

Year 2 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2019-June 30, 2020

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, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

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 2 Requirements

Completed Phase I of system mapping
 Developed a written catchment investigation procedure and added the procedure to the SWMP
 Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP
 Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes
 Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP
 Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP
 Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants
 Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or
 operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 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:

Phase 1 mapping done except catchment delineation. Prepared procedures for as-built drawings for approval of planning board. Prepared draft O&M procedures for parks and open spaces; buildings and facilities, vehicles and equipment. Prepared draft inventory of parks and open spaces, buildings and facilities.

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:

- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- Provided training to employees involved in IDDE program within the reporting period
- All curbed roadways were swept at least once within the reporting period
- Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual 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:

MCM2 – not able to do public hearing with Watershed Associations as planned; SWMP is posted on Town website.

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:

Septic systems - Board of Health website has link to maintenance information and brochure is available for

hand out to septic system owners.

Nitrogen (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) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release 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)

Potential structural BMPs

Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was

- estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen 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:

Prepared annual spring message for lawn care that will be posted on stormwater web page.

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
- 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:

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

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:

Massachusetts' 2016 §303d list stated that restoration activities for White Island Pond have been effective and total phosphorus was delisted as a cause of impairment.

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:**

*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:[Message name here]

Message Description and Distribution Method:

Website posting of fact sheet in summer (June/July), which promotes the proper management of pet waste and cites Town dog waste regulations that include fines for violations.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Enable Town residents, businesses, institutions and commercial facilities to reduce nitrogen and bacteria in stormwater runoff. Town webmaster will track # of people who view materials and # of people that download materials. Goal: 100 fact sheets will be downloaded by website visitors annually, and Survey Monkey will measure effectiveness of messaging.

Message Date(s):

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:[Message name here]

Message Description and Distribution Method:

Website posting of fact sheet in the fall (September/October), which promotes the proper management of leaf litter and yard waste.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Enable Town residents, businesses, institutions and commercial facilities to learn yard waste practices that

prevent clogging of stormwater drainage and reduce nitrogen released to water resources. Town webmaster will track # of people who view materials and # of people that download materials. Goal: 100 fact sheets will be downloaded by website visitors annually, and Survey Monkey will measure effectiveness of messaging.

Message Date(s): June 2020

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:[Message name here]

Message Description and Distribution Method:

Emailed industrial facilities a fact sheet about Industrial Stormwater Best Management Practices.

Targeted Audience: Industrial facilities

Responsible Department/Parties: Planning and Development

Measurable Goal(s):

Inform and assist industrial facilities to utilize practices to better manage stormwater. Email messages included response form to measure the effectiveness of brochure/fact sheet.

Message Date(s): February 2020

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**:

Stormwater Management Plan posted at <https://www.plymouth-ma.gov/engineering/pages/stormwater>

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**:
Prepared SWMP presentation for Year 2, but unable to do public meeting as planned.

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: 2

Number of SSOs removed: 2

MS4 System Mapping

Below, check all that apply.

The following elements of the Phase I map have been completed:

- Outfalls and receiving waters
- Open channel conveyances
- Interconnections
- Municipally-owned stormwater treatment structures
- Waterbodies identified by name and indication of all use impairments
- Initial catchment delineations

Optional: Describe any additional progress you made on your map during this reporting period or provide additional status information regarding your map:

During dry weather sampling, corrections were made to outfall and BMP status to update mapping with actual field conditions.

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.

- 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: 83

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.

- 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: 0

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

Percent of total catchments investigated: 0

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

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.

- 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:

Total number of illicit discharges removed:

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

Employee Training

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

Engineering staff participated in <https://www.centralmastormwater.org/toolbox/pages/2020-idde-workshop-ms4-assistance-grant> webinar.

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:

Number of inspections completed:

Number of enforcement actions taken:

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

Town requires stormwater systems to be inspected during construction and certified by a Professional Engineer.

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

Ordinance or Regulatory Mechanism

Below, select the option that describes your ordinance or regulatory mechanism progress.

- Bylaw, ordinance, or regulations are updated and adopted consistent with permit requirements
- Bylaw, ordinance, or regulations are updated consistent with permit requirements but are not yet adopted
- Bylaw, ordinance, or regulations have not been updated or adopted

As-built Drawings

Describe the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites:

Prepared procedure for as-built drawings to update the Town Guide for the Design of Storm Water Facilities. Update will also require BMPs to be optimized for nitrogen removal. Submission of long term operation and maintenance measures is required in the Design Guide.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

The report will be completed by June 2022.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

The report will be completed by June 2022.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

The inventory will be completed by June 2022.

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: 828

Number of catch basins cleaned: 828

Total volume or mass of material removed from all catch basins: 1,500 cubic yards

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

Total number of catch basins: 5,200

If applicable:

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

The catch basin cleaning optimization plan will be completed in Year 3.

Street Sweeping

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

- Number of miles cleaned: 5,500
- Volume of material removed: 11,000 cubic yards
- Weight of material removed: [Select Units]

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

- Parks and open spaces
- Buildings and facilities
- Vehicles and equipment

The following O&M procedures for permittee-owned properties have been completed:

- Parks and open spaces
- Buildings and facilities
- Vehicles and equipment

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: 0

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

SWPPP is in progress and will be completed in Year 3. OM Procedures are in progress and will be completed in Year 3.

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:

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 2 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:

MCM2 – not able to do public hearing with Watershed Associations, as planned
MCM3 – developed internal dry weather sampling procedures to ensure compliance with state COVID requirements

Meetings with town and internal sub consultant held virtually

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 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

- Inspect all outfalls/ interconnections (excluding Problem and Excluded outfalls) for the presence of dry weather flow
- Complete follow-up ranking as dry weather screening becomes available

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 uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- 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

Provide any additional details on activities planned for permit year 3 below:

Part V: Certification of Small MS4 Annual Report 2020

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:

Jonathan Beder

Title:

Director of Public Works

Signature:

Date:

[Signatory may be a duly authorized representative]

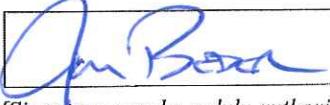
Part V: Certification of Small MS4 Annual Report 2020

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Name: Jonathan Beder

Title: Director of Public Works

Signature: 

*[Signature may be a duly authorized
representative]*

Date: 9/25/20

Project Name:

Project Location:

Project Number:

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
102	pipe	Steel	fair	rounded pipe				Inner Diameter (in.)d = 42 Flow Depth (in.) h= 4		yes	fair	moderate	no			algae, rip rap		Gap on fernco Algae and barnacles on headwall	
103	pipe	clay tile	good	rounded pipe				Inner Diameter (in.)d = 18		no		dry	yes	Inches =4		excessive sediment, excessive vegetation	sediment removal, soil stabilization		yes
104	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 36 Flow Depth (in.) h= 8.5		yes	good	moderate	no			tree work	Corrugations in wall of concrete, no evidence of corrugated pipe		
107	pipe	clay tile	good	rounded pipe				Inner Diameter (in.)d = 24		yes	fair	moderate	no			excessive vegetation	clean pipe, remove trash debris 2 pipes, Concrete, no flow, 12 in pool of water *Clay, moderate flow, 24 in (connected to manhole as shown on mapping) flow - 9in; sediment - 7in ; a few chips	yes	
110	pipe	concrete	fair							no		dry	no			rip rap	remove vegetation from outlet, remove trash debris Covered in thorns; cannot get good view. Appears to have flared end, cannot see pipe, private property, easement?	yes	
115	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 36 Flow Depth (in.) h= 6		no		moderate	no			excessive sediment	clean pipe Sediment from beach, subject to tides.	yes	

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
117	pipe	clay tile	good	rounded pipe				Inner Diameter (in.)d = 12		no		trickling	no			excessive sediment	clean pipe	Pipe half filled with sand and rock, flow depth not measurable, trickling over sand	yes
118	pipe	clay tile	poor	rounded pipe				Inner Diameter (in.)d = 12		yes	crumbling	trickling	no			excessive sediment, algae	clear sediment, repair pipe	pipe is settled and disconnected one pipe length inside	yes
119	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 32		no		dry	no			rip rap, algae	remove trash debris	Concrete flared end	
120	pipe	concrete	fair	rounded pipe				Inner Diameter (in.)d = 36 Flow Depth (in.) h=2		yes	good	moderate	no		there is an odor present	rip rap, excessive sediment, algae	clean pipe, clear sediment	White coating on rocks in pipe	yes
121	pipe	corrugated metal	fair	rounded pipe				Inner Diameter (in.)d = 42h x 64w Flow Depth (in.) h=2		yes	fair	moderate	no			rip rap, algae	remove trash debris		
124	pipe	clay tile	fair	rounded pipe				-Outer Diameter (in.) D= 12		no		dry	no				other	Barnacles in and pipe, some seaweed in pipe	
127	pipe	concrete	good	rounded pipe				-Inner Diameter (in.)d = 15		yes	good	dry	no			rip rap		Bar in pipe, flared end	
131	pipe	plastic	good	rounded pipe				-Outer Diameter (in.) D= 7		no		dry	no			rip rap	remove trash debris		
130	pipe	clay_tile	fair	rounded pipe				-Inner Diameter (in.)d = 9		yes	fair	dry	no		there is scouring below outlet		erosion at structure	Not positive on pipe material, could be concrete	
133	pipe	clay_tile	fair	rounded pipe				-Outer Diameter (in.) d= 14		yes	good	dry	no			rip_rap	other, remove trash debris	Rip rap is higher than pipe, looks like front portion of pipe broke off, back part is still intact and looks functional.	yes
134	pipe	concrete	fair	rounded pipe				-Outer Diameter (in.) D= 14 estimated		yes	good	dry	no		there is an odor present	rip rap	other,blocked pipe	Rocks and debris in front of pipe, not completely blocking	yes

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
135	pipe	other	fair							yes	good	dry	no			rip rap	other	Cannot see pipe, either not an outfall or completely covered by rock, trash and debris	
136	pipe	concrete	poor	rounded pipe				-Inner Diameter (in.)d = 28		no		dry	no			rip rap	other	Front section of pipe broken	yes
137	pipe	clay_tile	poor	rounded pipe				-Inner Diameter (in.)d = 18 estimated		no		dry	no			rip rap	other	Covered by rock half full with rocks and leaves	yes
138	pipe	concrete	fair	rounded pipe				-Inner Diameter (in.)d = 24 estimated		no		dry	no		there is an odor present	rip rap	blocked pipe, remove trash debris	Flared end, bars covered. Blocked by rip rap, half filled with rocks and debris	yes
142	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 14 (left), 12 (right)		no		dry	no			floatables			
143	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 24		yes	good	dry	no			rip rap, excessive vegetation	remove trash debris		yes
144	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 36 Outer Diameter (in.)D= 42		yes	good	dry	no			rip rap		No flow, stagnant pool below invert	
145	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 16		no		dry	no			excessive vegetation			
148	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 24		no		dry	no			algae	clear vegetation from front of outfall	Flared end, 2in muck with 1in water on top, stagnant water pool, fallen tree over pipe, partially blocked	yes
149	open swale				concrete	fair	rectangular swale			no		dry	no			rip rap, excessive sediment	remove trash debris	Weir: 4 ft length, 8in breath, fixed wooden sluiceway	yes
150	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = 24		no		dry	no			rip rap, excessive vegetation, excessive sediment	tree work, remove trash debris	Flared end metal - bottom is rusted	

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
166	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 18		no		dry				excessive sediment		Flared end concrete. 2 vertical bars at entrance.	
170	pipe	plastic	fair	rounded pipe				-Inner Diameter (in.)d = 12		no		dry	no			rip rap	other, blocked pipe	Flared end plastic, one side broken by rocks, pipe partially blocked	yes
203	pipe	plastic	good	rounded pipe				-Inner Diameter (in.)d = 8		yes	good	dry	no						
206	pipe	plastic	good	rounded pipe				-Outer Diameter (in.) D= 5		no		heavy	no						
207	pipe	concrete	good	rounded pipe				-Inner Diameter (in.)d = 12		yes	good	heavy	no						
209	pipe	concrete	good	rounded pipe				-Inner Diameter (in.)d = 12		no		dry	no						
212	pipe	unknown		rounded pipe				Inner Diameter (in.)d = ~12		no			no			remove vegetation	See pictures	yes	
215	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 36		yes	good	moderate	yes	Inches = 2	there is an odor present				
216	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = ~12		no		dry	yes	Inches = ~6		excessive sediment, sheen bacterial	remove trash debris, sediment removal		yes
217	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			rip rap	remove trash debris from flared end	Plastic flared end	yes
218	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 15		no		dry	no			rip rap, excessive sediment, excessive vegetation, sheen bacterial	stabalize with rip rap, remove trash debris	Flared end concrete	yes
220	pipe	clay tile	good	rounded pipe				Inner Diameter (in.)d = ~12		no		dry	yes	Inches = 9		rip rap	remove sediment inside structure and sediment trap	Trickling water downstream, but doesn't appear to be coming from outfall	yes

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
226	open swale				earthen	fair	rounded swale		Swale Width (in.) T= 24 Swale Height (in.) H= 12	no		dry	no			excessive sediment, excessive vegetation	repair erosion, soil stabilization, sediment removal	Asphalt at top leading into earth	yes
227	open swale				earthen	crumbling	rounded swale			no		dry	no			excessive sediment, excessive vegetation	remove trash debris, tree work	No visible root beyond edge of pavement	
229	pipe	corrugated metal	crumbling	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			structural corrosion , repair/ replace pipe	Pipe rusted out ~14ft back, water flows out there		yes
230	pipe	plastic	poor	rounded pipe				Inner Diameter (in.)d = 15		yes	fair	dry	yes	Inches =9		excessive sediment, excessive vegetation	tree work, remove trash debris	Pipe crushed/deformed	yes
231	open swale				paved asphalt	good	rounded swale		Swale Width (in.) T= 3ft Swale Height (in.) H= 3in	no		dry	no			excessive sediment		9ft long asphalt	
235	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = ~15		no		dry	no			excessive sediment, excessive vegetation	remove trash debris, clean pipe	Flared end concrete	yes
236	pipe	corrugated metal	poor	rounded pipe				Inner Diameter (in.)d = 15		yes	good	dry	no			excessive sediment, excessive vegetation	clean pipe, remove trash debris, remove sediment	Ditch work for excessive sediment, see pictures	yes
237	pipe	concrete	fair	rounded pipe				Inner Diameter (in.)d = 22		yes	good	dry	no			excessive sediment	clean pipe, remove sediment	Exposed rebar on left pipe. Second pipe not on map, invert ~3in lower, corrugated metal pipe caved in, 3in left open, 15in	yes
239	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 18		yes	good	dry	no			sheen bacterial			
240	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 18		yes	good	dry	no						
242	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 4 Flow Depth (in.) h=3		no		dry	no					Flared end section, stagnant water	

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
244	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 30		no		dry				excessive sediment	remove sediment at entrance, clean pipe	Flared end, 9in of sediment - 20x20 plume of muck	yes
245	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 30		no		dry	no			excessive sediment	remove sediment at entrance, clean pipe	12in sediment, 15x15 plume of muck	yes
249	pipe	concrete	fair	rounded pipe				Inner Diameter (in.)d = 20		yes	good	dry	no			excessive sediment	clear pipe	Grate over pipe, completely blocked by trash and debris	yes
253	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 12 Outer Diameter (in.)D= 14		yes	good	dry	no			sheen bacterial	repair concrete crack	Stagnant pool underneath pipe, headwall worn away under pipe see picture	yes
254	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 12		yes	good	dry	no			sheen bacterial			
255	pipe	plastic	fair	rounded pipe				Inner Diameter (in.)d = 12		yes	fair	dry	no				remove trash debris		yes
256	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			excessive sediment		Flared end, 12in minus rip rap embankment	
257	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 18		yes	good	dry	no			excessive sediment			
259	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = ~24		no		dry	no			excessive sediment, excessive vegetation	clear pipe, remove sediment	~16 in of sediment	yes
260	pipe	corrugated metal	crumbling	rounded pipe				Inner Diameter (in.)d = 15		no		dry	no			excessive sediment, excessive vegetation	replace pipe and flared end section, inspect at manhole to verify structural integrity	Flared end rotted,	yes
261	pipe	corrugated metal	poor	rounded pipe				Inner Diameter (in.)d = 18		no		dry	no			excessive vegetation	clear outfall entrance	Flared end detached	yes
262	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = 12		yes	good	dry	no			rip rap			
263	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 21		yes	good	dry	no			excessive sediment	remove trash debris, clean pipe, remove sediment, stabilize soil	Grate over pipe, sediment is higher than pipe	yes
264	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 24		no		trickling	no			excessive sediment		Flared concrete end	

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
265	pipe	corrugated metal	crumbling	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			sheen bacterial	clear vegetation	Pipe rotted back into embankment, stagnant water	yes
266	pipe		good							no		dry	no			algae, sheen bacterial		27x27 D shape catch basin grate, overflow system, see pictures	
268	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no		there is scouring below outlet	rip rap	clear pipe, stabilize eroded area	Flared end concrete. Homeowners next door concerned with amount of water, other catch basins do not alleviate flow during storms.	yes
269	pipe	concrete	fair	rounded pipe				Inner Diameter (in.)d = ~15		no		dry	yes	Inches = ~17			clear concrete	Fully submerged. Extends ~8 feet into pond	yes
270	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = 10		yes	good	dry	no		there is scouring below outlet		inspect yearly for maintenance issues		yes
271	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 15		yes	good	dry	no						
273	open swale			concrete	good	rounded swale		Swale Width (in.) T= 3ft Swale Height (in.) H= 6in		yes	good	dry	no			remove trash debris	21in pipe leading into swale	yes	
274	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = 15		yes	good	dry	no			excessive sediment, excessive vegetation	remove sediment, clear pipe	~11in of sediment in pipe	yes
277	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 15		no		dry	no			excessive sediment	clear pipe, remove sediment	8in of silt in pipe	yes
278	open swale			paved asphalt	crumbling	rounded swale		Swale Width (in.) T= 5ft		no		dry	no			excessive vegetation	remove trash debris	location for future BMP	yes
280	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 12		yes	good	dry	no			excessive sediment	clear pipe, remove sediment		yes
281	pipe	concrete	good	rounded pipe				Inner Diameter (in.)d = 15		yes	good	dry	no			excessive sediment, rip rap		Single vertical bar in pipe entry way	

Dry Weather Survey Results

NPDES ID	Type of Outfall	Pipe Material	Pipe Condition	Pipe Shape	Open Swale Material	Open Swale Condition	Swale Shape	Round Pipe Measurements	Rounded Triangular Swale Measurements	Headwall	Headwall Condition	Description of Flow	Outlet Submerged	Height Above Outlet	Visual Notes	Materials Present	Required Maintenance	Additional Notes	Maintenance Required?
6/16.	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 24		yes	good	dry	no			excessive sediment, sheen bacterial	clear pipe	Outlet control structure 6x11ft. Two 8in low flow controls. See pictures.	yes
6/16-1	pipe	corrugated metal	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			excessive sediment	remove trash debris	Outfall not identified on town GIS, looks fairly new. Rip rap embankment.	yes
6/16 -2	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			excessive sediment, excessive vegetation		Flared end plastic	
6/16-3	pipe	plastic	good	rounded pipe				Inner Diameter (in.)d = 12		no		dry	no			excessive vegetation			



Project Name: Plymouth MS4
Project Location: 2 Battery March Park, Suite 100 | Quincy, MA
Project Number: 1619000055

Inspection of Bioretention Areas/Rain Gardens

NPDES ID	BMP Location	Date of Inspection	Type of Inspection	Weather Conditions	Start Time	End Time	Additional Comments	Soil Erosion and Repair		Invasive Species		Remove Trash		Mulch Void Areas	
								Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?
6/16 BMP	Bollington St	6/16/2020	regular	70 clear	15:00	15:10	n/a	yes	none	yes	None	yes	none	yes	none
6/16-2 BMP	Town Brook	6/16/2020	regular	70 clear	16:20	16:32	n/a	no	Regrade and stabilize	no	Remove Japanese knotweed		none	yes	none

NPDES ID	BMP Location	Date of Inspection	Type of Inspection	Weather Conditions	Start Time	End Time	Additional Comments	Remove Dead Vegetation		Replace Dead Vegetation		Prune		Replace all Media and Vegetation	
								Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?	Status Satisfactory?	Corrective Action Needed?
6/16 BMP	Billington St	6/16/2020	regular	70 clear	15:00	15:10	New construction	yes	none	yes	none	yes	none	yes	none
6/16-2 BMP	Town Brook	6/16/2020	regular	70 clear	16:20	16:32		yes	none	yes	none	no	Prune large bushes	yes	none



Project Name: Plymouth MS4

Project Location: 2 Battery March Park, Suite 100 | Quincy, MA

Project Number: 1619000055

Inspection of Other BMPs

							BMP Activity 1	BMP Activity 2	BMP Activity2	
NPDES ID	BMP Description	BMP Location	Date of Inspection	Type of Inspection	Weather Conditions	Start Time	Maintenance Activity	Maintenance Activity	Maintenance Activity	End Time
256	Forebay	Surrey Dr.	6/15/2020	regular	60 cloudy	10:00	Remove Sediment			10:03
257	Forebay 14x14ft	Surrey Dr	6/15/2020	regular, during storm event	60 cloudy	10:09	Remove Sediment			10:10
281	Infiltration basin	W Ridge Trail	6/15/2020	regular	65 cloudy	15:29	Clean forebay	Remove trees in basin	Clean cb structure - discharge point unknown	15:36

Project Name: Plymouth MS4
 Project Location: 2 Battery March Park, Suite 100 | Quincy, MA
 Project Number: 1619000055

Water Quality Screening Results

NPDES ID	Date of Inspection	Start Time	Type of Inspection	Ammonia			Boron			Chloride			Color						
				Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?
102	6/10/2020	10:52	regular	Colorimeter	0.03 mg/L	> 0.5 mg/L	no		n/a	> 0.35 mg/L	yes	Strips	304 mg/L	230 mg/L	yes	Colorimeter	101 units	>500 units	no
104	6/5/2020	09:35	regular	Colorimeter	0.04 mg/L		no	HI38074	-		yes	Strips	71 mg/L		no	Colorimeter	40 units		no
107	6/5/2020	12:30	regular	Colorimeter	0.1 mg/L		no		n/a		yes	Strips	146 mg/L		no	Colorimeter	72 units		no
117	6/10/2020	15:08	regular	Colorimeter	0.00 mg/L		no		n/a		yes	Strips	90 mg/L		no	Colorimeter	90 units		no
115	6/10/2020	12:09	regular	Colorimeter	0.13 mg/L		no		n/a		yes	Strips	90 mg/L		no	Colorimeter	12 units		no
120	6/10/2020	16:08	regular	Colorimeter	0.00 mg/L		no		n/a		yes	Strips	201 mg/L		no	Colorimeter	11 units		no
121	6/10/2020	15:15	regular	Colorimeter	0.01 mg/L		no		n/a		yes	Strips	201 mg/L		no	Colorimeter	8 units		no
215	6/17/2020	13:31	regular	Colorimeter	0.15 mg/L		no		n/a		yes	Strips	0.08 mg/L		no	Colorimeter	26 units		no
264	6/24/2020	09:38	regular	Colorimeter	0.25 mg/L		no		n/a		yes	Strips	0 mg/L		no	Colorimeter	108 units		no

NPDES ID	Date of Inspection	Start Time	Type of Inspection	Specific Conductance			Detergents and Surfactants			Fluoride			Hardness						
				Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?
102	6/10/2020	10:52	regular	Tracer	1127 uS/cm	> 2,000 uS/cm	no	K-9400	>0.3 mg/L	> 0.25 mg/L	yes		n/a	> 0.25 mg/L	yes	Titration	106 mg/L	<10 mg/L or >2,000 mg/L	no
104	6/5/2020	09:35	regular	Tracer	10,870 uS/cm		yes	K-9400	0.125 mg/L		no		n/a		yes	Titration	36 mg/L		yes
107	6/5/2020	12:30	regular	Colorimeter	6,430 uS/cm		yes	K-9400	0.125 mg/L		no		n/a		yes				yes
115	6/10/2020	12:09	regular	Tracer	490 uS/cm		no	K-9400	0.125 mg/L		no		n/a		yes	Titration	80 mg/L		no
117	6/10/2020	15:08	regular	Tracer	436 uS/cm		no	K-9400	0.125 mg/L		no		n/a		yes	Titration	84 mg/L		no
120	6/10/2020	16:08	regular	Tracer	810 uS/cm		no	K-9400	0.2 mg/L		no		n/a		yes	Titration	104 mg/L		no
121	6/10/2020	15:15	regular	Tracer	1100 uS/cm		no	K-9400	0.125 mg/L		no		n/a		yes	Titration	84 mg/L		no
215	6/17/2020	13:31	regular	Tracer	406 uS/cm		no	K-9400	0.125 mg/L		no		n/a		yes	Titration	52 mg/L		no
264	6/24/2020	09:38	regular	Tracer	126 uS/cm		no	K-9400	0.125 mg/L		no		n/a		yes	Titration	24 mg/L		no

NPDES ID	Date of Inspection	Start Time	Type of Inspection	pH			Potassium			Turbidity					
				Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results	Benchmark	Full Analytical Required?	Field Test Kit	Results		
102	6/10/2020	10:52	regular	Tracer	6.88	< 5	no	Colorimeter	4 mg/L	>20 mg/L	no	Colorimeter	8 NTU	< 1,000 NTU	no
104	6/5/2020	09:35	regular	Tracer	6.39		no	Colorimeter	1.0 mg/L		no	Colorimeter	3 NTU		no
107	6/5/2020	12:30	regular	Tracer	6.9		no	Colorimeter	0.8 mg/L		no	Colorimeter	4 NTU		no
115	6/10/2020	12:09	regular	Tracer	6.34		no	Colorimeter	1.6 mg/L		no	Colorimeter	2 NTU		no
117	6/10/2020	15:08	regular	Tracer	6.37		no	Colorimeter	6.7 mg/L		no	Colorimeter	2 NTU		no
120	6/10/2020	16:08	regular	Tracer	6.12		no	Colorimeter	3.4 mg/L		no	Colorimeter	0 NTU		no
121	6/10/2020	15:15	regular	Tracer	6.84		no	Colorimeter	2.4 mg/L		no	Colorimeter	1 NTU		no
215	6/17/2020	13:31	regular	Tracer	6.5		no	Colorimeter	2.6 mg/L		no	Colorimeter	2 NTU		no
264	6/24/2020	09:38	regular	Tracer	7.3		no	Colorimeter	3.1 mg/L		no	Colorimeter	8 NTU		no



Project Name: Plymouth MS4

Project Location: 2 Battery March Park, Suite 100 | Quincy, MA

Project Number: 1619000055

Water Quality Laboratory Results

NPDES ID	Date of Inspection	Start Time	Type of Inspection	Laboratory	Bacteria	Boron	Chloride	Specific Conductance	Detergents and Surfactants	Fluoride	Hardness	End Time
102	6/10/2020	10:30	regular		Enterococcus: 70 CFU/100mL E-coli: 220 CFU/100mL	0.026 mg/L	300 mg/L	n/a	BRL (0.01 mg/L)	<0.25 mg/L		11:45
104	6/5/2020	10:30	regular		Enterococcus: 2,800 CFU/100mL E coli: 640 CFU/100mL	BRL (0.010mg/L)	n/a	257 uS/cm	n/a	<0.2 mg/L	40 mg/L	12:16
107	6/5/2020	12:30	regular	EnviroTech	Enterococcus: 2,300 CFU/100 mL E coli: 1,300 CFU/100 mL	BRL (0.1 mg/L)	n/a	508 uS/cm	n/a	<0.2 mg/L	54 mg/L	13:30
115	6/10/2020	12:10	regular		Enterococcus: 40 CFU/100 mL E coli: 10 CFU/100 mL	0.033 mg/L	n/a	n/a	n/a	<0.25 mg/L		13:40
117	6/10/2020	15:00	regular		Enterococcus: <10 CFU/100 mL E coli: 5 CFU/100 mL	0.036 mg/L	n/a	n/a	n/a	<0.25 mg/L		15:00
121	6/10/2020	13:20	regular		Enterococcus: 70 CFU/100 mL E coli: <10 CFU/100 mL	0.050 mg/L	n/a	n/a	n/a	<0.25 mg/L		13:20
120	6/10/2020	14:00	regular		Enterococcus: <10 CFU/100 mL E coli: <10 CFU/100 mL	0.063 mg/L	n/a	n/a	n/a	<0.25 mg/L		14:00