Year 4 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2021-June 30, 2022

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2021 and June 30, 2022 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Dedham

EPA NPDES Permit Number: MAR041033

Primary MS4 Program Manager Contact Information

Name: Jason Mammone, P.E. Title: Director of Engineering

Street Address Line 1: 55 River Street

Street Address Line 2:

City: Dedham State: MA Zip Code: 02026

Email: jmammone@dedham-ma.gov Phone Number: (781) 751-9352

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.dedham-ma.gov/home/showpublisheddocument/18974/637997805859831740

Date SWMP was Last Updated: June 2022

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☒ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☒ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☒ Charles River Watershed Phosphorus ☐ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☐ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 4 Requirements

☒ Developed a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover, made it available as part of the SWMP, and:

- ○ No updates were recommended
- ◉ Updates were recommended. The anticipated date or date of completion for updates is/was:

June 30, 2024

☒ Developed a report assessing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist, made it available as part of the SWMP, and:

- ○ No updates were recommended
- ◉ Updates were recommended. The anticipated date or date of completion for updates is/was:

June 30, 2024

☒ Identified a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious cover

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide an update on previous incomplete milestones, or provide any additional details, please use the box below:

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ◉ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ○ The updated SSO inventory can be found at the following website:
- ☒ Updated system map due in year 2 as necessary
- ☒ Provided training to employees involved in IDDE program within the reporting period
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- ☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- ☒ Updated inventory of all permittee owned facilities as necessary
- ☒ O&M programs for all permittee owned facilities have been completed and updated as necessary
- ☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- ☒ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- ☒ Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time

☒ Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers

☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

☒ Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Phosphorus Source Identification Report

☒ Completed the Phosphorus Source Identification Report

○ The Phosphorus Sourchace Identification Report is attached to the email submission

◉ The Phosphorus Source Identification Report can be found at the following website:

https://www.dedham-ma.gov/departments/engineering/municipal-stormwater-ms4

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

○ The BMP information is attached to the email submission

○ The BMP information can be found at the following website:

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The estimated phosphorus removal associated with existing structural BMPs has been calculated for some developments in Town. However, the Town is still working to refine this information and expand this analysis. As the Town moves forward in developing their Phosphorus Control Plan, the Town will track and estimate the phosphorus removed by each BMP including reporting the BMP type, total area treated, design storage volume, and the estimated phosphorus removed in mass per year. The Town has begun drafting language to include in the Stormwater Management Rules and Regulations which require developers submitting for a Major Stormwater Permit to provide information and calculations for structural BMPs and the associated phosphorus reduction.

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

- ○ The street sweeping schedule is attached to the email submission
- ◉ The street sweeping schedule can be found at the following website:

https://www.dedham-ma.gov/departments/engineering/municipal-stormwater-ms4

☐ Prioritized inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Cleaned catch basins more frequently if inspection and maintenance activities indicated excessive sediment or debris loadings

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Town has been collecting data during annual catch basin cleaning that will be utilized to develop a catch basin cleaning optimization plan. This plan will be developed and implemented once sufficient data has been collected. The plan will include provisions to prioritize areas that discharge to water bodies impaired for solids, oil, grease, or metals. The Town has also developed a tablet-based catch basin cleaning inspection form to more easily identify catch basins that are filling up more frequently. Most of the Town owned catch basins were cleaned in 2022. Using this new data point for each catch basin, the catch basin optimization plan will be developed in Permit Year 5.

Charles River Watershed Phosphorus TMDL

☒ Defined the scope of the Phosphorus Control Plan (PCP). *Please select one of the following:*

- ◉ The PCP scope is the entire area within our jurisdiction within the Charles River Watershed
- ○ The PCP scope is the urbanized area portion of our jurisdiction within the Charles River Watershed

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Both of the above items are true, as the entire area under the Town's jurisdiction within the Charles River Watershed is urbanized.

NON-TRADITIONAL AND TRANSPORTATION MS4s ONLY- municipalities please skip this section:

☐ Estimated the current impervious area of permittee owned property, determined the Land Use information for permittee owned property, calculated the phosphorus removal in pounds per year for any structural BMP owned by the permittee in accordance with Appendix F Attachment 3, and recorded the date of last maintenance activity for all structural BMPs for which phosphorus removal is calculated

- ○ The above information is attached to the email submission
- ○ The above information can be found at the following website:

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

There are no known locations where SSOs have discharged to the MS4 during the reporting period or in the 5 years prior to the start of the reporting period.

The Town performed training on Illicit Discharge Detection and Elimination (IDDE) and Good Housekeeping and Pollution Prevention in June 2022. Due to the COVID-9 pandemic, a formal, in-person training was not permissible, so PowerPoint Presentations were distributed to staff, and staff had to send confirmation to the Director of Engineering verifying that they completed the required training.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

The list of outfalls/interconnections and their receiving waters was updated during Permit Year 3 as part of the completed dry-weather outfall screening and sampling. The Town updated this list again in Permit Year 4 to reflect minor changes in their drainage system. The updated list of receiving waters and outfalls is included in Section 1 of the Town's SWMP. In addition, any new impairments are included in Section 1 of the SWMP as well.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 9

*Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.*

BMP: Dog Waste Flyers

Message Description and Distribution Method:

The Town distributed a flyer entitled "There's no such thing as the poop fairy" with dog license issuances and renewals during Permit Year 4. These flyers were distributed both in-person and via mail after the onset of COVID-19. These flyers were also maintained on the Town website throughout the permit year.

Targeted Audience: Residents

Responsible Department/Parties: Town Clerk/Environmental Department

Measurable Goal(s):

The Town distributed 1,150 dog waste flyers with dog license issuances and renewals during the reporting period.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Leaf Litter Messaging

Message Description and Distribution Method:

The Town posted and maintained information provided by the Neponset River Watershed Partnership regarding proper disposal of leaf litter to the home page of its website throughout the permit year. The leaf litter slider also served as a link to the Town's stormwater webpage, where more educational information is posted. As part of the fall campaign, the Town also shared the information to the "Dedham DPW" Facebook and "Town of Dedham Engineering Dept" Twitter pages.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department, DPW

Measurable Goal(s):

By posting the leaf litter slide to the home page of the Town's website, Dedham ensured that it would be accessible to as many residents as possible.

Message Date(s): Dec 2021, Permit Year 4

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Septic System Messaging

Message Description and Distribution Method:

The Town posted and maintained a SepticSmart flyer developed by the EPA and a SepticSmart homeowners' guide to its website throughout the permit year. The flyer was posted in both English and Spanish.

Targeted Audience: Residents

Responsible Department/Parties: Health Department, Engineering Department

Measurable Goal(s):

By posting the septic system flyer to the home page of the Town's website, Dedham ensured that it would be accessible to as many residents as possible.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Regional Outreach Mailer

Message Description and Distribution Method:

The Neponset River Watershed Association mailed out an informational flyer to all residents in Dedham during July 2022. The flyer covered rain barrels, dog waste management, fertilizer use, and other topics related to stormwater management.

Targeted Audience: Residents

Responsible Department/Parties: Neponset Stormwater Partnership

Measurable Goal(s):

By posting the flyer to the Town's website, Dedham ensured that it would be accessible to as many residents as possible.

Message Date(s): July 2022 (one week after Permit Year ended)

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Yard Waste Flyer

Message Description and Distribution Method:

A flyer regarding best management practices for yard waste was developed and sent out to all the public schools in Dedham.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department, School Department

Measurable Goal(s):

By maintaining the yard flyer on the Town's website as well as handing it out to students, Dedham ensured that it would be accessible to as many residents as possible.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ○

If yes, describe why the change was made:

BMP: Outreach Message

Message Description and Distribution Method:

The Town maintained the Neponset River Watershed Association informational flyer on their website throughout the the permit year. Throughout the rest of Year 4, messages related to stormwater management were sent out through social media targeting residents. These messages included topics of general stormwater management, leaf litter and fall clean up best practices, and proper disposal of pet waste. The messages were sent out via Facebook Ads, the DPW Facebook page, the Engineering Department Twitter page, the DPW Twitter page, the Town website, email notifications to Town website subscribers, and to the Dedham School System.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department

Measurable Goal(s):

The flyer was sent to every house in Dedham in July 2021.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Outreach Message

Message Description and Distribution Method:

Throughout Permit Year 4, messages related to stormwater management were sent out through social media targeting residents and businesses. These messages included topics of general stormwater management, leaf litter and fall clean up best practices, and proper disposal of pet waste. The messages were sent out via Facebook Ads, the DPW Facebook page, the Engineering Department Twitter page, the DWP Twitter page, the Town website, email notifications to Town website subscribers, and to the Dedham School System.

Targeted Audience: Businesses, Institutions, and Commercial Facilities

Responsible Department/Parties: Engineering Department

Measurable Goal(s):

By maintaining the information on the Town's website as well as making social media posts, Dedham ensured that it would be accessible to as many businesses as possible.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ○

If yes, describe why the change was made:

BMP: Outreach Message

Message Description and Distribution Method:

Two public education flyers were created targeting developers. One flyer focused on reducing stormwater runoff during construction, and a second flyer focused specifically on sediment and erosion control for

developers. Both flyers were distributed to developers by the Conservation Department, Planning Department, Building Department and Engineering Department when they submit for applications and permits.

Targeted Audience: Developers (construction)

Responsible Department/Parties: Conservation Dept, Planning Dept, Building Dept, and Engineering Dept

Measurable Goal(s):

The Town distributed a total of 113 flyers to developers.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP: Outreach Message

Message Description and Distribution Method:

A stormwater prevention guide flyer, which focused on stormwater management related to industrial facilities, was mailed to industrial facilities within the Town.

Targeted Audience: Industrial Facilities

Responsible Department/Parties: Engineering Department

Measurable Goal(s):

The flyer was mailed to 57 industrial facilities.

Message Date(s): Permit Year 4

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period**:

The Town posted the updated SWMP, dated June 2022, to its website at the end of Permit Year 4. The SWMP was made available for public comment. In addition, Annual Reports for Permit Years 1, 2, and 3 were also made available on the Town's website throughout Permit Year 4.

Was this opportunity different than what was proposed in your NOI? Yes ○ No ◉

Describe any other public involvement or participation opportunities conducted **during this reporting period**:

The Board of Health held its annual Household Hazardous Waste Collection Day on October 3, 2021 and on April 30, 2022, providing the opportunity for residents to properly dispose of hazardous materials such as paints, pesticides, vehicle fluids, batteries, flammable materials, and other substances that may have otherwise been discharged into the MS4. The DPW staff additionally collect and properly dispose of hazardous materials year-round as needed.

In addition to providing bi-weekly curbside recycling pickup, the Town held a recycling collection event on April 2, 2022, to collect items that are not accepted during curbside pickup, but are still recyclable. The Town held a combined electronic/styrofoam/cardboard recycling day in January 2022. Dedham Arts also held an electronic/metals recycling event in October 2021 for items not accepted during curbside pickup, but are still recyclable. The Town additionally hosts a monthly cardboard recycling day.

Rain barrels were made available for purchase to residents from the Dedham-Westwood Water District and composting bins were made available for purchase through the Conservation Department.

Dedham continued to participate in the Neponset River Watershed Association which ran an educational advertising campaign through ThinkBlue Massachusetts from May 17 to June 4, 2022. Facebook and Instagram sponsored videos and Youtube pre-roll ads were used to help viewers visualize how trash, pet waste, and motor oil become stormwater pollution. This video was also distributed in Spanish. While ad impressions targeted members of all communities in the NepRWA, 12,968 Facebook and Instagram and 17,448 YouTube ad impressions can be attributed to Dedham residents. The ad campaign was followed by a survey of resident in all target communities - those who remembered seeing the ad were more likely to know that stormwater pollution ends up in local waterways and more likely to consider polluted runoff a serious environmental threat.

The Town continued its Citizens Water Monitoring Network, an initiative organized through the Neponset River Watershed Association, during the reporting period. Resident volunteers collected quarterly samples at the Mother Brook at Washington Street station, testing for E.coli, total phosphorus, pH, dissolved oxygen, temperature, ortho-phosphate, total nitrogen, and ammonia.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

☐ This SSO section is NOT applicable because we DO NOT have sanitary sewer

*Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period**.*

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Optional: Provide additional status information regarding your map:

During the reporting period, the Town was able to refine their outfall and interconnection inventory. The MS4 map will continue to be updated as necessary as there are updates to existing drainage infrastructure and as new drainage infrastructure is constructed. Updates to the Town's MS4 system mapping were completed to include these changes. The most recent version of the MS4 map is included with the SWMP and is also available at the following location: https://dedham.maps.arcgis.com/home/index.html.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

○ No outfalls were inspected

◉ The outfall screening data is attached to the email submission

○ The outfall screening data can be found at the following website:

*Below, report on the number of outfalls/interconnections screened **during this reporting period**.*

Number of outfalls screened: 22

*Below, report on the percent of outfalls/interconnections screened **to date**.*

Percent of outfalls screened: 100

Optional: Provide additional information regarding your outfall/interconnection screening:

Wet weather outfall screening was completed for 22 outfalls during the reporting period, of which 20 were flowing and were sampled. The Town previously completed dry weather screening for all their outfalls in Permit Year 3. The Town also conducted wet weather sampling for 20 outfalls in Permit Year 3 bringing the total to 40 outfalls sampled during wet weather through Permit Year 4.

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ No catchment investigations were conducted
- ◉ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 9

*Below, report on the percent of catchments investigated **to date.***

Percent of total catchments investigated: 10.4

Optional: Provide any additional information for clarity regarding the catchment investigations below:

The Town investigated 10 catchments during Permit Year 4, however there were only 9 new catchments where both catchment investigations and wet weather outfall sampling were completed. Per the permit, the Town is only reporting that catchment investigations are complete in catchments where outfalls/ interconnections have been screened during dry weather, where key junction manholes in these catchments have been screened, and where wet weather sampling has been completed, and where all results indicated no evidence of likely sewer input based on field observations and sampling. Catchment investigation data attached to this report includes all the investigations completed during the reporting period. There are 179 outfalls in Dedham that have at least one SVF, therefore wet weather sampling must be conducted at each of these outfalls for catchment investigations to be considered complete. The Town's most recent SVF Matrix is attached to the e-mail with the Annual Report submission.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ◉ No illicit discharges were found
- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed ***since the effective date of the permit (July 1, 2018)****.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

The Town's most recent Catchment Prioritization & Ranking Matrix is attached to the e-mail with the Annual Report submission.

Employee Training

Describe the frequency and type of employee training conducted **during this reporting period**:

Individual IDDE employee training was conducted in June 2022 of the reporting period. PowerPoint presentations were sent to staff and the staff had to send an email confirmation to the Director of Engineering that they had completed the training. This was done due to limitations from the effects of COVID-19.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed ***during this reporting period****.*

Number of site plan reviews completed: 15

Number of inspections completed: 60

Number of enforcement actions taken: 4

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

The number of site plan reviews, inspections, and enforcement actions taken is for all projects, even those where there was less than an acre of disturbance.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3): May 31, 2021

As-built Drawings

*Below, report on the number of as-built drawings received **during this reporting period**.*

Number of as-built drawings received: 18

Optional: Enter any additional information relevant to the submission of as-built drawings:

The number of as-builts received is for all projects, even those where there was less than an acre of disturbance.

Retrofit Properties Inventory

Below, list the permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (at least 5):

1) Avery Elementary School
2) Dedham High School
3) 34 Milton St
4) Dedham Public Works
5) 37 Brookside Ave

MCM6: Good Housekeeping

Catch Basin Cleaning

*Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins **during this reporting period**.*

Number of catch basins inspected: 1,571

Number of catch basins cleaned: 1,380

Total volume or mass of material removed from all catch basins: 23,980 cubic feet

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins: 1,961

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

Street Sweeping

*Report on street sweeping completed **during this reporting period** using one of the three metrics below.*

- (●) Number of miles cleaned: 330
- ( ) Volume of material removed: [Select Units]
- ( ) Weight of material removed: [Select Units]

Stormwater Pollution Prevention Plan (SWPPP)

*Below, report on the number of site inspections for facilities that require a SWPPP completed **during this reporting period**.*

Number of site inspections completed: 4

Describe any corrective actions taken at a facility with a SWPPP:

Inspections were conducted at the DPW Facility during all four quarters for the reporting period, with one inspection conducted during wet weather. No corrective actions were taken at this facility. However, the Town is in the process of designing improvements to the DPW facility site based on recommendations included in the SWPPP. Improvements include design of three (3) subsurface in-line hydrodynamic separators to remove trash and debris, sediment, floatables and other larger pollutants. A double catch basin and a plunge pool are also being installed at the rear of the site to provide erosion control and keep the existing vegetation intact in an effort to slow down the rate of runoff to Mother Brook and allow stormwater to infiltrate and/or naturally be filtered by the existing vegetation. The Town is also in the process of conducting a feasibility study for a designated vehicle washing station.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- ( ) Not applicable
- (●) The results from additional reports or studies are attached to the email submission
- ( ) The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

The Neponset River Watershed Association has been collecting water quality data in Dedham and throughout the Neponset River watershed since 1996. Samples are collected by volunteers through the Community Water

Monitoring Network and by the Neponset River Watershed Association staff. The data is used to track the health of the Neponset River and its tributaries, and to locate pollution sources for follow-up sampling. There is one permanent monitoring station in Dedham located on Mother Brook. The station is tested for E. coli, total phosphorus, pH, dissolved oxygen, and temperature once per month between May and October. Recommendations related to phosphorus and E. coli levels were identified in the 2021 Water Quality Report, which is attached to the e-mail submission with this Annual Report. The Town will utilize this data, we warranted, during future MS4 compliance initiatives.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 4 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 5 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program

- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)
- Identify additional permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 5 below:

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Jason Mammone, P.E.	Title:	Director of Engineering
Signature:		Date:	

[Signatory may be a duly authorized representative]

Dedham, MA - Catchment Investigation Results

System Discharge	Structure	Upstream Structure	Location Description	Date	Flow	Sandbagged	Flow Behind Sandbag	Sampling Results					Surcharging	Observations
								Ammonia (mg/l)	Chlorine (mg/l)	Surfactants (mg/l)	Temperature (°F)	E.coli (mpn/100 mL)		
OF604	DMH1317	CB2734	Hyde Park St	12/2/20	Yes	No	No	0.1	0.03	0.375	51.2	690	No	
OF604	DMH1688	CB1564	Hyde Park St	12/2/20	Yes	No	No	0	0.04	0.75	50.3	49	No	
OF604	DMH333	DMH916	Colburn St	12/2/20	Yes	No	No	0	0	0.25	50.6	51	No	
OF604	DMH1714	DMH1317	Hyde Park St	12/3/20	Yes	No	No	0	0.02	0.375	52.4	34	No	
OF604	CB446	DMH1714	Hyde Park St	12/3/20	Yes	No	No	0	0.02	0.375	51.1	33	No	
OF604	CB446	CB447	Hyde Park St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH67	DMH1513	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH67	CB360	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH636	CB370	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	Could only see one incoming pipe and one pipe from CB(sandbagged). Mainline flow from inlet not sampled.
OF604	DMH64	CB357	Greenhood St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	CB358	CB359	Greenhood St	12/3/2020	No	Yes	No	-	-	-	-	-	No	Mainline flow from inlet to drainage system, no sample taken.
OF604	CB453	CB455	Greenhood St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	CB453	CB454	Greenhood St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	CB442	CB443	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	CB1488	CB335	Congress Pl	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	CB1488	DMH63	Congress Pl	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH1726	CB374	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH1726	DMH1725	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH1727	CB371	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF604	DMH1727	CB373	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF504	CB1642	DMH330	Colburn St	12/3/2020	No	Yes	No	-	-	-	-	-	No	
OF459	CB1613	CB979	Clark St	12/3/2020	No	No	No	-	-	-	-	-	Yes	
OF459	CB1613	CB751	Clark St	12/3/2020	No	No	No	-	-	-	-	-	Yes	
OF459	DMH1498	CB1613	Clark St	12/3/2020	No	No	No	-	-	-	-	-	Yes	
OF464	DMH1413	CB977	Charles St	12/4/20	Yes	No	No	0	0.01	0.5	55.1	550	No	
OF604	OF604	DMH917	Colburn St	12/4/20	Yes	No	No	0.3	0.01	0.375	53	1300	No	
OF604	IN26	Stream	Greenhood St	12/4/20	Yes	No	No	0	0.02	0.375	49.5	310	No	Inlet sampled to compare with outlet.
OF459	CB2220	DMH294	Barrows St	12/4/20	Yes	No	No	0	0.02	0.5	57.8	<1	No	
OF459	CB979	CB2221	Charles St	12/4/20	Yes	No	No	0	0.02	0.5	55.2	2	No	Downstream sample taken to compare with inlet sample.
OF464	CB1912	CB988	Woodleigh Rd	12/4/20	Yes	No	No	0	0.01	0.25	53.9	54	No	
OF464	CB977	CB978	Barrows St	12/4/2020	No	Yes	No	-	-	-	-	-	No	Pipe connecting DMH to nearby SMH is capped.
OF464	CB977	CB1364	Barrows St	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF464	CB977	SMH	Barrows St	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF464	DMH185	DMH942	Mt Vernon St	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF464	DMH185	CB981	Mt Vernon St	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF464	CB976	SMH	Mt Vernon St	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF464	CB301	CB302	Whiting Rd	12/4/2020	No	Yes	No	-	-	-	-	-	No	
OF459	CB977	CB976	Barrows St	12/9/20	Yes	No	No	0	0	0.375	49.6	<1	No	
OF168	CB480	CB478	Veterans Rd	12/9/20	Yes	No	No	0	0.02	0.375	49	<1	No	
OF168	CB482	CB481	Veterans Rd	12/9/20	Yes	No	No	0	0.02	0.375	48	1	No	
OF464	CB986	DMH1155	Whiting Rd	12/9/20	Yes	No	No	0	0.02	0.375	46	120	No	Flow from DMH1155 is backing up into the outlet pipe of CB301. can not verify flow from CB201.
OF168	CB481	CB480	Veterans Rd	12/9/20	Yes	No	No	0	0	0.25	48.2	1	No	Foam in catch basin sump
OF464	DMH185	DMH944	Mt Vernon St	12/9/20	Yes	No	No	0	0.02	0.375	47.6	550	No	
OF168	CB483	CB482	Veterans Rd	12/9/2020	No	No	No	-	-	-	-	-	Yes	
OF604	CB362	CB453	Greenhood St	12/9/2020	No	No	No	-	-	-	-	-	Yes	
OF408	DMH1742	DMH337	Leonard St	12/10/2020	Yes	No	No	0	0.02	0.25	55.2	12	No	
OF408	CB474	CB473	Leonard St	12/10/2020	Yes	No	No	0	0.01	0.25	52.1	20	No	
OF167	CB523	DMH338	Veterans Rd	12/10/2020	Yes	No	No	0	0.02	0.125	48.8	<1	No	
OF167	CB518	CB517	Veterans Rd	12/10/2020	Yes	No	No	0	0	0.125	50.2	1	No	
OF167	CB518	CB1410	Veterans Rd	12/10/2020	Yes	No	No	0	0	0.125	49.7	2	No	
OF408	CB1641	CB475	Oakland St	12/10/2020	Yes	No	No	0	0	0.25	49.3	5.2	No	
OF408	DMH1742	CB472	Leonard St	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF167	CB523	CB522	Veterans Rd	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF167	CB518	CB519	Veterans Rd	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF167	CB518	CB516	Veterans Rd	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF408	CB1641	CB476	Oakland St	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF168	CB480	CB479	Veterans Rd	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF168	CB482	Unknown structure	Veterans Rd	12/10/2020	No	Yes	No	-	-	-	-	-	No	
OF705	IN18	Open Channel Conveyance	Mt Vernon St	12/14/2020	Yes	No	No	0	0.03	0.375	48.2	>2419.6	No	
OF705	OF705	CB2615	Whiting Rd	12/14/2020	Yes	No	No	0.1	0	0.375	48.8	>2419.6	No	
OF705	CB339	CB338	Fulton St	1/5/2021	Yes	No	No	0	0	0.25	46.5	2	No	
OF705	DMH61	CB335	Fulton St	1/5/2021	Yes	No	No	0	0	0.25	46.5	1	No	
OF403	DMH57	CB1486	High St	1/6/2021	Yes	No	No	0	0	0.375	50.1	2	No	
OF705	CB332	DMH61	Fulton St	1/6/2021	Yes	No	No	0	0.02	0.375	46.4	2	No	
OF705	DMH1671	DMH1670	Avery Elementary School	1/6/2021	No	Yes	Yes	0.2	0.05	1.25	-	2400	No	
OF448	DMH927	CB2214	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH927	CB439	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH2510	CB548	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH2510	CB2510	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH2510	DMH250	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH210	DMH209	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH210	DMH423	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH404	CB1205	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH404	CB701	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF448	DMH404	DMH139	High St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF446	CB1601	CB1602	Ames St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	CB342	CB341	Woodleigh Rd	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH61	CB333	Fulton St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	CB339	CB340	Fulton St	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH52	CB256	Whiting Rd	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH52	CB330	Whiting Rd	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	CB2226	DMH850	Whiting Rd	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1670	CB2979	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1670	CB2980	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1676	CB2985	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1676	CB2616	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1676	CB2986	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1671	DMH1672	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1668	DMH1671	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1668	DMH1671	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1672	CB2981	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1672	CB2982	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1672	DMH1673	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1674	CB2983	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1674	CB2984	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1674	Unnamed CB	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF705	DMH1674	DMH1675	Avery Elementary School	1/6/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH415	DMH77	Sawmill Ln	1/6/2021	No	No	No	-	-	-	-	-	Yes	
OF403	DMH77	DMH76	Sawmill Ln	1/6/2021	No	No	No	-	-	-	-	-	Yes	Moderate turbidity in standing water

System Discharge	Structure	Upstream Structure	Location Description	Date	Flow	Sandbagged	Flow Behind Sandbag	Sampling Results					Surcharging	Observations
								Ammonia (mg/l)	Chlorine (mg/l)	Surfactants (mg/l)	Temperature (°F)	E.coli (mpn/100 mL)		
OF403	DMH80	CB392	Walnut St	1/7/2021	Yes	No	No	0	0.03	0.375	45.6	1	No	
OF403	DMH81	DMH80	Bussey St	1/7/2021	Yes	No	No	0	0.04	0.375	46.9	3.1	No	
OF403	DMH71	DMH69	Sawmill Ln	1/7/2021	No	Yes	Yes	0.1	0.04	0.625	54.5	<1	No	
OF403	DMH71	DMH70	Sawmill Ln	1/7/2021	Yes	No	No	0	0.02	0.375	53.3	<1	No	
OF403	DMH70	DMH72	Bussey St	1/7/2021	Yes	No	No	0	0.01	0.375	48.9	<1	No	
OF403	DMH73	DMH74	High St	1/7/2021	Yes	No	No	0	0.02	0.375	48.8	1	No	
OF403	DMH71	DMH71	Sawmill Ln	1/7/2021	No	No	No	0	0.02	0.375	47.9	2	No	
OF403	DMH76	DMH82	Sawmill Ln	1/7/2021	No	Yes	Yes	0	0.02	0.375	48.7	64	No	Not enough flow to sample from DMH82, sandbagged overnight, sampled next day.
OF403	DMH415	CB389	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH77	CB388	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH76	DMH75	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH82	CB398	Bussey St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH81	CB396	Walnut St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH81	CB395	Walnut St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH80	DMH79	Walnut St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH80	CB393	Walnut St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH78	CB390	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH73	CB384	High St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH73	CB385	High St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH70	Unknown	Bussey St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH71	CB381	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH71	CB382	Sawmill Ln	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH69	CB378	Bussey St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH69	CB377	Bussey St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH57	CB322	High St	1/7/2021	No	Yes	No	-	-	-	-	-	No	Infiltration from walls and bench of manhole, flow from catch basin coming from pipe segment. Upstream catch basin is dry.
OF403	DMH314	CB1405	Walnut St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH79	CB391	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH79	DMH331	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH58	CB323	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH58	CB324	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH58	DMH59	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH60	CB325	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH60	CB326	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF403	DMH60	CB327	Cass Ave	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF705	CB332	CB331	Fulton St	1/7/2021	No	Yes	No	-	-	-	-	-	No	
OF471	sw-03165	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF471	sw-03170	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	Asphalt in outlet pipe, could not place sandbag
OF471	sw-03198	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF471	sw-03197	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF471	sw-00738	-	-	11/3/2021	No	No	No	-	-	-	-	-	Yes	Submerged approx 10"
OF471	sw-00921	-	-	11/3/2021	No	No	No	-	-	-	-	-	Yes	Pipe surcharged
OF596	sw-00932	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-00282	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-01838	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-02147	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-00809	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-01996	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-00809	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-00994	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-01901	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	Unnamed pipe	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-00978	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-02152	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF596	sw-02151	-	-	11/3/2021	No	Yes	No	-	-	-	-	-	No	
OF471	sw-00737	-	-	11/3/2021	Yes	No	No	0	0	0.375	61.7	13	No	Flow rate approx 5 GPM
OF471	sw-00770	-	-	11/3/2021	Yes	No	No	0	0	0.375	61.2	25	No	
OF596	sw-00814	-	-	11/4/2021	No	No	No	-	-	-	-	-	Yes	Surcharged approx 3"
OF471	sw-03199	-	-	11/4/2021	Yes	No	No	0.1	0	0.25	56.9	28	No	Flow rate approx 5 gpm
OF471	sw-03163	-	-	11/4/2021	Yes	No	No	0.1	0	0.25	53.5	18	No	Flow rate approx 5 gpm
OF471	sw-03162	-	-	11/4/2021	Yes	No	No	0.1	0.11	0.25	51.0	9	No	Flow rate approx 5 gpm
OF559	sw-03536	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF559	sw-03535	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF559	sw-03534	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF559	sw-02444	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF00855	sw-02432	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	CB2218	-	-	12/14/2021	No	No	No	-	-	-	-	-	Yes	CB surcharged
OF707	DMH890	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-02096	-	-	12/14/2021	No	No	No	-	-	-	-	-	Yes	Submerged approx 4"
OF707	sw-02095	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-04448	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-01971	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	Yes	Surcharged approx 6"
OF707	sw-02799	-	-	12/14/2021	Yes	No	No	1	0	0.25	54.5	35	No	
OF707	sw-00904	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-01513	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-02181	-	-	12/14/2021	No	No	No	-	-	-	-	-	Yes	Submerged approx 4"
OF707	sw-00938	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	CB654	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	Gas/electric/sewer main running through catch basin
OF707	sw-02090	-	-	12/14/2021	No	No	No	-	-	-	-	-	Yes	Submerged approx 4"
OF707	sw-00902	-	-	12/14/2021	Yes	No	No	1	0	0.25	50.9	1203	No	Flow rate approx 0.5 gpm
OF707	sw-01512	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-01511	-	-	12/14/2021	No	No	No	-	-	-	-	-	Yes	Surcharged approx 6"
OF707	sw-03906	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00702	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00495	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00939	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00906	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00905	-	-	12/14/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-00494	-	-	12/14/2021	Yes	No	No	0.2	0	0.25	52.8	42	No	Flow rate approx 3 gpm
OF707	sw-02092	-	-	12/15/2021	Yes	No	No	3	0	0.25	42.4	>2420	No	Flow rate approx 2 gpm
OF707	sw-02093	-	-	12/15/2021	No	Yes	No	-	-	-	-	-	No	
OF707	sw-01718	-	-	12/15/2021	Yes	No	No	0	0.09	0.25	46.8	20	No	Flow rate approx 5 gpm
OF707	sw-03903	-	-	12/15/2021	Yes	No	No	0.4	0.09	0.25	48.9	308	No	Flow rate approx 2 gpm

System Discharge	Structure	Upstream Structure	Location Description	Date	Flow	Sandbagged	Flow Behind Sandbag	Sampling Results					Surcharging	Observations
								Ammonia (mg/l)	Chlorine (mg/l)	Surfactants (mg/l)	Temperature (°F)	E.coli (mpn/100 mL)		
OF172	sw-00410	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Pipe submerged approx 2"
OF172	sw-04452	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-02806	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Submerged approx 3"
OF172	sw-02806	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-04451	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-03151	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-03150	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	Yes-Dog waste bags in catch basin sump
OF172	sw-01835	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01992	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-00432	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-02063	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-02781	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01254	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-00713	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01757	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-02779	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	Unnamed pipe	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-02065	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF408	sw-02229	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF408	sw-00926	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF408	sw-02052	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF604	sw-01376	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF604	sw-03110	-	-	5/12/2022	No	Yes	No	-	-	-	-	-		Yes-Trash and debris in manhole. Interconnection from BWSC. Upstream pipe not visible
OF172	sw-01255	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Submerged approx 6"
OF172	sw-00715	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Submerged approx 6"
OF172	sw-00714	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Submerged approx 4"
OF172	sw-00717	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-00716	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01110	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01118	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-04255	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	Could not reach pipe with sandbag
OF172	sw-00406	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-00405	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01112	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF172	sw-01113	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF153	sw-00353	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	
OF153	Unnamed pipe	-	-	5/12/2022	No	No	No	-	-	-	-	-	Yes	Submerged approx 6"
OF602	sw-00030	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	Could not access outfall. No sign of flow or contamination
OF747	sw-00035	-	-	5/12/2022	No	Yes	No	-	-	-	-	-	No	Yes-Dog waste bag at outfall. Could not find any upstream structure. Could not verify catch basin in Condon Park parking lot as connected
OF604	sw-01377	-	-	5/13/2022	Yes	No	No	0.3	1.24	0.25	63.4	-	No	

DEDHAM, MA - YEAR 4 CATCHMENT SCORING, RANKING & PRIOIRITIZATION

Discharge Point ID	Discharge Group ID	Catchment Area ID	Catchment located within 300' of a Recreational Area (0=No, 1=Yes, High Priority)	Catchment loacted within 1500' of drinking water Supplies (0=No, 1=Yes, High Priority)	Sewer Inputs indicators found during dry weather screening (0=No, 1=Yes, Problem)	Know or suspected problem including 2003 MS4 screening (0=No, 1=Yes, High Priority)	Past discharge complaints or reports (0=No, 1=Yes, High Priority)	Area of septic loacted within the catchment area (Sq. Ft.)	Percentage of septic located within the catchment area	Septic Score	Low Loading Generating Site Located Within Catchment Area (0=No, 1=Yes)	Area of Low Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Low Loading Generating Sites Located Within Catchment Area	Low Loading Generating Sites Score	Area of Medium Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Medium Loading Generating Sites Located Within Catchment Area	Medium Loading Generating Sites Score	High Loading Generating Sites Score	Miles of Public Sewer Mains Located within the Catchment Area	Sewer Score	Discharge Point Discharges Directly to Waterbody with Approved TMDL or Known Impairment (0=No, 5=Unknown, 10=Yes)	MS4 Receiving Waterbody Name	Final_Outfall_ID	Final_ReceivingWater_Name	EPA Priority	Total Score	Final Rank	System Vulnerability Factor Present (0=No, 1=Yes)
OF572	DG_207	G_207_OF572	1	0	0	0	0	0.00	0%	0	1	42342.56	2%	1	138085.03	5%	2	0	2.24	7	10	Mother Brook (MA73-28)	OF572	Mother Brook (MA73-28)	High	20	1	1
OF704	DG_263	G_263_OF704	1	0	0	0	0	0.00	0%	0	1	260092.61	4%	1	21996.05	1%	2	0	2.36	7	10	Mother Brook (MA73-28)	OF704	Mother Brook (MA73-28)	High	20	2	1
OF604	DG_368	G_368_OF604	1	0	0	0	0	48027.80	2%	1	0	0.00	0%	0	0.00	0%	0	0	2.35	7	10	Mother Brook (MA73-28)	OF604	Mother Brook (MA73-28)	High	18	3	1
OF707	DG_415_1	_415_1_OF707	1	0	0	0	0	0.00	0%	0	1	30878.52	1%	1	0.00	0%	0	0	2.91	7	10	Charles River (MA72-07)	OF707	Charles River (MA72-07)	High	18	4	1
OF403	DG_262	G_262_OF403_	1	0	0	0	0	0.00	0%	0	1	4169.18	1%	1	16513.46	2%	2	0	0.79	3	10	Mother Brook (MA73-28)	OF403	Mother Brook (MA73-28)	High	16	5	1
OF596	DG_449	G_449_OF596	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	1.07	5	10	Charles River (MA72-07)	OF596	Charles River (MA72-07)	High	15	6	1
OF655	DG_464	G_464_OF655	1	0	0	0	0	0.00	0%	0	1	44968.73	4%	1	31240.35	3%	2	0	0.50	2	10	Mother Brook (MA73-28)	OF655	Mother Brook (MA73-28)	High	15	7	1
OF471	DG_306	G_306_OF471	1	0	0	0	0	11784.49	1%	1	0	0.00	0%	0	0.00	0%	0	0	0.54	3	10	Mother Brook (MA73-28)	OF471	Mother Brook (MA73-28)	High	14	8	1
ITC001	DG_446	G_446_ITC001	1	0	0	0	0	0.00	0%	0	1	103.11	1%	1	0.00	0%	0	0	0.70	3	10	Charles River (MA72-07)	OF597	Charles River (MA72-07)	High	14	9	1
OF408	DG_280	G_280_OF408	1	0	0	0	0	36075.63	3%	1	0	0.00	0%	0	0.00	0%	0	0	0.67	3	10	Mother Brook (MA73-28)	OF408	Mother Brook (MA73-28)	High	14	10	1
OF448	DG_307	G_307_OF448	1	1	0	0	0	13164.21	2%	1	0	0.00	0%	0	0.00	0%	0	0	0.72	3	10	Charles River (MA72-07)	OF448	Charles River (MA72-07)	High	14	11	1
OF446	DG_316	G_316_OF446	1	1	0	0	0	0.00	0%	0	1	60955.54	16%	1	258.57	1%	2	0	0.20	1	10	Charles River (MA72-07)	OF446	Charles River (MA72-07)	High	14	12	1
OF559	DG_284	G_284_OF559	1	0	0	0	0	0.00	0%	0	1	239877.71	64%	3	0.00	0%	0	0	0.16	1	10	Mother Brook (MA73-28)	OF745	Mother Brook (MA73-28)	High	14	13	1
OF152	DG_351_1	_351_1_OF152	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.91	3	10	Mother Brook (MA73-28)	OF152	Mother Brook (MA73-28)	High	13	14	1
OF00855	DG_442	_442_OF00855	1	0	0	0	0	0.00	0%	0	1	2039.52	1%	1	0.00	0%	0	0	0.26	2	10	Charles River (MA72-07)	OF00855	Charles River (MA72-07)	High	13	15	1
OF422	DG_344	G_344_OF422	0	1	0	0	0	47609.93	74%	3	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF422	Charles River (MA72-07)	High	13	16	1
OF423	DG_345	G_345_OF423	0	1	0	0	0	164246.58	73%	3	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF423	Charles River (MA72-07)	High	13	17	1
OF504	DG_314	G_314_OF504	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.60	3	10	Mother Brook (MA73-28)	OF504	Mother Brook (MA73-28)	High	13	18	1
OF473	DG_249	G_249_OF473	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.11	1	10	Mother Brook (MA73-28)	OF473	Mother Brook (MA73-28)	High	11	19	1
OF168	DG_226	G_226_OF168	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.03	1	10	Mother Brook (MA73-28)	OF168	Mother Brook (MA73-28)	High	11	20	1
OF472	DG_290_2	_290_2_OF472	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	1	10	Mother Brook (MA73-28)	OF472	Mother Brook (MA73-28)	High	11	21	1
OF485	DG_351_2	_351_2_OF485	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	1	10	Mother Brook (MA73-28)	OF485	Mother Brook (MA73-28)	High	11	22	1
OF486	DG_257	G_257_OF486	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	10	Mother Brook (MA73-28)	OF486	Mother Brook (MA73-28)	High	11	23	1
OF603	DG_290_1	_290_1_OF603	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.18	1	10	Mother Brook (MA73-28)	OF603	Mother Brook (MA73-28)	High	11	24	1
OF654	DG_261	G_261_OF654	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	10	Mother Brook (MA73-28)	OF654	Mother Brook (MA73-28)	High	11	25	1
OF713	DG_255	G_255_OF713	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	10	Mother Brook (MA73-28)	OF713	Mother Brook (MA73-28)	High	11	26	1
OF715	DG_248	G_248_OF715	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	10	Mother Brook (MA73-28)	OF715	Mother Brook (MA73-28)	High	11	28	1
OF716	DG_251	G_251_OF716	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	10	Mother Brook (MA73-28)	OF716	Mother Brook (MA73-28)	High	11	29	1
OF153	DG_300	G_300_OF153	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF153	Mother Brook (MA73-28)	High	10	30	1
OF433	DG_339	G_339_OF433	0	1	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF433	Charles River (MA72-07)	High	10	31	1
OF526	DG_334	G_334_OF526	0	1	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF526	Charles River (MA72-07)	High	10	32	0
OF602	DG_292	G_292_OF602	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF602	Mother Brook (MA73-28)	High	10	33	1
OF710	DG_252	G_252_OF710	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF710	Mother Brook (MA73-28)	High	10	34	1
OF747	DG_283	G_283_OF747	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF747	Mother Brook (MA73-28)	High	10	35	1
OF750	DG_277	G_277_OF750	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF750	Mother Brook (MA73-28)	High	10	36	0
OF722	DG_264	G_264_OF722	1	0	0	0	0	0.00	0%	0	1	30463.91	2%	1	18419.01	1%	2	0	1.59	5	0	Wigwam Brook	OF722	Wigwam Brook	High	8	37	1
OF172	DG_075	G_075_OF172	1	0	0	0	0	0.00	0%	0	1	3.22	1%	1	8511.31	1%	2	0	1.61	5	0	Greenlodge Stream	OF172	Greenlodge Stream	High	8	38	1
OF574	DG_156	G_156_OF574	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	4.65	7	0	Greenlodge Stream	OF574	Greenlodge Stream	High	7	39	1
OF781	DG_064	G_064_OF781	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	17655.04	1%	2	0	1.79	5	0	East Brook	OF781	East Brook	High	7	40	1
OF314	DG_033	G_033_OF314	1	0	0	0	0	1580.59	0%	1	0	0.00	0%	0	0.00	0%	0	0	1.98	5	0	Greenlodge Stream	OF314	Greenlodge Stream	High	6	41	1
OF674	DG_106	G_106_OF674	1	0	0	0	0	0.00	0%	0	1	133204.14	57%	3	6465.10	3%	2	0	0.10	1	0	Greenlodge Stream	OF674	Greenlodge Stream	High	6	42	1
OF672	DG_367	G_367_OF672	1	0	0	0	0	518898.29	52%	3	1	500482.75	50%	3	0.00	0%	0	0	0.00	0	0	Weld Stream	OF672	Weld Stream	High	6	43	1
ITC020	DG_646	G_646_ITC020	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	9559.26	50%	6	0	0.00	0	0	Wigwam Brook	OF611	Wigwam Brook	High	6	44	1
OF575	DG_093	G_093_OF575	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	1.21	5	0	Greenlodge Stream	OF575	Greenlodge Stream	High	5	45	1
OF474	DG_055	G_055_OF474	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	1.39	5	0	Greenlodge Stream	OF474	Greenlodge Stream	High	5	46	1
OF670	DG_148	G_148_OF670	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	1.54	5	0	East Brook	OF670	East Brook	High	5	47	1
OF478	DG_090	G_090_OF478	1	0	0	0	0	0.00	0%	0	1	101311.31	42%	2	40731.09	17%	2	0	0.23	1	0	Greenlodge Stream	OF478	Greenlodge Stream	High	5	48	1
OF775	DG_461	G_461_OF775	1	1	0	0	0	0.00	0%	0	0	0.00	0%	0	124497.14	14%	2	0	0.91	3	0	Wigwam Brook	OF775	Wigwam Brook	High	5	49	1
OF668	DG_148	G_148_OF668	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	1.30	5	0	East Brook	OF670	East Brook	High	5	50	1
OF678	DG_267	G_267_OF678	1	0	0	0	0	0.00	0%	0	1	109092.38	37%	2	0.00	0%	0	0	0.37	2	0	Wigwam Brook	OF678	Wigwam Brook	High	4	51	1
OF434	DG_268	G_268_OF434	1	1	0	0	0	0.00	0%	0	1	88921.02	14%	1	0.00	0%	0	0	0.61	3	0	Lowder Brook	OF434	Lowder Brook	High	4	52	1
OF673	DG_071	G_071_OF673	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	1525.26	1%	2	0	0.46	2	0	Greenlodge Stream	OF673	Greenlodge Stream	High	4	53	1
OF198	DG_362	G_362_OF198	1	0	0	0	0	893436.11	73%	3	1	203857.21	17%	1	0.00	0%	0	0	0.00	0	0	MIT Endicott Brook	OF198	MIT Endicott Brook	High	4	54	1
OF397	DG_208	G_208_OF397	1	0	0	0	0	0.00	0%	0	1	1898.08	12%	1	3.34	1%	2	0	0.01	1	0	Wigwam Brook	OF397	Wigwam Brook	High	4	55	1
ITC021	DG_646	G_646_ITC021	1	0	0	0	0	0.00	0%	0	1	8.92	1%	1	4088.82	22%	2	0	0.08	1	0	Wigwam Brook	OF611	Wigwam Brook	High	4	56	1
OF429	DG_276	G_276_OF429	0	1	0	0	0	52694.41	14%	1	0	0.00	0%	0	0.00	0%	0	0	0.27	2	0	Lowder Brook	OF429	Lowder Brook	High	3	57	1
OF449	DG_239_1	_239_1_OF449	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.84	3	0	Wigwam Brook	OF449	Wigwam Brook	High	3	58	1
OF539	DG_190	G_190_OF539	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.87	3	0	East Brook	OF539	East Brook	High	3	59	1
OF583	DG_062	G_062_OF583	1	0	0	0	0	0.00	0%	0	1	6856.65	2%	1	0.00	0%	0	0	0.31	2	0	Greenlodge Stream	OF583	Greenlodge Stream	High	3	60	1
OF617	DG_238	G_238_OF617	0	1	0	0	0	0.00	0%	0	1	53766.63	44%	2	0.00	0%	0	0	0.01	1	0	Ursuline Stream	OF617	Ursuline Stream	High	3	61	1
OF653	DG_272	G_272_OF653	0	1	0	0	0	18.85	0%	1	0	0.00	0%	0	0.00	0%	0	0	0.06	1	0	Lowder Brook	OF653	Lowder Brook	High	2	62	1
OF669	DG_109	G_109_OF669	1	0	0	0	0	7306.02	4%	1	0	0.00	0%	0	0.00	0%	0	0	0.17	1	0	East Brook	OF669	East Brook	High	2	63	1
OF476	DG_027	G_027_OF476	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.29	2	0	Greenlodge Stream	OF476	Greenlodge Stream	High	2	64	1
OF567	DG_032	G_032_OF567	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.41	2	0	Greenlodge Stream	OF567	Greenlodge Stream	High	2	65	1
OF568	DG_039	G_039_OF568	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.41	2	0	Greenlodge Stream	OF568	Greenlodge Stream	High	2	66	1
OF496	DG_447	G_447_OF496	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.09	1	0	Vine Rock Stream	OF496	Vine Rock Stream	High	1	67	1
OF677	DG_287	G_287_OF677	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.09	1	0	Wigwam Brook	OF677	Wigwam Brook	High	1	68	1
OF00847	DG_274	_274_OF00847	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.05	1	0	Wigwam Brook	OF00847	Wigwam Brook	High	1	69	1
OF00857	DG_097	_097_OF00857	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.11	1	0	Little Wigwam Stream	OF00857	Little Wigwam Stream	High	1	70	1
OF452	DG_117	G_117_OF452	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.04	1	0	Little Wigwam Stream	OF452	Little Wigwam Stream	High	1	71	1
OF495	DG_448	G_448_OF495	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.07	1	0	Vine Rock Stream	OF495	Vine Rock Stream	High	1	72	1
OF508	DG_203	G_203_OF508	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.10	1	0	Wigwam Brook	OF508	Wigwam Brook	High	1	73	1
OF270	DG_085	G_085_OF270	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.06	1	0	Little Wigwam Stream	OF270	Little Wigwam Stream	High	1	74	1
OF494	DG_450	G_450_OF494	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	0	Vine Rock Stream	OF494	Vine Rock Stream	High	1	75	1
OF879	DG_650	G_650_OF879	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.12	1	0	Lowder Brook	OF879	Lowder Brook	High	1	76	1
OF720	DG_210	G_210_OF720	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Wigwam Brook	OF720	Wigwam Brook	High	0	77	0
OF721	DG_214	G_214_OF721	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Wigwam Brook	OF721	Wigwam Brook	High	0	78	0
OF877	DG_648	G_648_OF877	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Westfield Brook	OF877	Westfield Brook	High	0	79	1
OF878	DG_651	G_651_OF878	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Westfield Brook	OF878	Westfield Brook	High	0	80	1
OF880	DG_649	G_649_OF880	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Westfield Brook	OF880	Westfield Brook	High	0	81	1
OF881	DG_647	G_647_OF881	1	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Lowder Brook	OF881	Lowder Brook	High	0	82	1
ITC007	DG_371	G_371_ITC007	0	0	0	0	0	0.00	0%	0	1	426246.97	20%	1	2000.01	1%	2	0	0.27	2	10	Mother Brook (MA73-28)	OF659	Mother Brook (MA73-28)	Low	15	83	1
OF657	DG_341	G_341_OF657	0	0	0	0	0	3382.37	2%	1	1	7244.51	4%	1	11491.16	7%	2	0	0.17	1	10	Mother Brook (MA73-28)	OF657	Mother Brook (MA73-28)	Low	15	84	1

Discharge Point ID	Discharge Group ID	Catchment Area ID	Catchment located within 300' of a Recreational Area (0=No, 1=Yes, High Priority)	Catchment loacted within 1500' of drinking water Supplies (0=No, 1=Yes, High Priority)	Sewer Inputs indicators found during dry weather screening (0=No, 1=Yes, Problem)	Know or suspected problem including 2003 MS4 screening (0=No, 1=Yes, High Priority)	Past discharge complaints or reports (0=No, 1=Yes, High Priority)	Area of septic locted within the catchment area (Sq. Ft.)	Percentage of septic located within the catchment area	Septic Score	Low Loading Generating Site Located Within Catchment Area (0=No, 1=Yes)	Area of Low Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Low Loading Generating Sites Located Within Catchment Area	Low Loading Generating Sites Score	Area of Medium Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Medium Loading Generating Sites Located Within Catchment Area	Medium Loading Generating Sites Score	High Loading Generating Sites Score	Miles of Public Sewer Mains Located within the Catchment Area	Sewer Score	Discharge Point Discharges Directly to Waterbody with Approved TMDL or Known Impairment (0=No, 5=Unknown, 10=Yes)	MS4 Receiving Waterbody Name	Final_Outfall_ID	Final_ReceivingWater_Name	EPA Priority	Total Score	Final Rank	System Vulnerability Factor Present (0=No, 1=Yes)
OF201	DG_357	G_357_OF201	0	0	0	0	0	545676.21	95%	4	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF201	Charles River (MA72-07)	Low	14	85	1
OF484	DG_363	G_363_OF484	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	17912.59	4%	2	0	0.32	2	10	Mother Brook (MA73-28)	OF484	Mother Brook (MA73-28)	Low	14	86	1
OF660	DG_321	G_321_OF660	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.84	3	10	Mother Brook (MA73-28)	OF660	Mother Brook (MA73-28)	Low	13	87	1
OF414	DG_400	G_400_OF414	0	0	0	0	0	206465.43	48%	2	1	95883.69	22%	1	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF414	Charles River (MA72-07)	Low	13	88	1
OF593	DG_456	G_456_OF593	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.68	3	10	Charles River (MA72-07)	OF593	Charles River (MA72-07)	Low	13	89	1
OF600	DG_342_1	_342_1_OF600	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.60	3	10	Mother Brook (MA73-28)	OF600	Mother Brook (MA73-28)	Low	13	90	1
OF601	DG_342_2	_342_2_OF601	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.60	3	10	Mother Brook (MA73-28)	OF601	Mother Brook (MA73-28)	Low	13	91	1
ITC003	DG_440	G_440_ITC003	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.47	2	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	12	92	1
OF443	DG_366	G_366_OF443	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.27	2	10	Charles River (MA72-07)	OF443	Charles River (MA72-07)	Low	12	93	1
OF466	DG_281	G_281_OF466	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.29	2	10	Mother Brook (MA73-28)	OF466	Mother Brook (MA73-28)	Low	12	94	1
OF591	DG_457	G_457_OF591	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.34	2	10	Charles River (MA72-07)	OF591	Charles River (MA72-07)	Low	12	95	1
OF777	DG_348	G_348_OF777	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.04	1	10	Mother Brook (MA73-28)	OF777	Mother Brook (MA73-28)	Low	11	96	1
ITC006	DG_440	G_440_ITC006	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.07	1	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	11	97	1
ITC008	DG_371	G_371_ITC008	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.11	1	10	Mother Brook (MA73-28)	OF659	Mother Brook (MA73-28)	Low	11	98	1
OF656	DG_271	G_271_OF656	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.13	1	10	Mother Brook (MA73-28)	OF656	Mother Brook (MA73-28)	Low	11	99	1
OF442	DG_383	G_383_OF442	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.05	1	10	Charles River (MA72-07)	OF442	Charles River (MA72-07)	Low	11	100	1
ITC002	DG_440	G_440_ITC002	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.15	1	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	11	101	1
ITC004	DG_440	G_440_ITC004	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	11	102	1
ITC005	DG_440	G_440_ITC005	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.12	1	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	11	103	1
ITC009	DG_371	G_371_ITC009	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.04	1	10	Mother Brook (MA73-28)	OF659	Mother Brook (MA73-28)	Low	11	104	1
ITC010	DG_371	G_371_ITC010	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.19	1	10	Mother Brook (MA73-28)	OF659	Mother Brook (MA73-28)	Low	11	105	1
ITC026	DG_440	G_440_ITC026	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.19	1	10	Charles River (MA72-07)	OF598	Charles River (MA72-07)	Low	11	106	1
OF167	DG_231	G_231_OF167	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	10	Mother Brook (MA73-28)	OF167	Mother Brook (MA73-28)	Low	11	107	1
OF169	DG_218	G_218_OF169	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.08	1	10	Mother Brook (MA73-28)	OF169	Mother Brook (MA73-28)	Low	11	108	1
OF170	DG_288	G_288_OF170	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.07	1	10	Charles River (MA72-07)	OF170	Charles River (MA72-07)	Low	11	109	1
OF592	DG_455	G_455_OF592	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.08	1	10	Charles River (MA72-07)	OF592	Charles River (MA72-07)	Low	11	110	1
OF594	DG_452	G_452_OF594	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	10	Charles River (MA72-07)	OF594	Charles River (MA72-07)	Low	11	111	1
OF658	DG_459	G_459_OF658	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.07	1	10	Mother Brook (MA73-28)	OF658	Mother Brook (MA73-28)	Low	11	112	1
OF769	DG_418	G_418_OF769	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	1	10	Charles River (MA72-07)	OF769	Charles River (MA72-07)	Low	11	113	1
OF776	DG_355	G_355_OF776	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.08	1	10	Mother Brook (MA73-28)	OF776	Mother Brook (MA73-28)	Low	11	114	1
ITC025	DG_430	G_430_ITC025	0	0	0	0	0	0.00	0%	0	1	3013.80	1%	1	0.00	0%	0	0	0.00	0	10	Charles River (MA72-07)	OF410	Charles River (MA72-07)	Low	11	115	1
OF771	DG_289	G_289_OF771	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	10	Mother Brook (MA73-28)	OF771	Mother Brook (MA73-28)	Low	10	116	1
OF701	DG_096	G_096_OF701	0	0	0	0	0	0.00	0%	0	1	2973.69	1%	1	10082.65	1%	2	0	1.08	5	0	East Brook	OF701	East Brook	Low	8	117	1
ITC019	DG_100	G_100_ITC019	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.26	2	5	Unknown	OF135	Unknown	Low	7	118	1
ITC012	DG_113	G_113_ITC012	0	0	0	0	0	472.74	0%	1	0	0.00	0%	0	0.00	0%	0	0	0.12	1	5	Unknown	CB	Unknown	Low	7	119	1
OF242	DG_151_1	_151_1_OF242	0	0	0	0	0	17257.85	1%	1	1	230048.97	16%	1	0.00	0%	0	0	1.05	5	0	Wigwam Brook	OF242	Wigwam Brook	Low	7	120	1
ITC016	DG_119	G_119_ITC016	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.16	1	5	Unknown	ITC016 - DMH424	Unknown	Low	6	121	1
ITC017	DG_067	G_067_ITC017	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.06	1	5	Unknown	ITC017	Unknown	Low	6	122	1
ITC018	DG_072	G_072_ITC018	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.15	1	5	Unknown	Culvert Point	Unknown	Low	6	123	1
OF193	DG_369	G_369_OF193	0	0	0	0	0	2779.64	72%	3	1	2779.63	72%	3	0.00	0%	0	0	0.00	0	0	Weld Stream	OF193	Weld Stream	Low	6	124	1
OF394	DG_126	G_126_OF394	0	0	0	0	0	0.00	0%	0	1	321.13	1%	1	1653.48	1%	2	0	0.29	2	0	Wigwam Brook	OF394	Wigwam Brook	Low	5	125	1
OF395	DG_126	G_126_OF395	0	0	0	0	0	0.00	0%	0	1	321.13	1%	1	1653.48	1%	2	0	0.29	2	0	Wigwam Brook	OF394	Wigwam Brook	Low	5	126	1
OF212	DG_228	G_228_OF212	0	0	0	0	0	564.87	3%	1	1	17117.13	77%	4	0.00	0%	0	0	0.00	0	0	Lowder Brook	OF212	Lowder Brook	Low	5	127	1
OF418	DG_325	G_325_OF418	0	0	0	0	0	331601.21	89%	4	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Weld Stream	OF418	Weld Stream	Low	4	128	1
OF586	DG_175	G_175_OF586	0	0	0	0	0	139073.73	81%	4	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Stoney Lea Brook	OF586	Stoney Lea Brook	Low	4	129	1
OF697	DG_077	G_077_OF697	0	0	0	0	0	0.00	0%	0	1	88127.67	8%	1	0.00	0%	0	0	0.92	3	0	East Brook	OF697	East Brook	Low	4	130	1
ITC011	DG_094	G_094_ITC011	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	1262.81	1%	2	0	0.27	2	0	Little Wigwam Stream	OF757	Little Wigwam Stream	Low	4	131	1
OF437	DG_239_2	_239_2_OF437	0	0	0	0	0	0.00	0%	0	1	9377.08	1%	1	41222.71	4%	2	0	0.24	1	0	Lowder Brook	OF437	Lowder Brook	Low	4	132	1
OF682	DG_319	G_319_OF682	0	0	0	0	0	0.00	0%	0	1	714.98	1%	1	219.79	1%	2	0	0.17	1	0	Wigwam Brook	OF682	Wigwam Brook	Low	4	133	1
ITC023	DG_158	G_158_ITC023	0	0	0	0	0	42484.06	6%	1	0	0.00	0%	0	0.00	0%	0	0	0.35	2	0	N/A	OF856	N/A	Low	3	134	1
ITC024	DG_046	G_046_ITC024	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	13178.69	1%	2	0	0.11	1	0	Little Wigwam Stream	OF686	Little Wigwam Stream	Low	3	135	1
ITC022	DG_158	G_158_ITC022	0	0	0	0	0	146380.52	67%	3	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	N/A	OF856	N/A	Low	3	136	1
OF399	DG_162	G_162_OF399	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.72	3	0	East Brook	DMH1004	East Brook	Low	3	137	1
OF430	DG_225	G_225_OF430	0	0	0	0	0	62081.82	53%	3	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Lowder Brook	OF430	Lowder Brook	Low	3	138	1
OF520	DG_451	G_451_OF520	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.72	3	0	Cutler Brook	OF520	Cutler Brook	Low	3	139	1
OF779	DG_069_2	_069_2_OF779	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.62	3	0	Greenlodge Stream	OF564	Greenlodge Stream	Low	3	140	1
OF421	DG_443	G_443_OF421	0	0	0	0	0	0.00	0%	0	1	23256.00	28%	2	0.00	0%	0	0	0.01	1	0	Cutler Brook	OF421	Cutler Brook	Low	3	141	1
OF406	DG_092	G_092_OF406	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	7953.99	8%	2	0	0.05	1	0	Greenlodge Stream	OF406	Greenlodge Stream	Low	3	142	1
OF439	DG_171	G_171_OF439	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	171.28	3%	2	0	0.03	1	0	Lowder Brook	OF439	Lowder Brook	Low	3	143	1
OF801	DG_191	G_191_OF801	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.33	2	0	Lowder Brook	OF801	Lowder Brook	Low	2	144	1
ITC015	DG_646	G_646_ITC015	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.30	2	0	Wigwam Brook	OF611	Wigwam Brook	Low	2	145	1
ITC013	DG_211	G_211_ITC013	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.39	2	0	Lowder Brook	OF487	Lowder Brook	Low	2	146	1
ITC028	DG_061	G_061_ITC029	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.27	2	0	Little Wigwam Stream	OF883	Little Wigwam Stream	Low	2	147	1
ITC029	DG_061	G_061_ITC029	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.27	2	0	Little Wigwam Stream	OF883	Little Wigwam Stream	Low	2	148	1
ITC030	DG_061	G_061_ITC029	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.27	2	0	Little Wigwam Stream	OF883	Little Wigwam Stream	Low	2	149	1
OF413	DG_305	G_305_OF413	0	0	0	0	0	32504.32	32%	2	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Weld Stream	OF413	Weld Stream	Low	2	150	1
OF552	DG_037	G_037_OF552	0	0	0	0	0	47324.01	21%	1	0	0.00	0%	0	0.00	0%	0	0	0.20	1	0	Little Wigwam Stream	OF552	Little Wigwam Stream	Low	2	151	1
OF564	DG_069_2	_069_2_OF564	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.48	2	0	Greenlodge Stream	OF564	Greenlodge Stream	Low	2	152	1
OF666	DG_232	G_232_OF666	0	0	0	0	0	24887.74	17%	1	0	0.00	0%	0	0.00	0%	0	0	0.12	1	0	Westfield Brook	OF666	Westfield Brook	Low	2	153	1
OF876	DG_018	G_018_OF876	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.33	2	0	Peanut Butter Brook	OF876	Peanut Butter Brook	Low	2	154	1
OF671	DG_102	G_102_OF671	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.07	1	0	East Brook	OF671	East Brook	Low	1	155	1
OF667	DG_112	G_112_OF667	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.10	1	0	East Brook	OF667	East Brook	Low	1	156	1
OF247	DG_379	G_379_OF247	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.05	1	0	Arlington Stream	OF247	Arlington Stream	Low	1	157	1
ITC027	DG_646	G_646_ITC027	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.04	1	0	Wigwam Brook	OF611	Wigwam Brook	Low	1	158	1
OF00871	DG_065	_065_OF00871	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.09	1	0	Greenlodge Stream	OF00871	Greenlodge Stream	Low	1	159	1
OF230	DG_453	G_453_OF230	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.09	1	0	Vine Rock Stream	OF230	Vine Rock Stream	Low	1	160	1
OF274	DG_149	G_149_OF274	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.16	1	0	East Brook	OF274	East Brook	Low	1	161	1
OF391	DG_192	G_192_OF391	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	0	Lowder Brook	OF391	Lowder Brook	Low	1	162	1
OF419	DG_204	G_204_OF419	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.15	1	0	Lowder Brook	OF419	Lowder Brook	Low	1	163	1
OF436	DG_180	G_180_OF436	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	0	Lowder Brook	OF436	Lowder Brook	Low	1	164	1
OF438	DG_179	G_179_OF438	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.01	1	0	Lowder Brook	OF438	Lowder Brook	Low	1	165	1
OF450	DG_170	G_170_OF450	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.22	1	0	East Brook	OF450	East Brook	Low	1	166	1
OF451	DG_167	G_167_OF451	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.12	1	0	East Brook	OF451	East Brook	Low	1	167	1
OF461	DG_143	G_143_OF461	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.02	1	0	East Brook	OF461	East Brook	Low	1	168	1
OF462	DG_128	G_128_OF462	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.12	1	0	East Brook	OF462	East Brook	Low	1	169	1
OF475	DG_023	G_023_OF475	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.05	1	0	Greenlodge Stream	OF475	Greenlodge Stream	Low	1	170	1

Discharge Point ID	Discharge Group ID	Catchment Area ID	Catchment located within 300' of a Recreational Area (0=No, 1=Yes, High Priority)	Catchment loacted within 1500' of drinking water Supplies (0=No, 1=Yes, High Priority)	Sewer Inputs indicators found during dry weather screening (0=No, 1=Yes, Problem)	Know or suspected problem including 2003 MS4 screening (0=No, 1=Yes, High Priority)	Past discharge complaints or reports (0=No, 1=Yes, High Priority)	Area of septic locted within the catchment area (Sq. Ft.)	Percentage of septic located within the catchment area	Septic Score	Low Loading Generating Site Located Within Catchment Area (0=No, 1=Yes)	Area of Low Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Low Loading Generating Sites Located Within Catchment Area	Low Loading Generating Sites Score	Area of Medium Loading Generating Sites Located Within Catchment Area (Sq. Ft.)	Percentage of Medium Loading Generating Sites Located Within Catchment Area	Medium Loading Generating Sites Score	High Loading Generating Sites Score	Miles of Public Sewer Mains Located within the Catchment Area	Sewer Score	Discharge Point Discharges Directly to Waterbody with Approved TMDL or Known Impairment (0=No, 5=Unknown, 10=Yes)	MS4 Receiving Waterbody Name	Final_Outfall_ID	Final_ReceivingWater_Name	EPA Priority	Total Score	Final Rank	System Vulnerability Factor Present (0=No, 1=Yes)
OF477	DG_014	G_014_OF477	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.05	1	0	Peanut Butter Brook	OF477	Peanut Butter Brook	**Low**	**1**	**171**	1
OF546	DG_021	G_021_OF546	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.24	1	0	Peanut Butter Brook	OF546	Peanut Butter Brook	**Low**	**1**	**172**	1
OF570	DG_022	G_022_OF570	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.20	1	0	Peanut Butter Brook	OF570	Peanut Butter Brook	**Low**	**1**	**173**	1
OF571	DG_020	G_020_OF571	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.09	1	0	Peanut Butter Brook	OF571	Peanut Butter Brook	**Low**	**1**	**174**	1
OF576	DG_038	G_038_OF576	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.06	1	0	Greenlodge Stream	OF576	Greenlodge Stream	**Low**	**1**	**175**	1
OF637	DG_026	G_026_OF637	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.10	1	0	Greenlodge Stream	OF637	Greenlodge Stream	**Low**	**1**	**176**	1
OF706	DG_024	G_024_OF706	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.15	1	0	Greenlodge Stream	OF706	Greenlodge Stream	**Low**	**1**	**177**	1
OF708	DG_049	G_049_OF708	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.16	1	0	Greenlodge Stream	OF708	Greenlodge Stream	**Low**	**1**	**178**	1
OF417	DG_372	G_372_OF417	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	County Jail Brook	OF417	County Jail Brook	**Low**	**0**	**179**	1
OF435	DG_198	G_198_OF435	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Lowder Brook	OF435	Lowder Brook	**Low**	**0**	**180**	1
OF455	DG_074	G_074_OF455	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Little Wigwam Stream	OF455	Little Wigwam Stream	**Low**	**0**	**181**	1
OF480	DG_385	G_385_OF480	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	County Jail Brook	OF480	County Jail Brook	**Low**	**0**	**182**	1
OF565	DG_034	G_034_OF565	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Greenlodge Stream	OF565	Greenlodge Stream	**Low**	**0**	**183**	1
OF773	DG_199	G_199_OF773	0	0	0	0	0	0.00	0%	0	0	0.00	0%	0	0.00	0%	0	0	0.00	0	0	Lowder Brook	OF773	Lowder Brook	**Low**	**0**	**184**	1

Dedham, MA - Wet Weather Outfall Sampling Results

Outfall ID	Location	Receiving Water	Inspection Date and Time	Outfall Size/ Material	Physical Condition	Estimated Flow Rate (gallon/min)	Evidence of Non-Stormwater Discharge	Comments	Field Testing Results						Lab Results			
									Temp. (°F)	Salinity (PPM)	Conductivity (µs/cm)	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)	E. Coli (mpn/100 mL)	Dissolved Oxygen (mg/L)	BOD5 (mg/L)	Total Phosphorus (mg/L)
OF153	Bussey Street	Mother Brook (MA73-28)	3/24/2022 9:09	12" RCP	Fair condition	1	Moderate turbidity in discharge	Could not access outfall. Sampled at u/s manhole.	43.8	500	932	0.20	0.50	0.08	29.5	11	9	0.18
OF466	Colburn Street	Mother Brook (MA73-28)	3/24/2022 9:35	12" HDPE	Good condition	2	Moderate turbidity in discharge	-	46.2	348	649	0.2	0.5	0	157.6	11	11	0.26
OF656	Colburn Street	Mother Brook (MA73-28)	3/24/2022 9:53	12" CMP	Fair condition	10	Moderate turbidity in discharge	-	46.2	37	71	0.2	0.25	0	115.3	12	11	0.44
OF654	Maverick Street	Mother Brook (MA73-28)	3/24/2022 10:25	12" CMP	Fair condition	5	Moderate turbidity in discharge	-	48	56	108	0.1	0.25	0	63.7	11	5	0.12
OF655	Maverick Street	Mother Brook (MA73-28)	3/24/2022 10:26	18" CMP	Fair condition	15	Moderate turbidity in discharge	-	48.6	180	333	0.1	0.25	0	37.7	11	<5	0.05
OF710	Sawmill Lane	Mother Brook (MA73-28)	3/24/2022 10:56	6" HDPE	Good condition	0.5	None	-	46.8	20	35	0.1	0.25	0	4.1	11	12	0.39
OF486	Emmett Avenue	Mother Brook (MA73-28)	3/24/2022 11:07	12"HDPE	Good condition	0.25	None	-	48.2	236	452	0.4	2.5	0	14.5	10	7	0.17
OF750	Bussey Street	Mother Brook (MA73-28)	3/24/2022 11:37	8" PVC	Good condition	0.25	None	-	45.4	59	113	0.1	0.25	0	4.1	11	15	0.09
OF472	Condon Park	Mother Brook (MA73-28)	3/24/2022 11:58	15" RCP	Fair condition	2	None	-	49.3	378	694	0	0.25	0	1	6	<5	0.02
OF747	Condon Park	Mother Brook (MA73-28)	3/24/2022 13:03	18" RCP	Good condition	-	None	No flow. Outfall dry and filled with leaves and debris.	-	-	-	-	-	-	-	-	-	-
OF771	Evergreen Way	Mother Brook (MA73-28)	6/9/2022 8:57	12" RCP	Fair condition	0.5	None	Moderate erosion downstream of outfall.	65.9	15	17	0.3	1	0.03	>2419.6	8	11	0.42
OF600	Curve Street	Mother Brook (MA73-28)	3/24/2022 13:27	15" CMP	Fair condition	1	None	Homeowner at #216 Curve St did not allow access. Sampled at u/s catch basin.	56.4	305	557	0.1	0.25	0	436	10	<5	0.11
OF601	Curve Street	Mother Brook (MA73-28)	3/24/2022 13:58	12" RCP	Fair condition	-	None	No flow. Appears to be overflow for system. Pipe in upstream catch basin was surcharged and flow was going down the system to OF600.	-	-	-	-	-	-	-	-	-	-
OF559	Brookdale Avenue	Mother Brook (MA73-28)	3/24/2022 14:17	18" HDPE	Fair condition	3	Moderate turbidity in discharge	Outfall completely submerged. Sampled at u/s manhole.	50.4	213	398	0.2	0.5	0	228.2	10	6	0.12
OF776	Washington Street	Mother Brook (MA73-28)	6/9/2022 9:50	16" RCP	Fair condition	2			68.9	27	47	0.1	0.25	0.19	2419.6	9	3	0.09
OF777	Eastbrook Rd	Mother Brook (MA73-28)	6/9/2022 8:34	12" HDPE	Good condition	2	None	-	67.5	62	109	0.2	0.5	0.16	>2419.6	8	4	0.1
OF657	Washington Street	Mother Brook (MA73-28)	6/9/2022 12:22	24" HDPE	Good condition	0.5	None	-	73.9	66	117	0	0.25	0	>2419.6	9	2	0.04
OF658	Lower East Street	Mother Brook (MA73-28)	6/9/2022 8:02	12" VC	Poor condition	3	None	-	66.3	86	156	0.3	0.75	0	>2419.6	6	5	0.14
OF660	Curve Street	Mother Brook (MA73-28)	6/9/2022 9:16	12" RCP	Fair condition	3	None	Sampled at u/s manhole. Could not access outfall.	67.9	38	63	0.3	0.25	0.06	>2419.6	9	4	0.27
OF484	Washington Street	Mother Brook (MA73-28)	6/9/2022 11:46	24" HDPE	Fair condition	0.5	None	-	72.8	160	288	0.1	0.25	0	>2419.6	8	2	0.06
OF403	Sawmill Lane	Mother Brook (MA73-28)	6/9/2022 12:50	24" RCP	Fair condition	3	None	Outfall completely submerged. Sampled at u/s manhole.	77.0	157	282	0.1	0.25	0.07	>2419.6	7	9	0.2
ITC007	Lower East Street	Mother Brook (MA73-28)	6/9/2022 10:13	12" RCP	Good condition	0.5	None	-	69.5	21	28	0.4	0.25	0.09	>2419.6	9	3	0.15
ITC008	Lower East Street	Mother Brook (MA73-28)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ITC009	Lower East Street	Mother Brook (MA73-28)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ITC010	Lower East Street	Mother Brook (MA73-28)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*The 2016 MS4 Permit identifies likely sewer input indicators as follows:

Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water. E.Coli = 235 CFU/100 mL.

Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

The catchment area to this outfall has a suspected illicit connection based upon MS4 Permit criteria, which indicates likely sewer input.

The outfall sampling results exceed water quality standards/benchmark criteria.

2021 Water Quality Report, Dedham, Massachusetts

Prepared by Sean McCanty, Ph.D.
River Restoration Director
Neponset River Watershed Assocation

9/14/2022

Background

The Neponset River Watershed Association (NepRWA) has been collecting water quality data both in Dedham and throughout the Neponset River watershed since 1996. As part of the Community Water Monitoring Network (CWMN), volunteers collect monthly water samples annually from May to October. Data gathered by the CWMN volunteers are used to track the health of the Neponset River and its tributaries, inform the public about threats to human health and wildlife, and to locate pollution sources (hot spots) for follow-up sampling. There is one permanent CWMN station within the town of Dedham, located on Mother Brook (Figure 1), which is tested for *Escherichia coli* (*E.coli*), total phosphorus, pH, dissolved oxygen, and temperature. The following report summarizes the findings for the 2021 season, with raw water quality data available upon request.

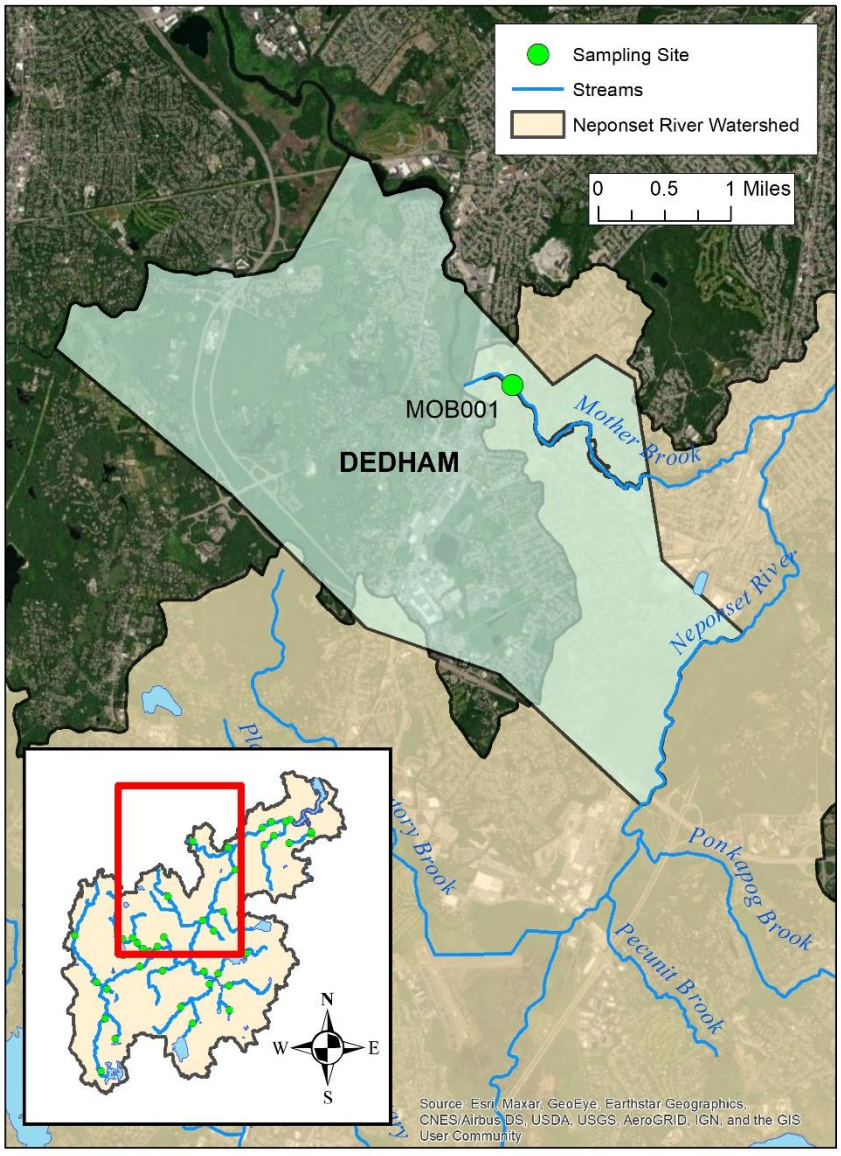

Figure 1: Map of the CWMN sites in Dedham, Massachusetts.

E. coli bacteria concentration is used by NepRWA and the Commonwealth to assess a waterbody's safety for "contact recreation" through activities such as swimming (primary contact) and boating (secondary contact). The presence of *E. coli* is not necessarily hazardous

itself, but it provides evidence of fecal contamination and is an indicator that other, more dangerous, pathogens associated with human and animal waste might be present. The most common source of excess *E. coli* in our watershed is the improper disposal of pet waste in streets, lawns, and catch basins. Additional common sources include sewer or septic system malfunctions and discharges of organic wastes from household or commercial garbage. Wildlife waste also contains *E. coli,* so some amount of *E. coli* in waterbodies is normal. However, elevated concentrations from wildlife are typically due to human activities, such as feeding ducks or large populations of geese. Management interventions to reduce *E. coli* loads can include education on pet waste disposal, proper management of solid waste, frequent cleaning of catch basins, filtration or infiltration stormwater best management practices (BMPs) to reduce the runoff that reaches a waterbody, and rapid identification and repair of sewage leaks and spills.

Phosphorus is a required plant nutrient that is often the "limiting nutrient" in freshwater ecosystems. This means that plants and algae will grow until the lack of phosphorus limits them. Therefore, the concentration of available phosphorus in a freshwater waterbody will often control the rate of aquatic plant growth (the other required nutrients are typically present at proportionately higher levels). *Excess* phosphorus creates *excess* biomass, especially algae, leading to a process called eutrophication. When these excess plants and algae die, the process of decomposition by bacteria and other decomposers consumes dissolved oxygen from the water. In extreme cases, dissolved oxygen levels get too low to support aquatic animals such as fish. Other impacts of eutrophication include unattractive and smelly algal blooms and loss of underwater plant communities due to reduced light penetration in turbid and algae-rich waters. Elevated phosphorus concentrations can also cause *harmful* algal blooms (HABs), where toxins are produced by the algae. A notable culprit is cyanobacteria, which produce toxins harmful to people and pets as well as wildlife.

Phosphorus sources can include wet (from rain) or dry (from sprinklers) weather runoff from parking lots, streets/gutters, and lawns. These surfaces contain phosphorus from fertilizers, organic matter (leaves, grass clippings), soil, garbage, and pet waste. Interestingly, phosphorus can also accumulate on these surfaces from atmospheric deposition, from fine dust particles and aerosols. Illegal dumping of organic matter, such as leaves in or near waterways or catch basins

is a common problem. Poorly maintained septic systems, illicit discharges of sewage, and naturally occurring dead aquatic plant materials are additional sources.

The pH of a waterbody is a measure of how acidic the water is, with low pH meaning the water is more acidic than neutral, and high pH meaning it is more basic or alkaline. Water that is too acidic or too basic can be toxic to aquatic life. The pH is influenced by soil and bedrock characteristics, groundwater seepage, acid rain, carbon dioxide in the atmosphere, or heavy loading of tannin rich leaves/needles.

Adequate concentrations of dissolved oxygen (DO) are necessary to support fish, amphibians, mollusks, aquatic insects, and other invertebrate species. Many environmental drivers impact the DO levels in a water body. For example, cooler water temperatures can sustain higher concentrations of DO, which is why there is often a seasonal trend in DO concentration: low levels in the warm months and higher levels in the colder months. Rapid mixing and turbulence (such as riffles or step pools) also increase levels of DO due to atmospheric mixing. Aquatic plants also generate oxygen via photosynthesis during daytime hours. Alternatively, large amounts of decaying organic matter consume dissolved oxygen as microorganisms degrade the organic matter and lower levels of DO result, particularly in overnight hours when decomposition is not offset by active photosynthesis. Excessive phosphorous that causes eutrophic conditions is also closely associated with low dissolved oxygen levels, because it drives plant growth and subsequent decomposition. In thermally stratified lakes, oxygen deficient conditions can occur in the deeper portions of the water where there is no atmospheric mixing and no photosynthesis (the two sources of DO in aquatic systems). In the summer, ponds and lakes typically have warmer surface waters and thus lower surface DO concentrations. Management interventions that can increase DO levels include increasing riparian shading to maintain lower water temperatures, removing obsolete dams, reducing excessive water withdrawals / diversions, and reducing decaying organic matter though the reduction of phosphorous runoff and other drivers of eutrophication.

Results and Discussion

Monthly sampling events occur rain or shine on the second Thursday of the month during the sampling season. This means that weather is not a criterion in determining when to collect

water quality data. This allows our sampling program to address the different conditions that occur in our waterbodies in wet vs. dry weather. Rain events result in significant increases in street runoff via stormwater and overland flow into our rivers, which can significantly alter the concentrations of bacteria, nutrients, and other chemicals. In 2021, five sampling days occurred during dry periods and just one sampling date occurred during a wet period. A wet period is defined as greater than 0.1 inches of precipitation within the 48-hour period preceding a sampling event. As shown in Table 1, both 2021 and 2020 had more sampling events occur during dry weather than any year since 2016, when all six sampling events occurred during dry weather. This lack of additional data during wet weather suggests we should be cautious in any improvements in parameters, especially for *E. coli*, as the relative improvement may reflect wet vs. dry dynamics rather than real improvements to water quality or changes in the frequency of sewage spills.

Table 1: The number of water quality sampling days that occurred during dry or wet weather since year 2011.

Year	Dry (days)	Wet (days)
2011	3	3
2012	2	4
2013	5	1
2014	4	2
2015	4	2
2016	6	0
2017	4	2
2018	3	3
2019	3	3
2020	5	1
2021	5	1

Escherichia coli (E. coli)

In Massachusetts, the criteria that defines acceptable levels of *E.coli* in Class B waterbodies (waterbodies that support wildlife, swimming, and boating, but not drinking) is set by both single sample maximum and a geometric mean. For Mother Brook, no single sample should exceed 235 Colony Forming Units (CFU) per 100 mL (the single sample standard), nor should the geometric mean of at least 5 samples taken within the same season exceed 126 CFU/100mL

(the seasonal standard). For ease of interpretation, NepRWA calculates the geometric mean on the whole sampling season (generally 6 sampling events).

In 2020 *E. coli* levels at the Mother Brook site were consistently below the single sample standard and the seasonal geometric mean for the first time in since 2013 (Table 2). In our 2020 report, we noted this potentially pointed to improvements following the closure of the Dedham Transfer Station in 2019. The 2021 season showed a slight increase in *E. coli* levels, with 2 samples failing the single sample maximum standard, 437 CFU/100mL (a wet event) and 354 CFU/100mL (a dry event). However, even this increase is well below the maximum and average values from 2017 – 2019, suggesting that the improvements seen since 2020 represent a marked improvement (Figure 2).

Table 2: The maximum, average, minimum, and geometric mean *E. coli* concentrations at the site on Mother Brook (MOB001) in Dedham, MA, since year 2011. N=6. Units are in cfu/100ml. Bolded values represent a measure above the state criteria, bolded years represent failure of either single sample maximum or season geometric mean.

Year	Maximum	Average	Minimum	Geometric Mean
2011	**3450**	653	5	94
2012	**19900**	3538	5	**261**
2013	**288**	100	10	60
2014	**1200**	337	109	**191**
2015	**1940**	735	98	**457**
2016	**591**	235	52	**161**
2017	**3260**	1327	74	**569**
2018	**24200**	9237	62	**2160**
2019	**3870**	716	20	**132**
2020	199	116	20	93
2021	**437**	200	30	**142**

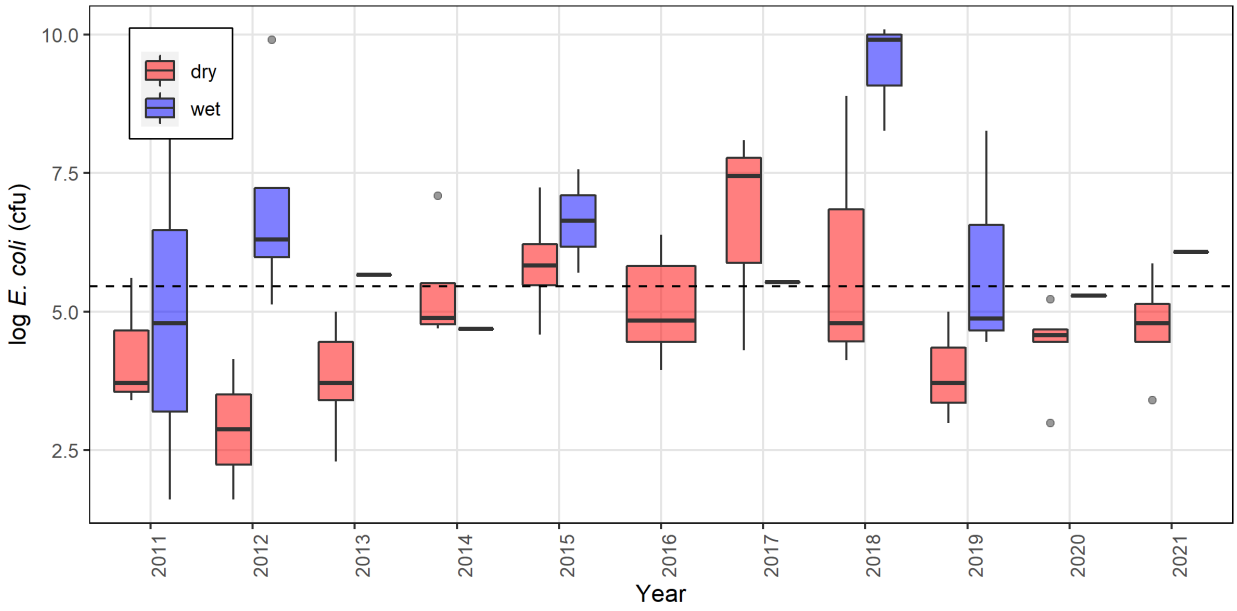

Figure 2: *E. coli* levels at Mother Brook in Dedham, MA from years 2011 to 2021 – note the log scale. The plot shows levels grouped by weather (blue = wet, red = dry). The black dashed line shows the single sample maximum acceptable threshold (235 CFU/100mL). The lower and upper bounds of each box correspond to the first and third quartiles (the 25th and 75th percentiles). The upper whisker extends to the largest value or no further than 1.5 * the range between these two quartiles. Similarly, the lower whisker extends from the hinge to the smallest value or 1.5 * this interquartile range. Data beyond the end of the whiskers are “outlying" points and are plotted individually.

Phosphorus

The Commonwealth of Massachusetts does not currently provide numerical standards for classification of water quality impairments by phosphorus alone. Instead, the Massachusetts Department of Environmental Protection (MassDEP) uses a narrative standard that considers the EPA gold book standard for phosphorus alongside dissolved oxygen levels and excessive primary producer growth. The EPA gold book standard identifies an average of at least three samples exceeding 0.1mg/L as the upper threshold for flowing waters and 0.05mg/L for streams entering a lake/reservoir. We considered the Mother Brook site in Dedham to be entering a lake or reservoir due to the Mill Pond downstream. Dissolved oxygen and excess primary producer growth like algal blooms are used as evidence that the phosphorus levels are causing an impact to the stream ecology.

The seasonal average total Phosphorus level in 2021 was 0.08 mg/l, which is above the threshold for waters entering a lake or reservoir (Table 3). Since 2010, seasonal averages have ranged from 0.05mg/l to 0.08 mg/l in 2018 due to a large outlying value (Figure 3). In 2021 however, there was no large outlier, but higher values in almost all months, suggesting

phosphorus is becoming more of an issue. Future data will tell whether this represents a new normal, or aberrant findings for 2021.

Table 3: The maximum, average, and minimum values of total phosphorus recorded during 2020 at Mother Brook in Dedham, MA. N=6.

Maximum (mg/l)	Average (mg/l)	Minimum (mg/l)	Standard (mg/l)
0.10	0.08	0.04	0.05

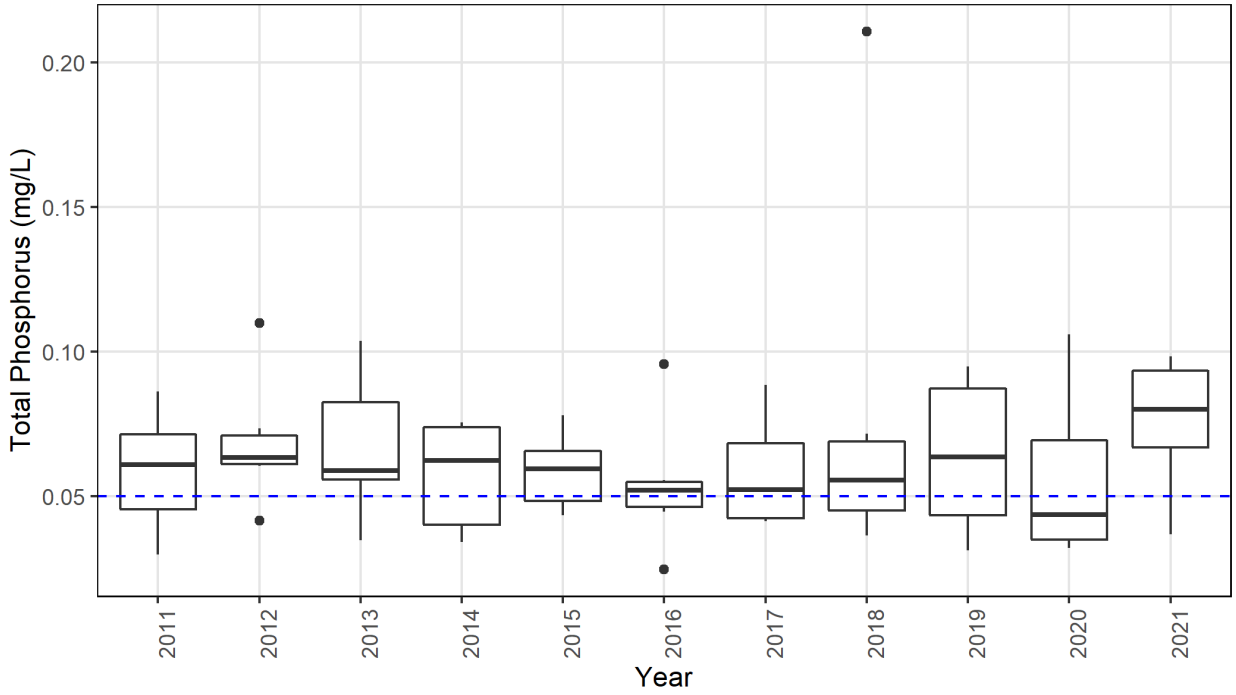

Figure 3: Total phosphorus levels at Mother Brook in Dedham, MA from year 2011 to 2021. The blue dashed line is at 0.05mg/l. Boxplot statistics are the same as in Figure 2.

It is important to note that the Massachusetts DEP asks for additional information to help identify a problem with total Phosphorus, such algae or other primary producer data. While we do not have primary producer data at this site, there is a strong negative correlation between total Phosphorus levels and dissolved oxygen levels (R^2 = -0.58) over the last 10 years, suggests eutrophication may be a concern. While dissolved oxygen levels are not considered low at this site, the strong relationship with total Phosphorus implies that it is important to maintain low nutrient levels.

pH

The Commonwealth of Massachusetts considers a pH range between 6.5 and 8.3 to be healthy for waterbodies in the state. Since 2010 pH levels have been within the acceptable range at the Mother Brook site except during one sampling event in 2020 and 2021 (Figure 4). The October water sample had a pH of 6.26, which is too acidic, but all other samples that year had near neutral values. This coincides with a new pH probe in use at NepRWA and it will depend on future data to determine whether the probe is faulty or more accurate.

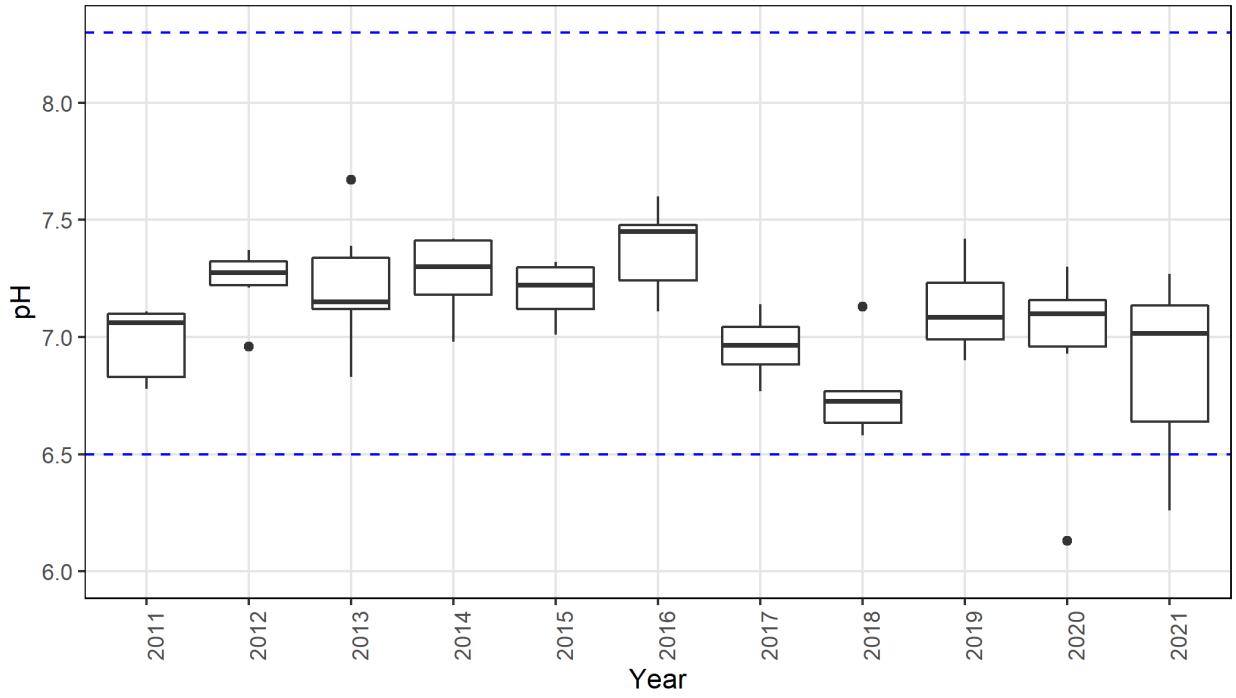

Figure 4: The pH levels at the eight sites in Dedham for years 2011 through 2021. Blue dashed lines represent the Common Boxplots statistics are the same as Figure 2.

Dissolved Oxygen:

The Commonwealth of Massachusetts considers DO levels below 5 mg/L to be stressful to all aquatic organisms and below 6 mg/L to be stressful to certain species of fishes that require colder water. Mother Brook is not a cold-water resource according to the Massachusetts Division of Fisheries and Wildlife, so here we use the 5 mg/l threshold.

Dissolved oxygen levels in 2021 were similar to the 10-year average levels (Figure 5). Trends in seasonal dissolved oxygen are likely driven by stream temperatures and nutrient enrichment. Ten years of data shows that DO levels are typically above the stressful threshold except in 2018 when the June and July levels were DO = 1.7mg/l and DO = 2.3mg/l, respectively (Figure 6). The June 2018 total Phosphorus concentration was 0.21mg/l, which could have fueled plant growth and a subsequent reduction in DO. Considering the 10 years of data shown in Figure 6, the hypoxic conditions in 2018 appear to be an anomalous, but it would be helpful to understand what environmental conditions created the hypoxic stream conditions to prevent that in the future.

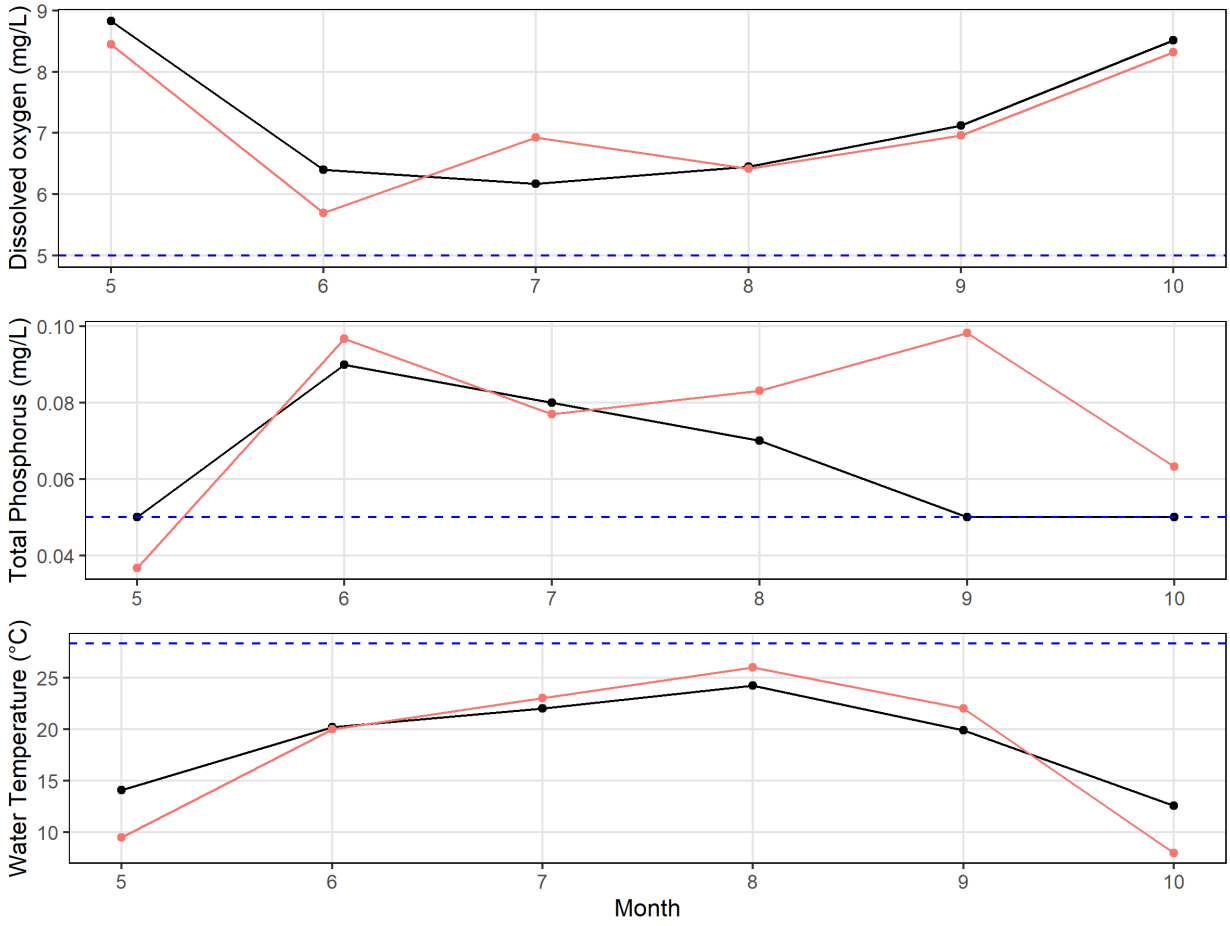

Figure 5: Monthly dissolved oxygen levels (top plot), total phosphorus levels (middle plot) and water temperature levels (bottom plot) at Mother Brook in Dedham. The black line shows the mean monthly value from 2011 to 2021 and the red line shows the 2020 values. The blue dashed lines represent the state criteria, namely 5 mg/L for DO, 0.05mg/L for phosphorus, and 28.3°C for warm water maximum temperature.

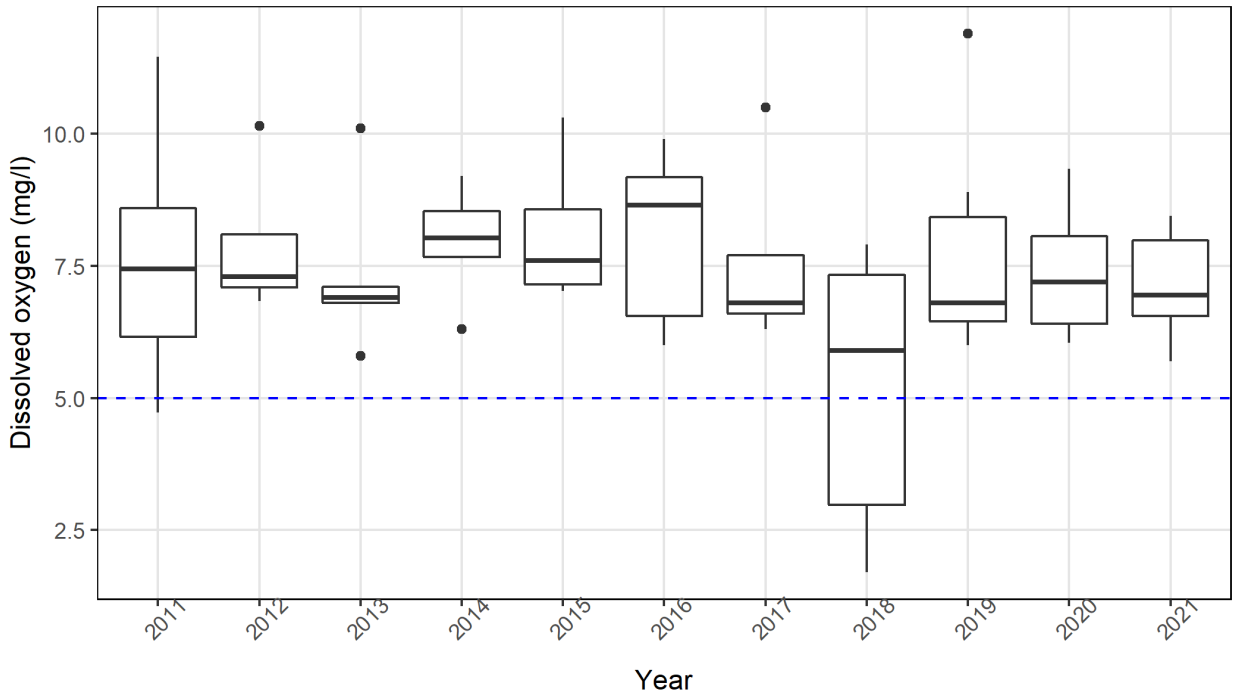

Figure 6: Dissolved oxygen levels at Mother Brook in Dedham, MA, from year 2011 to year 2021. N=6 for each year. The blue dashed line is at 5mg/l.

Conclusion

The water quality data that we collect through the CWMN program is used to inform our messaging to the public and follow up site visits to sites to investigate problems (hot spot sampling). Table 4 details our recommendations and items to discuss with the Town.

Table 4: Major parameters of concern by site with recommendations on first steps to address the problem.

Site	Parameter	Recommendation
MOB001	TP	• Identify sources of phosphorus and aim to reduce concentrations -including reviewing available Charles River data in an effort to determine whether sources may be upstream rather than on the Brook. • Consider a monitoring program for plant and algae growth to identify ecological impacts of the high phosphorus concentrations both at the site and within the downstream impoundments.

MOB001	*E. coli*	• Continue to monitor to ensure that the levels remain low following the closure of the Dedham Transfer Station. Identify other, non-sewage sources of E. coli contamination, such as pet waste and consider outreach campaigns to curtail them.