

Year 1 Annual Report

Massachusetts Small MS4 General Permit

Reporting Period: May 1, 2018-June 30, 2019

****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.

Part I: Contact Information

Name of Municipality or Organization: City of Cambridge

EPA NPDES Permit Number: MAR041076

Primary MS4 Program Manager Contact Information

Name: Catherine Daly Woodbury

Title: Project Manager, Department of Public Works

Street Address Line 1: 147 Hampshire Street

Street Address Line 2: na

City: Cambridge

State: MA

Zip Code: 02139

Email: cwoodbury@cambridgema.gov

Phone Number: (617) 349-4818

Fax Number: na

Stormwater Management Program (SWMP) Information

SWMP Location (web address): <http://www.cambridgema.gov/stormwater>

Date SWMP was Last Updated: Jun 28, 2019

If the SWMP is not available on the web please provide the physical address and an explanation of why it is not posted on the web:

Part II: Self Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4.

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 1 Requirements

- ☒ Develop and begin public education and outreach program
☒ Identify and develop inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
 - ☐ The SSO inventory is attached to the email submission
 - ☒ The SSO inventory can be found at the following website:

www.cambridgema.gov/stormwater (under "Annual Reports and Information")
 An SSO inventory was included in the IDDE Plan. The IDDE Plan's inventory included information through 06.15.19. The SSO inventory for this report was revised through 06.30.19. The revised inventory will be added as a revision to the IDDE Plan.

- ☒ Develop written IDDE plan including a procedure for screening and sampling outfalls
☒ IDDE ordinance complete
☒ Identify each outfall and interconnection discharging from MS4, classify into the relevant category, and priority rank each catchment for investigation
 - ☐ The priority ranking of outfalls/interconnections is attached to the email submission
 - ☒ The priority ranking of outfalls/interconnections can be found at the following website:

www.cambridgema.gov/stormwater
 An initial ranking was conducted and included as part of the written IDDE plan (section 5.0 and Appendix D). This ranking will be updated based upon dry weather screening and other relevant inspections.

- ☒ Construction/ Erosion and Sediment Control (ESC) ordinance complete
☒ Develop written procedures for site inspections and enforcement of sediment and erosion control measures
☒ Develop written procedures for site plan review

- ☒ Keep a log of catch basins cleaned or inspected
- ☐ Complete inspection of all stormwater treatment structures

Annual Requirements

- ☒ Annual opportunity for public participation in review and implementation of SWMP
- ☒ Comply with State Public Notice requirements
- ☒ 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
- ☒ All curbed roadways have been swept a minimum of one time per year

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

Annual Requirements

*Public Education and Outreach**

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

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

Annual Requirements

*Public Education and Outreach**

- ☒ Distribute 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 and phosphorus-free fertilizers
- ☒ Distribute an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Distribute 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

- ☐ Increase 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 Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus

- ☒ removal by the BMP consistent with Attachment 1 to Appendix H. Document 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 in each annual report

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- ☐ Increase street sweeping frequency of all municipal owned streets and parking lots to a schedule to target areas with potential for high pollutant loads

Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50

- ☐ percent full; Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings

Charles River Watershed Phosphorus TMDL

- ☒ Begin Phase 1 Phosphorus Control Plan (PCP)

Use the box below to input additional details on any unchecked boxes above or any additional information you would like to share as part of your self assessment:

1. Year 1 Requirements - Complete inspection of all stormwater treatment structures: Cambridge currently has contracts that ensure routine maintenance of many of its stormwater treatment structures. We are currently developing an inventory of all structures to ensure that inspection and maintenance required by the permit (inspected annually at a minimum) is occurring for all structures.

2. Good Housekeeping and Pollution Prevention for Permittee Owned Operations - increase street sweeping frequency of all municipally 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): Cambridge has a street sweeping program that sweeps all residential streets monthly between April and December (weather permitting) and commercial squares are swept daily, thus complying with the requirements of the MS4 Permit 2.3.7.a.iii(c) and Appendix H Section V.2.a.ii. Parking lots are currently swept on an "as needed" basis and are not included in routine sweeping. DPW is revising our parking lot sweeping program to address parking lots during Year 2 to ensure compliance with the requirements of the MS4 Permit.

3. Solids, Oil and Grease (Hydrocarbons), or Metals

- Increase street sweeping frequency of all municipal owned streets and parking lots to a schedule to target areas with potential for high pollutant loads: (see #2 above)

- Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings: Cambridge is developing a catch basin inspection and maintenance prioritization program to meet the requirements of this MS4 Permit. Currently, all catch basin inspection and cleaning activities are tracked through digital forms and stored in the Public Works work management software system, Cartegraph. The City uses Cartegraph to manage and track catch basin inspection and cleaning. Ten years' worth of cleaning records are on file. These forms were updated in 2019 to collect data for the MS4 Permit reporting requirements. Before May 2019, the City tracked the amount of debris removed by recording the number of clamshell scoops. In May 2019, the City began measuring the depth to the bottom of the catch basin, as well

as the depth to sediment, both before and after cleaning to calculate total volume of debris removed from each basin. Together with catch basin diameters, this data will be used to more accurately calculate and track volume of sediment removed from each basin to comply with the Permit requirements. The City also tracks historical cleaning records for each catch basin in Cartegraph. The City is using this data to develop its optimization plan that will prioritize which catch basins to clean on a given day.

4. Additional Information - Any structural BMPs listed in Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix F. Document 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 in each annual report:

- The City has begun tracking the installation of structural BMPs that manage phosphorous (P) using Attachment 1 to Appendix F. The City looked at past installation of infiltration systems, many of which did not follow the measurement requirements in Attachment 1 to Appendix F and it has been determined that it is too difficult to calculate post design and installation and are therefore not included within the tracking system. We may re-evaluate these systems and where applicable may include them in the tracking system later. The projects currently within the tracking system would remove 5.73 pounds of P per year.

- King Open & Cambridge Street Schools & Community Complex: This project includes several treatment systems: Bio retention 0.51 pounds/year, porous pavement 0.08 pounds/year, rainwater reuse 1.72 pounds/year, subsurface detention 0.99 pounds/year, and an infiltration system 0.53 pounds/year for a total of 3.83 pounds of phosphorous removed from system.

- Longfellow Park: A stormwater infiltration trench infiltrates and treats 2" of runoff from 26,429 sf of impervious area resulting in an estimated phosphorous removal of 1.9 pounds/year).

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:

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 the reporting period: 15+

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

BMP: Annual Message on Grass Clipping/Fertilizers

Message Description and Distribution Method:

Cambridge is participating in the Mystic River Watershed Association's (MyRWA) Mystic River Stormwater Education Collaborative (Stormwater Collaborative). Using materials supplied by MyRWA DPW shared grass clipping and fertilizer social media posts on Facebook ad Twitter

Targeted Audience: Residents and Business/institutions/commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

37,598 social media impressions

Message Date(s): March 2019 - June 2019

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: Annual Message on Leaf Litter

Message Description and Distribution Method:

Using materials supplied by MyRWA DPW shared social media posts on Facebook and Twitter and DPW issued a press release.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

1,004 social media impressions

45 news/press release webpage views

Message Date(s):

- October - November 2018 social media post
- November 13, 2018 press release issued

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: Annual Message on Septic System Maintenance

Message Description and Distribution Method:

The majority of properties in Cambridge are directly connected to the sanitary system. We were able to identify twelve (12) potential properties where the sanitary connection is unknown. A letter was mailed to these business and property owners discussing the proper care of septic systems and requesting updated information regarding a possible connection to the sanitary system.

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

Thirteen (13) letters were mailed regarding twelve (12) properties. We received follow up information from three (3) properties removing them from this list for year 2.

Message Date(s): November 2018

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: Annual Message on Pet Waste

Message Description and Distribution Method:

- DPW developed a Canines for Clean Water campaign (pledge form and pet waste bag dispenser giveaways, and brochure) to inform pet owners of their responsibilities regarding pet waste management.
- DPW worked with MyRWA's Stormwater Collaborative on advertising pet waste messaging on Facebook and Twitter.
- DPW posted a brochure on the Animal Commission's webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

- Since its inception in April 2019 the Canines for Clean Water program collected 263 pledges and distributed free pet waste bag dispensers. An approximate 50 additional residents were approached, but did not sign a pledge since they were already properly managing their pet's waste and had a portable bag dispenser.
- 1,417 social media impressions

Message Date(s): April 2019 through June 2019

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: Stormwater pollution in trash, oil, cigarette butts & dog waste

Message Description and Distribution Method:

Think Blue Massachusetts "Fowl Water" video (<https://www.thinkbluemassachusetts.org/>)
Advertisement on Facebook, Instagram, & YouTube

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

125,364 social media impressions from residents of Cambridge

Message Date(s): June 23, 2019 - June 30, 2019

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: Erosion and Sediment Control Management

Message Description and Distribution Method:

- Erosion and Sediment Control (ESC) information/requirements were added as a Permit Condition in all issued Excavation Permits.
- DPW provided three (3) presentations to contractors and inspectors/construction project managers discussing proper ESC for construction sites.
- DPW posted a street sweeping poster provided by MyRWA at DPW adjacent to the permit desk.
- DPW held weekly construction meetings from April through November (2018 and 2019) providing opportunities to discuss ESC and reminders about additional measures to take prior to rain events and during

dry conditions.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW

Measurable Goal(s):

- 196 excavation permits issued with ESC permit conditions
- 203 contractors and inspectors/project managers attended ESC presentations
- 325 (estimated) views of street sweeping poster by contractors
- 39 weekly construction meetings were held during this permit term

Message Date(s):

- April through June 2019 for Excavation permit attachment of ESC permit requirements
- May 7, 2018, April 2, 2019, May 20, 2019 for contractor ESC presentations
- April through June 2019 for poster viewing
- April through November 2019 and April through June 2019 for weekly meetings

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: Proper Use of Salts/Deicers

Message Description and Distribution Method:

- Social media posts about the proper use of salt/deicers (Facebook/Twitter/YouTube)
- Press release about proper use of salt/deicers
- Press release about DPW's brine pretreatment pilot program to reduce salt use citywide

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

- 18,156 social media impressions
- 140 press release views
- 113 press release views

Message Date(s):

- December 2018 through March 2019 (social media)
- February 5, 2019 (use of salt/deicers)
- January 7, 2019 (brine pilot program)

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: Clean Water Starts with You: Soil, Oil, Cigarette Butts, Pet Waste (MyRWA Stormwater PSA)

Message Description and Distribution Method:

DPW shared MyRWA Stormwater PSA on social media and broadcast on local cable TV (CCTV)
<https://www.youtube.com/watch?v=9sd3wOBl4Kw>

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

- 4,509 social media impressions (Facebook/Twitter/YouTube)
- 27,000 (approximately) homes had exposure. Program aired over 250 times over a two month period across three (3) local channels (CCTV-8, -9, -96)

Message Date(s):

- May through June 2018 social media
- October through November 2018 CCTV

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:Street Sweeping: dirt, sand, trash and other pollutants

Message Description and Distribution Method:

- Social media posts (Facebook/Twitter) and news/press release on street cleaning/yard waste/Household hazardous waste
- MyRWA street sweeping poster displayed at DPW entrance

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

- 3,531 social media impressions
- 216 website/press release views
- 650 (estimated) views of street sweeping poster

Message Date(s):

- April 2019 for social media and press release
- April through June 2019 for poster display

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:Household Hazardous Waste disposal

Message Description and Distribution Method:

- Social media posts (Facebook/Twitter) regarding proper disposal of hazardous waste and dates of events
- Press releases about hazardous waste events
- Household hazardous waste website to inform residents of what and how to dispose of materials properly.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

- 32,833 social media impressions
- 4,099 views of press release/news pages
- 17,439 views of Household Hazardous Waste web page

Message Date(s): April 2018 through June 30, 2019

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:Rain Barrels: Reduce runoff and reuse rainwater

Message Description and Distribution Method:

- DPW sponsored rain barrel purchase and distribution programs with The Great American Rain Barrel Company
- DPW provided brochures on proper management of pet waste, building rain gardens, Low Impact Development, protecting properties from sewer backups and other stormwater management best management practices at time of rain barrel pick up.
- DPW promoted rain barrel use on social media (Facebook and Twitter)

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

- 117 barrels sold in 2018; 79 barrels sold in 2019
- 96 brochure packets provided to residents in 2018; 56 brochure packets provided to residents in 2019
- 3,769 social media impression in 2018; 2,313 social media impression in 2019

Message Date(s):

- April to June 2018 and April to May 2019 (social media)
- June 6, 2018 distribution
- May 22, 2019 distribution

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:Untold Possibilities at the Last Minute: Artist explore the state of climate change and water quality

Message Description and Distribution Method:

Local artist exhibit at Cambridge Arts' Gallery 344 on the state of climate change today in “Untold Possibilities at the Last Minute”. Artists explored climate changes through time travel, bio-indicators, three-dimensional visualization of data, food, poetry and music. Exhibit message was distributed through Twitter, press releases and website.
<https://www.untoldpossibilities.org/>

Targeted Audience: Residents

Responsible Department/Parties: Cambridge Arts Council

Measurable Goal(s):

- 67,799 social media impressions
- 365 views on website

Message Date(s): May to June 2019

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:

An outreach event through art was not anticipated at the time of preparing the NOI and the education program. The translation of scientific information of the multi faceted aspects of climate change by local artists was used to engage the public.

BMP:MyRWA Stormwater PSA: Devil Ducks (Fertilizer, Pesticides)

Message Description and Distribution Method:

A MyRWA Stormwater PSA video (adapted from ThinkBlue Maine Rubber Ducky) was broadcast on local cable TV
<https://www.youtube.com/watch?v=c9NE5x-aSwU>

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

27,000 potential viewers. Program aired over 250 times over a two month period across three (3) local channels (CCTV-8, -9, -96)

Message Date(s): June to July 2018

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:Cambridge Stormwater Management Program Display

Message Description and Distribution Method:

DPW developed a display on the City's stormwater management program including what the city is doing, what you can do, what is stormwater pollution, and how to report illicit dumping. This display was displayed at City hall and used at outreach events.

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

400 potential views at City Hall

Message Date(s): June 18 to June 30, 2019

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:General Stormwater Message/Information about Runoff

Message Description and Distribution Method:

- Message on social media about stormwater runoff (Facebook and Twitter)
- DPW developed a PSA video about how the City is addressing stormwater pollution
<https://www.youtube.com/watch?v=gJhiXEBS0HA>

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

- 2,177 social media impressions
- 15 video views

Message Date(s): June 2019

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:

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

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:

Add an Educational Message

MCM2: Public Participation

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

1. City Council's Health and Environment Committee Hearing held a public hearing on September 27, 2018 to discuss Cambridge's stormwater management program and new permit requirements. A copy of the presentation and meeting notes will be posted on www.cambridgema.gov/stormwater (under Annual Reports and Information).

2. Cambridge DPW participated at River Festival on June 11, 2019. DPW set up a display that explained Cambridge's stormwater management program and how the public can help with improving water quality, provided information on Canines for Clean Water pledges, minimizing fats, oils and grease in sewers to prevent SSOs, Dwayne the Storm Drain coloring books, protecting property from floods and household hazardous waste collections. We were able to reach/inform 250+/- people. Comments were positive and people walked away having a better understanding of stormwater pollution, what the City is doing, and ways to address it. We collected 39 Canines for Clean Water pledges, gave away 50 coloring books and other handouts. A copy of the stormwater display will be posted at www.cambridgema.gov/stormwater (under Annual Reports and Information).

3. Cambridge DPW participated at Fresh Pond Day on June 15, 2019. DPW set up a similar display and provided the same outreach materials provided at the River Festival. We reached approximately 500 people at this event and spoke to approximately 200. People were interested to learn about the work involved in separating out combined sewers systems and how stormwater makes its way to the receiving waters.

Was this opportunity different than what was proposed in your NOI? Yes ☐ No ☒

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

1. Community events/meetings: Cambridge DPW participated in the following community events/meetings:

- June 11, 2019: The Port Preparedness Plan Open House. This was an open house and panel discussion to discuss the second neighborhood climate change preparedness & resilience plan. DPW set up our stormwater display and provided similar outreach materials as were provided at River Festival mentioned above.
- Cambridge Science Festival (2018 and 2019): DPW participated in the Science Fair at Cambridge City Hall on April 20, 2018 where DPW demonstrated the EnviroScape model, provided stormwater related information, demonstrated how rain barrels work, and sponsored an Urban Rain Gardens presentation by the New England Wild Flower Society. DPW also participated in the Science in the City event at Cambridge City Hall on April 12, 2019 where DPW demonstrated the EnviroScape model and Promoted the Canines for Clean Water Pledge. DPW reached over 100 children and adults at each of the Science Festival events.
- April 6, 2019 Rabies Clinic: DPW joined the Animal Commission during their rabies clinic and dog licensing event. DPW promoted the Canines for Clean Water campaign and collected 39 pledges during the event.

2. Alewife Stormwater Wetland Tours: Cambridge DPW lead four (4) tours that discussed the function of the wetland as a stormwater best management practice and as a water quality and quantity control for the upstream catchment area:

- May 17, 2018: Forrester Research "Green Team" (14 employees)
- July 30, 2018: Mayor's Summer Youth Employment Program STEAM Initiative (6 students)
- September 4, 2018: EPA Retreat, Drinking Water Branch (13 participants)
- November 7, 2018: the BSCES Stainability Committee (18-20 participants)

3. Household Hazardous Waste (HHW): Cambridge sponsored five HHW days on June 30, 2018, September 8, 2018, November 17, 2018, April 6, 2019, June 8, 2019. A total of 44 tons of waste were collected from 1,781 vehicles/participants.

4. School Programs:

- Mystic River Stormwater Education Collaborative: Cambridge is a member of the Mystic River Watershed Association's (MyRWA) Stormwater Collaborative. As part of the MyRWA Stormwater Collaborative MyRWA staff provided educational outreach to ten (10) 4th and 5th grade school children and two adults at the Gately Youth Center on April 30, 2019 providing them with information on watersheds, what stormwater

is, how it can be managed, and how people can help reduce stormwater pollution. MyRWA staff also participated in the Cambridge Science Festival carnival on April 13, 2019 and Science in the City on April 12, 2019 reaching an estimated 250+ children and adults with their educational message.

- Cambridge Department of Public Works (DPW): DPW visited the Chestnut Street School on May 23, 2019 to discuss plants and provided 28 Dwayne the Storm Drain booklets on stormwater for a class of students age 2 ½ to 5 years old. DPW also demonstrated the EnviroScape Watershed model at the DPW Road Show on May 21, 2018 and May 21, 2019. The Road Show is geared toward pre-school children and we reached 120+ children at each Road Show event.

- Cambridge Public Schools (CPS): As part of the 5th grade curriculum students learn about non-source stormwater pollution and visit the Alewife Stormwater Wetland. As preparation for a visit to the Alewife Stormwater Wetland, a demonstration of the EnviroScape Watershed model is provided to most classrooms, that has a groundwater insert. We pretend the model is of Cambridge and we discuss different types of particulates that might enter into stormwater runoff when it rains e.g. plastic, paper trash, sediments, pesticides, fertilizers, road salt, automobile waste such as gasoline and oil, animal waste.

A visit to the engineered wetland then allows students to see an engineered solution that addresses the non-point source pollution from our city streets. Students move through the wetland as water molecules would (settling over time, absorbing thru soil & plants and evaporating in the deep pool areas) leaving behind particulates they collected as runoff before they are discharged to the Little River. CPS has a goal to get all 5th grade students out to the wetland annually so they can apply their understanding to a local, real, engineered and novel application. In the fall of 2018 there were four hundred and seventy (470) 5th grade students.

5. Solid Waste, Recycling and Composting: DPW's waste management program has been expanding the City's efforts to reduce solid waste by expanding the composting program (April 2018) and recycling of mattresses (April 2019). Overall trash collection has declined by 7%, collecting 16,645 tons of trash, 4,944 tons of organic waste and 11,096 tons of recycling.

6. Massachusetts Statewide Municipal Stormwater Coalition (Statewide Coalition). Cambridge participated in the Statewide Coalition as a member of both the Charles River Stormwater Collaborative and the Mystic River Stormwater Education Collaborative. The Statewide Coalition presented on the Think Blue Massachusetts public awareness campaign and regional collaboration on stormwater at the following public events:

- Metrowest/495 Partnership (October 4, 2018)
- MetroWest Stormwater Roundtable hosted by MetroWest Regional Collaborative (MWRC) of the Metropolitan Area Planning Council (MAPC) (November 20, 2018)
- Massachusetts Municipal Association (MMA) Meeting & Trade Show (Jan 18-19 2019)
- New England Water Environment Association Annual Conference (Jan 28 2019)
- Massachusetts Association of Conservation Commissions Annual Conference (March 2, 2019)
- Massachusetts Congress of Lake and Pond Associations Annual Workshop (April 12, 2019)
- New England American Public Works Association Spring Conference (April 17, 2019)
- Ecotarium Earth Day activities (April 16 – 19, 2019)
- New England Water Environment Association Spring Meeting (June 4, 2019)

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

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

Number of SSOs identified: 13

Number of SSOs removed: 13

Below, report on the total number of SSOs identified in the MS4 system and removed to date. At a minimum, report SSOs identified since 2013.

Total number of SSOs identified: 43

Total number of SSOs removed: 43

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period:

Ongoing, Phase 1 mapping is completed. The City has a detailed GIS map of the City's drain and sewer infrastructure. Updates are ongoing as infrastructure projects and system investigations are completed.

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:

www.cambridgema.gov/stormwater (under Annual Reports and Information)
Eleven (11) outfalls were screened. Two (2) of these outfalls had no dry weather flow or evidence of any illicit connections. Testing of the remaining nine (9) outfalls will be retested to confirm elevated results and to perform Chlorine, DO and pH testing for each outfall.

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

Number of outfalls screened: 11

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

Percent of total outfalls screened: 30.5%

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:

not yet begun

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:

The City has retained CDM/SDE to assist with catchment investigations beginning in year 2.

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:

not applicable - no illicit connections have been identified in separated areas

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 [UNITS]

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.

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:

Cambridge is doing work to separate combined sewer areas in various neighborhoods in the City. As part of this effort the City undertakes an expanded investigation program to ensure that sanitary connections to the drain system (illicit) and storm connections to the sanitary system (inflow) are identified and removed prior to opening the catchment to the receiving waters. As part of this effort Cambridge identified and removed five (5) illicit connections and one (1) inflow connection.

Employee Training

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

December 6, 2018: trained 6 staff responsible for IDDE. In-house and in-field training.

February 6, 2019: IDDE training follow up, review of IDDE Program, SWMP and SWPPP status, 5

employees.

March 5, 2019: IDDE field training for catchment investigations, 2 employees.

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: 23

Number of inspections completed: 193

Number of enforcement actions taken: 36

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

Ordinance Development

Describe the status of the post-construction ordinance required to be complete in year 2 of the permit term:

In progress. The City's Land Disturbance Regulations govern construction, development and redevelopment requirements. These Regulations were initially adopted on March 31, 2008 and can be viewed at: <https://www.cambridgema.gov/~media/Files/publicworksdepartment/Engineering/Regulations/LandDisturbanceRegulations.pdf?la=en>

We are currently reviewing these Regulations to ensure that stormwater controls or management practices for new development and redevelopment meet the retention and treatment requirements of the permit and all applicable requirements of the MA Stormwater Handbook.

As-built Drawings

Describe the status of 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 required to be complete in year 2 of the permit term:

Complete. Required as part of the Stormwater Control Permit and Land Disturbance Regulations adopted March 31, 2008. These documents can be viewed at:

Land Disturbance Regulations: <https://www.cambridgema.gov/~media/Files/publicworksdepartment/Engineering/Regulations/LandDisturbanceRegulations.pdf?la=en>

Stormwater Control Permit: <https://cambridgema.viewpointcloud.com/categories/1101/record-types/6712>

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:

In progress. The City will develop a report assessing current street design, parking lot guidelines, and other applicable local requirements that impact the creation of impervious cover. This report will focus on

highlighting current impediments to using low impact design options, and detailing improvements for promoting the use of such options. As a precursor to this report:

- The City working with the Charles River Watershed Association completed a Green Streets Guidance Document for use by the City of Cambridge Department of Public Works (Public Works), other City agencies and private developers. This document provides guidance on green street implementation in space-constrained urban settings with a focus on typical residential street layouts in the City of Cambridge. This document can be found at www.cambridgema.gov/stormwater (under "Ordinances, Regulations and Best Practices")
- The City's Five Year Sidewalk and Street Reconstruction Plan, a comprehensive plan for designing and reconstructing streets, identifies stormwater management and green infrastructure as an important component of street design by the City and private entities.
www.cambridgema.gov/theworks/fiveyearplan
- The City's 10 Year Sewer and Drain Infrastructure Plan outlines objectives and design considerations for infrastructure improvements which include management of stormwater quality and quantity through green infrastructure.
www.cambridgema.gov/theworks/tenyearplan

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:

In progress. The City will develop a report assessing existing local regulations to determine how to promote the implementation of green infrastructure. In particular, the City will assess the feasibility of allowing green roofs, infiltration practices, and water harvesting devices. As a precursor and basis of this report the City has been working on the following efforts that support zoning changes and green infrastructure:

- The City is currently working on a citywide Climate Change Preparedness and Resiliency Plan (CCPR) following the issuance of two neighborhood plans for Alewife/Fresh Pond and The Port.
<https://www.cambridgema.gov/CDD/Projects/Climate/climatechangeresilienceandadaptation>
- The City's Climate Resilience Zoning effort is building upon the City's 2017 Climate Change Vulnerability Assessment (CCVA) and ongoing citywide CCPR planning efforts to create development standards that can be incorporated into the Zoning Ordinance that would result in zoning changes to support green infrastructure.
<https://www.cambridgema.gov/CDD/Projects/Zoning/climateresiliencezoning>

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:

As part of the City's Five Year Sidewalk and Street Reconstruction Plan the City evaluates each street that is scheduled for reconstruction for green infrastructure opportunities and is identifying plazas and other hardscape areas where plantings can be enhanced and pavement removed. The City is developing a tracking sheet that identifies expansion of planting beds and installation of rain gardens/biobasins during street reconstruction and landscape improvement efforts. In addition, the City is looking at opportunities within capital improvement plans for municipal properties for ways to reduce imperviousness on site during reconstruction and/or retrofit with BMPs. Some recent projects include:

1. King Open & Cambridge Street Schools & Community Complex (rain gardens, cisterns, and infiltration

systems) designed and scheduled for completion in summer 2019.

2. Longfellow Park: creation of stormwater infiltration system to infiltrate runoff from 26,429 sf of impervious area within a 2.3 acre parcel. This project was completed in May 2019.

3. Various expanded planting areas and impervious reduction areas: Since 2018 there has been approximately 2,800 SF of impervious area converted to expanded planting/pervious areas, representing 8 individual sites.

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

The City of Cambridge is currently optimizing its catch basin cleaning process to comply with the Permit requi

If complete, attach the catch basin cleaning optimization plan or the schedule to gather information to develop the optimization plan:

- ☐ The catch basin cleaning optimization plan or schedule is attached to the email submission
- ☐ The catch basin cleaning optimization plan or schedule can be found at the following website:

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:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

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

Total number of catch basins:

If applicable:

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

not yet applicable

Street Sweeping

Describe the status of the written procedures for sweeping streets and municipal-owned lots:

Cambridge has a citywide street sweeping map and a written operations and maintenance BMP Fact Sheet for sweeping streets and parking lots, but the Fact Sheet has not been updated since 2006. Residential streets are swept monthly between April and December (weather permitting) and commercial areas are swept more frequently. A revised written program is underdevelopment and will be completed during Year 2 of this permit. The current program does not have a formal schedule for sweeping parking lots. Currently parking lots are swept on an "as needed" basis. The new program will schedule sweeping of parking lots in the spring and fall as required by the permit.

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

- ☐ Number of miles cleaned:
- ☐ Volume of material removed: [UNITS]
- ☒ Weight of material removed:

If applicable:

For rural uncurbed roadways with no catch basins, describe the progress of the inspection, documentation, and targeted sweeping plan:

not applicable

Winter Road Maintenance

Describe the status of the written procedures for winter road maintenance including the storage of salt and sand:

Cambridge has a written operations and maintenance BMP fact sheet for Road Sand/Salt Application and Storage which was updated in June 2019 to reflect recent changes in out salting operations and compliance with this Permit. DPW pre-treats major roadways prior to snow/ice events. A program to pre-treat 44.5 lane miles of major road surfaces using a brine solution of salt (solar salt) and water is being piloted citywide. A brine solution is sprayed on streets in advance of a predicted storm, creating a layer that prevents snow and ice from bonding with the surface. This process offers protection against ice formation, but uses only a quarter of the salt that is normally used in treating these areas.

Inventory of Permittee-Owned Properties

Describe the status of the inventory, due in year 2 of the permit term, of permittee-owned properties, including parks and open spaces, buildings and facilities, and vehicles and equipment, and include any updates:

Cambridge has an inventory of municipally owned properties, including parks and open spaces, buildings and facilities. The City is in the process of developing an inventory of vehicles and equipment. A new Fleet Manager position has been created and is expected to be filled during permit Year 2. The Fleet Manager will coordinate and assist in the development of this inventory.

O&M Procedures for Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment

Describe the status of the operation and maintenance procedures, due in year 2 of the permit term, of permittee-owned properties (parks and open spaces, buildings and facilities, vehicles and equipment) and include maintenance activities associated with each:

Cambridge has a Good Housekeeping Manual (GHM) with written procedures relevant to each type of property. There is substantial overlap between the contents of the existing GHM and the maintenance procedures required under this Permit. However, there are some elements required by this 2016 MS4 Permit (Permit) that are not part of the current GHM, including vehicle and equipment procedures, waterfowl congregation areas and management of trash containers. The GHM is being revised to comply with the requirements of this Permit.

Stormwater Pollution Prevention Plan (SWPPP)

Describe the status of any SWPPP, due in year 2 of the permit term, for permittee-owned or operated facilities including maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater:

In the Annual Report we identified seven (7) facilities that require a SWPPP. Four (4) facilities were inspected during year 1. The status of facility inspections is as follows:

1. Alewife Staging Area (inspection complete 3/7/19)
2. Cambridge Rindge and Latin School Garage (inspection complete 4/18/19)
aka 'The Gustave M. Solomons Transportation Career Center'
3. Police Maintenance Garage (inspection complete 4/18/19)
4. Fire Maintenance Garage (inspection complete 3/7/19)
5. Water Department Garage (inspection scheduled 8/8/19)
6. Cemetery Garage (inspection scheduled 8/8/19)
7. Fresh Pond Golf Course Garage (inspection scheduled 8/8/19)

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

Number of site inspections completed:

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

na. SWPPPs not yet completed

O&M Procedures for Stormwater Treatment Structures

Describe the status of the written procedure for stormwater treatment structure maintenance:

BMPs for various stormwater treatment structures were completed as part of the 2003 MS4 permit. These BMPs are currently being reviewed and revised to ensure compliance with the current 2016 MS4 permit requirements

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):

Characterizing the variability of phosphorus export from urban stormwater for potential treatment strategies: Phosphorous Loading and Sampling Analysis
www.cambridgema.gov/stormwater (under Annual Report and Information)

CCPR Alewife, Appendix B: Green Infrastructure Analysis and Urban Heat Island Modeling
<https://www.cambridgema.gov/CDD/Projects/Climate/~media/E793050A9B0F48ABBFFBF52924A5D58B.ashx>

The Port Preparedness Plan, Appendix 1: Gray and Green Infrastructure Analyses for the Port
<https://www.cambridgema.gov/CDD/Projects/Climate/~media/715EA486FA4D453CB573010FC94B467D.ashx>

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:

• Characterizing the variability of phosphorus export from urban stormwater for potential treatment strategies - Phosphorous Loading and Sampling Analysis: A potential treatment approach for areas with separated sewers is to divert stormwater to some type of treatment (facility or BMP/green infrastructure). However, it is not possible to treat all stormwater. To develop an optimized diversion and treatment strategy, a collaborative study between the City of Cambridge, Stantec, and Northeastern University is conducting stormwater sampling to understand the variability in phosphorus export from different urban landscapes. Specifically, this study is investigating the phosphorus loading associated with different particle size fractions during runoff events from different land uses. The focus on particle size provides a connection to flow velocities required for transport (i.e., shear stress), which can be modeled and may be used to trigger flow diversions. Thus, knowledge of the phosphorus loadings over a range of particle size fractions is needed to characterize the potential export reductions based on flow velocity thresholds. In this study, 1-hour composite stormwater samples for six storm events were collected from four different catchments within the City. The stormwater samples were collected using ISCO 6712c autosamplers. The samples were divided into six subsamples based on particle size: unfiltered, filtered through 250, 100, 50, 25, and 10 µm filters. The subsamples were then analyzed for total phosphorus and total solids. The analysis of these high-resolution stormwater samples shows that the phosphorus is not uniformly distributed between the particle size fractions and differs from total solids distributions, which supports potential diversion and treatment approaches based on flow velocity. However, the event loading distributions are also highly dependent on rainfall and landcover characteristics. Another key finding that will be highlighted is the effect of street sweeping on controlling the phosphorus export.

• CCPR Alewife, Appendix B: Green Infrastructure Analysis and Urban Heat Island Modeling: This study was conducted to address the City of Cambridge's questions about the extent to which the natural environment (such as trees) and engineered ecosystems (such as green infrastructure) can be effectively used to mitigate precipitation flooding and increased urban heat island effects caused by climate change. This study suggests that both UHI effects and future flood risks can be mitigated in the Alewife area:

1. UHI Effects: Increased tree canopy and other engineered green infrastructure solutions, such as bioretention basins, rain gardens, and green roofs have the potential to reduce the UHI effect in Cambridge

2. Future Flooding: Green infrastructure solutions, when appropriately designed and integrated as part of the natural ecosystem, can also help reduce flooding by reducing the peak flow via attenuation and detention of the stormwater runoff. Managing runoff generated from impervious surfaces with green infrastructure solutions is one of the effective measures to reduce flooding and improve water quality. For implementation, the City can consider integrating green infrastructure solutions into new development opportunities to meet the stormwater storage requirements, which are likely to become more stringent to cope with the rapid growth and development in the City.

- The Port Preparedness Plan, Appendix 1: Gray and Green Infrastructure Analyses for the Port: The City of Cambridge conducted a Climate Change Vulnerability Assessment (CCVA) to identify areas that are more susceptible to climate risks of flooding and extreme heat. From the CCVA report, the City identified Alewife and The Port as two areas to develop pilot neighborhood plans for climate resiliency. This technical report serves as an appendix to The Port Preparedness Plan report, summarizing the approaches and assumptions to analyze the performance of gray and green infrastructure strategies suitable for The Port neighborhood in Cambridge. Some of the key questions that this study seeks to answer include what types of gray infrastructure strategies can mitigate present and future flooding in The Port, how can green infrastructure strategies be effectively combined with gray infrastructure to mitigate flooding, and to what extent are these green infrastructure strategies successful in terms of mitigating urban heat island (UHI) effect in The Port and improving water quality.

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:

- The reporting period used for this annual report is from April 1, 2018 through June 30, 2019 since information provided in our last reporting period under the 2003 permit covered the period of April 1st through March 31st. We began this report on April 1, 2018 to include information since our last reporting period.
- The City's SSO inventory includes all identified and reported SSOs since 2011.
- The City maintains an active education and outreach program through social media, public meetings/events, website posting, direct mailings, etc. Messages and events regarding proper ways to dispose of waste (compost, litter, trash, hazardous wastes) climate change, alternative modes of transportation are numerous and also have impacts on stormwater and resident/business' understanding of these issues and behaviors. These activities and others, although relevant, are not reported under MCM 1: Public Education above.
- The information on the status of the catch basin optimization plan was not properly displaying in the above MCM6 text box and has been reinserted here:
The City of Cambridge is currently optimizing its catch basin cleaning process to comply with the Permit requirements, including ensuring that no catch basins are over 50% full at any given time. The City's current methodology relies on following the monthly street sweeping schedule and selecting catch basins based on accessibility and how recently they were last cleaned. To further optimize this process, the City is developing a more prescriptive protocol where the catch basins in each street sweeping zone will be prioritized based on additional metrics including topography, land use, tree cover, and proximity to high-traffic bus routes. The City selected these proxies based on operational experience, focusing on metrics that predict high trash and debris levels. Another component of this optimization process will be to increase data collection to eventually extrapolate catch basin fill rates based on historical volumes of debris removed. The City will then prioritize

catch basins that are filling more rapidly and divert fewer resources to those that fill more slowly. The methodology for the fully optimized process will be included as an update to the SWMP.

- Number of catch basins inspected: The above reporting of 159 catch basins inspected only represents the number inspected thus far for the cleaning optimization plan (the City began measuring the depth of sediment in June 2019). All reported catch basins cleaned (3,452) have been inspected for condition and presence or absence of hoods during cleaning.
- Article V of the City's Wastewater and Stormwater Drainage Use Regulations was updated to add language that provides for the basis for denying exemption of otherwise allowed non-stormwater discharges to the MS4 to ensure consistency with the 2016 MS4 Permit.
- In addition to the 23 Site Plan reviews reported under MCM4 above an additional 386 site plans were reviewed for smaller projects not covered under the MS4 Permit requirements.
- In addition to the 193 Erosion and Sediment Control inspection reported under MCM4 above an additional 190 inspections were performed for Erosion and Sediment Control for smaller projects not covered under the MS4 Permit requirements
- Snow and Ice Training (Bay State Roads): DPW sponsored nine (9) days of training from Bay State Roads on the safe and environmentally responsible snow and ice management. The eight days of training included 104 participants.
- This annual report is being signed by the City Engineer, an authorized representative. A copy of the Documentation for delegation of "Authorized Representative" will be provided with the annual report.

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

Yes, I agree ☒

- Complete system mapping Phase I
- Begin investigations of catchments associated with Problem Outfalls
- Develop or modify an ordinance or other regulatory mechanism for post-construction stormwater runoff from new development and redevelopment
- Establish and implement written procedures to require the submission of as-built drawings no later than two years after the completion of construction projects
- Develop, if not already developed, written operations and maintenance procedures
- Develop an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; review annually and update as necessary
- Establish a written program detailing the activities and procedures the permittee will implement so that the MS4 infrastructure is maintained in a timely manner
- Develop and implement a written SWPPP for maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- Enclose or cover storage piles of salt or piles containing salt used for deicing or other purposes
- Develop, if not already developed, written procedures for sweeping streets and municipal-owned lots
- Develop, if not already developed, written procedures for winter road maintenance including storage of salt and sand

- Develop, if not already developed, a schedule for catch basin cleaning
- Develop, if not already developed, a written procedure for stormwater treatment structure maintenance
- Develop a written catchment investigation procedure (*18 months*)

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 in the last 5 years
- 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

Provide any additional details on activities planned for permit year 2 below:

- Cambridge entered into a contract with CDM/SDE to assist with our IDDE catchment investigations.

Part V: Certification of Small MS4 Annual Report 2019

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:

Katherine F. Watkins

Title:

City Engineer

Signature:

Date:

09/30/19

*[Signatory may be a duly authorized
representative]*

Note: When prompted during signing, save the document under a new file name.

Annual Report Submission

Please submit the form electronically via email to both EPA and MassDEP by clicking on one of the links below or using the email addresses listed below. Please ensure that all required attachments are included in the email and not attached to this PDF.

EPA: stormwater.reports@epa.govMassDEP: frederick.civian@mass.gov

Paper Signature:

If you did not sign electronically above, you can print the signature page by clicking the button below.

[Print Signature Page](#)

Optional: If you did not sign electronically above, you may lock the form by clicking the "Lock Form" button below which will prompt you to save the locked version of the form. Save this locked version under a new file name.

[Lock Form](#)