

**Municipality/Organization:** Town of Brookline, MA

**EPA NPDES Permit Number:** MARNEC813

**MaDEP Transmittal Number:** W- 035336

**Annual Report Number  
& Reporting Period:** No. 14: March 2016-March 2017

## NPDES PII Small MS4 General Permit Annual Report

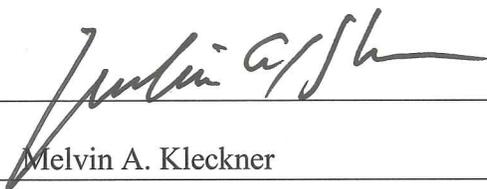
### Part I. General Information

**Contact Person:** Peter M. Ditto, P.E.      **Title:** Director of Engineering and Transportation

**Telephone #:** (617) 730-2138      **Email:** Peter\_Ditto@town.brookline.ma.us

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, 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.

**Signature:** 

**Printed Name:** Melvin A. Kleckner

**Title:** Town Administrator

**Date:** 4/13/17

**Part II.**

**II A. Self-Assessment**

The Town of Brookline has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions, except Minimum Control Measure (MCM) #3 Illicit Discharge Detection and Elimination (IDDE). Sources of bacterial contamination have been found in some of the Town drains. Currently, the Town is working on an EPA approved IDDE program to reduce sources of bacterial contamination in storm drains. Summary data on the IDDE program is presented in Parts IV and V of this report.

In general, the overall goal for the Town’s stormwater program is to improve the quality of water discharged from storm drains. The Town tracks improvements in water quality through stormwater sampling and inspections of various drains.

**Part III. Summary of Minimum Control Measures**

**1. Public Education and Outreach**

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)</b>	<b>Planned Activities – Permit Year 15</b>
<b>1A</b> Revised	Informational Brochures	DPW/Engineering	Distribute brochures Estimate the number of brochures handed out	Brochures placed at DPW facilities.	Continue to distribute brochures
<b>1B</b> Revised	Town Stormwater Website	DPW/Engineering, IT Dept, and Con Comm	Develop Website Start a counter on the website to track the number of viewers	Maintained Website.	Update Website as needed.
<b>1C</b> Revised	“Infoline”	DPW/Engineering	Set up “Infoline” Personnel have been assigned to handle these calls	Maintained “Infoline”	Continue to handle calls
<b>1D</b> Revised	Stormwater email account	DPW/Engineering	Website has an email account so residents may ask questions Log the number of emails.	Maintained Stormwater email account.	Maintain email account

<b>1E</b>	Posters/Videos in Schools	DPW/Engineering and School Dept.	Education material for schools and libraries	“Reining in the Storm” at the Public Library.	Update posters and videos as needed.
Revised			Track the number of times the video is checked out.		

**1a. Additions**

<b>1D</b>					
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**2. Public Involvement and Participation**

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)</b>	<b>Planned Activities – Permit Year 15</b>
<b>2A</b>	Local Advertisements	DPW/Engineering	Annual Public Service Announcements	handouts placed at Town Hall	Continue to Distribute handouts
Revised			Count the number of handouts distributed.		
<b>2B</b>	Local Clean-ups	DPW, Con Comm, and local groups	Conduct Annual clean-ups around water resource areas.	DPW, Con Comm, and Local groups conducted annual clean-ups around Muddy River, Halls Pond, and other water resource areas.	Continue annual clean-ups.
Revised			Track the amount of materials cleaned-up (ex. Bags of trash).		
<b>2C</b>	Community “Hotline”	DPW/Engineering	Create “Hotline”	“Hotline” maintained by DPW/Engineering.	Continue to Maintain “Hotline”
Revised			Personnel have been assigned to handle these calls		
<b>2D</b>	Storm Drain Stenciling Program	DPW/Parks and Con Comm	Maintain Storm Drain Stenciling Program	Conducted annual stenciling	Continue stenciling program
Revised			Track number of basins stenciled.		

**2a. Additions**

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### 3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 15
3A Revised	Storm Drain System Map	DPW/Engineering and GIS dept.	Maps have been created	Updated maps	Continue to update GIS maps as needed based on changes and drain system.
3B Revised	Illicit Discharge Detection and Elimination (IDDE) Program	DPW/Engineering and Water and Sewer Division	Town has had an aggressive IDDE program for years Monitor improvements in water quality	Continued to maintain an aggressive IDDE Program. Located and removed 2 Illicit discharges.	Continue to maintain an aggressive IDDE Program.
3C Revised	IDDE Ordinance	DPW/Engineering	Create By-law	Maintained and enforced Storm Water By-law	Continue to maintain and enforce Storm Water By-law.
3D Revised	IDDE “Hotline”	DPW/Engineering	Create “Hotline” Personnel have been assigned to handle these calls	“Hotline” maintained by DPW/Engineering.	Continue to Maintain “Hotline” and email account
3E Revised	Revise Sewer and Drain Use Regulations	DPW/Engineering	Revise and Adopt new regulations	DPW/Engineering in the process of revising Sewer and Drain Use Regulations.	Regulate Sewer and Drain use and work with contractors and public to eliminate non-storm water discharges
Revised					

#### 3a. Additions

3F	Comprehensive IDDE Plan	DPW/Engineering	Monitor improvements in water quality	Implement Plan	Continue to implement plan
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#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 15
4A	Site Runoff Control (Erosion and Sediment Control ESC By-law)	DPW/Engineering	Create ESC By-law	Maintained and enforced ESC component of Storm Water By-law.	Continue to maintain and enforce Storm Water By-law.
Revised					
4B	ESC Plan Review	DPW/Engineering	Conduct Plan review after adoption of Storm Water By-law	DPW/Engineering reviewed and approved 62 plans for construction projects	Continue ESC plan review.
Revised			Track number of plans reviewed.		
4C	Construction Inspection	DPW/Engineering	Conduct Inspections	DPW/Engineering inspected 62 construction sites	Continue Construction Site Inspections.
Revised			Track number of inspections.		
4D	“Hotline” for non-compliant construction sites	DPW/Engineering	Create “Hotline”	“Hotline” maintained by DPW/Engineering.	Continue to Maintain “Hotline”
Revised			Personnel have been assigned to handle these calls		
Revised					

#### 4a. Deletions

4E	Creation of contractors BMP handbook for construction activities	DPW/Engineering	Did not create handbook. Information available instead on website		
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## 5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 15
5A Revised	Post Construction Control By-law	DPW/Engineering	Create By-law	Implemented Post Construction Controls as part of Storm Water By-law	Continue to maintain and enforce Storm Water By-law.
5B Revised	Plan Review	DPW/Engineering and Building Dept.	Conduct Plan Review  Track number of plans reviewed.	Coordinated with Building and Planning Department to ensure plan review on all projects. Review 62 plans	Continue Plan Review Process
5C Revised	O&M of Runoff Control Structures/Practices	DPW/Engineering	Incorporate into all plans of Storm Water Management Structures and Practices  Track number of sites with O&M practices.	Worked with developers, contractors, engineers, and architects to include O&M into plans where applicable. Most of the 62 sites incorporated O&M practices.	Continue to ensure O&M of Storm Water Structures and Practices.
5D Revised	Inspection of Runoff Control Structures/Practices	DPW/Engineering	Conduct Inspections  Track number of inspections.	Conducted 62 inspections	Continue inspections.
Revised					
Revised					

### 5a. Additions

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## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 15
6A Revised	DPW Employee Training	DPW/Engineering	Conduct Annual Training Track education with a questionnaire.	Met with various Division Personnel (Highway/Sanitation, Water/Sewer, and Parks) to discuss Storm Water issues related to municipal operations.	Continue DPW personnel training and education.
6B Revised	Municipal Maintenance Activities	DPW/Engineering	Conduct Annual Inspection and review operation practices Log inspections and monitor progress on O&M practices	Conducted inspections at DPW facilities. (see Part IV for summary)	Continue inspections at DPW facilities
6C Revised	Household Hazardous Waste Collection Program	DPW	Conduct HHP day Track Waste Recovered, recycled, and disposed.	Collected household hazardous Products. See Part V for tracking summary.	Continue to maintain waste collection program

### 6a. Additions

6D	Street Sweeping Program	DPW/Highway	Track tons of sweepings collected.	Conducted Street Sweeping. Documented material collected, transported and disposed (See Part V O&M Section).	Continue Street Sweeping Program
6E	Catch Basin Cleaning Program	DPW/Water and Sewer/Engineering	Track tons cleanings collected.	Cleaned catch basins (See Part V O&M Section).	Continue Catch Basin Cleaning Program.

**7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>**

The Town discharges in to the Muddy River which flows into the Charles River. The Muddy River has been listed as impaired by pathogens, while the Charles River has been listed for both pathogens and phosphorous. Both sources can be attributed to polluted stormwater discharges. Below is summary of actions to reduce the amount of pathogens and phosphorous discharged to the Muddy and Charles Rivers.

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)</b>	<b>Planned Activities – Permit Year 15</b>
7A	Reduce Pathogens in stormwater discharges	DPW/Engineering	Track the number of cross-connections removed and measure improvements in stormwater sampling results	Implemented measures to reduce pathogens in stormwater discharges to Muddy and Charles Rivers (This work is already a part of the Towns IDDE program).	Continue to implement pathogen reduction measures
Revised					
7B	Reduce Phosphorous in stormwater discharges	DPW/Engineering	Track the number of construction sites inspected and installation of stormwater structural BMPs and maintenance of non-structural BMP programs	Implemented measures to reduce phosphorous in stormwater discharges (This work is regulated under the stormwater by-law through construction site inspections and onsite retention/filtration of runoff through new site development). Other reduction measures include non-structural BMPs like street sweeping and catch basin cleaning.	Continue to implement phosphorous reduction measures
Revised					
Revised					
Revised					

**7a. Additions**


## **7b. WLA Assessment**

The Town continues to implement BMPs to reduce the amount of pathogens and phosphorous in stormwater discharges. This is accomplished through an aggressive IDDE program (see Part V for GPD of wastewater removed from the storm drain system), construction site/new development regulations, installation of structural BMPs (onsite retention, detention, and filtration devices) where practical, and ongoing maintenance and funding of non-structural BMP programs like street sweeping and catch basin cleaning (see Part V of the report for Tons removed from the storm drain system).

## **Part IV. Summary of Information Collected and Analyzed**

The following is a summary of information collected and analyzed for Permit Year 14:

### **Drainage System**

- Continued to work aggressively on the Comprehensive IDDE plan. During this permit year, the Town removed 2 cross-connections and is in the process of conducting corrective actions throughout the drainage system. A total of 51 cross-connections with an estimated 14,410 GPD of wastewater flows have been removed from the drainage system from April 2005 to March 2017,
- continued to fund and maintain non-structural BMPs like street sweeping and catch basin cleaning programs (see Part V for tons removed),
- continued to work with Boston Water and Sewer Commission to address pollution issues at inter-municipal connections,
- and regulated approximately 62 sites from plan development through construction. Each site implemented erosion control practices during construction and installation of structural BMPs like onsite retention/detention/filtration of stormwater for post-construction.

### **Pollution Sources**

- Bacterial Contamination is the primary source of pollution in the drainage system. The Town has been following an aggressive Illicit Discharge Detection and Elimination (IDDE) Plan to locate and remove these wastewater flows.
- Small construction sites, illicit connections, and illegal discharges appear to be the main sources of pollution to the Town's drainage system. Inspections have helped to reduce the amount of sediment washing off construction sites.

### **Muddy River Flood Control, Water Quality, and Habitat Enhancement Project**

- The Muddy River Project, managed jointly by the Town of Brookline and City of Boston Parks Department, and the Massachusetts Department of Conservation and Recreation, involves improving flood storage, developing and implementing storm water management controls to improve water quality, and enhancing habitat areas along the riverway and associated water bodies.

Phase One of the project included the relocation of various impacted utilities, new culverts under Brookline Avenue, additional culverts under the Riverway, dredging of the Muddy River, as well as daylighting a section in front of the Landmark Center. This work has been completed. The ribbon cutting and dedication of this first phase of the project will take place in April 2017. The design of the dredging associated with the Flood Damage Reduction portion of the project is well underway.

### **Funding**

- Budget for Capital Improvement Projects (CIP) = approx. \$500,000 for Drain Improvements.
- Operations, Maintenance, and Management Costs (See Part V for breakdown)

**Part V. Program Outputs & Accomplishments (OPTIONAL)**

**Programmatic**

Storm water management position created/staffed – Town created and staffed Environmental Engineer and Civil Engineer	(y/n)	Y
Estimated Annual program budget/expenditures	(\$)	
Catch Basin Cleaning/Drain (Personnel, equipment, and maintenance)		\$160,000.00
Street Sweeping (Personnel, equipment, and maintenance)		\$450,000.00
DPW/Engineering (Program Management-Personnel and equipment)		\$130,000.00
Annual Cleaning of 2-Oil/Sediment/Water Separators – does not include installation (approx. \$120K/unit)		\$5,000.00
Household Hazardous Waste Collection, Transport, and Disposal		\$50,000.00
Est. Total Storm Water Management Program Expenditures		<b>\$800,000.00</b>

**Education, Involvement, and Training**

Estimated number of residents reached by education program(s)	(# or %)	10,000
Stormwater management committee established	(y/n)	N
Stream teams established or supported (6 different “Friends Groups” associated with waters resource areas in and around Brookline)	(# or y/n)	6
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	Y
Household Hazardous Waste Collection Days		
▪ days sponsored	(#)	26
▪ community participation	(%)	1,425
▪ material collected (type of waste collected: Pesticides, Bug sprays, Cathode Ray Tubes (CRTs or TVs), Rodent poisons, Paint thinner, Urethanes, Oil or enamel based paints, Weed killers, Concentrated fertilizers, Cleaning solvents, Caustic cleaners, Photo chemicals, Antifreeze, Kerosene, Diesel oil, Aerosol cans, Waste motor oil, Auto and household batteries, Fluorescent bulbs, Tires, Propane tanks, fire extinguishers, and e-waste	(tons or gal)	11,380 gallons liquid waste
E-waste (tons)	45	
Tires	520	
Propane Tanks	226	
Automobile Batteries	63	
Fluorescent lamps (ft)	21,020	
Fire Extinguishers	75	
School curricula implemented (Note: video at public library)	(y/n)	See Note

## Legal/Regulatory

	In Place Prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X

## Mapping and Illicit Discharges

Outfall mapping complete	(%)	100
Estimated or actual number of outfalls	(#)	10
System-Wide mapping complete	(%)	100
Mapping method(s)		
▪ Paper/Mylar (Drainage System Range Plans)	(%)	95
▪ CADD (as-builts from new projects)	(%)	90
▪ GIS (Drain and sewer mains and service connections)	(%)	98
Outfalls inspected/screened (Visual Inspections of each outfall during dry and wet weather conditions – estimated observations per outfall = 5)	(# or %)	5
Illicit/Illegal discharges identified (found under IDDE plan)	(#)	2
Illicit/Illegal connections/discharges located	(#) (est. gpd)	2
% of population on sewer	(%)	99.9
Number of houses with septic systems	(#)	29

## Construction

Estimated Number of construction starts (>1-acre)	(#)	3
Estimated percentage of construction starts adequately regulated for erosion and sediment control (Sites regulated by new Town by-law)	(%)	95
site inspections (multiple visits per site)	(# or %)	62 sites
Tickets/Stop work orders issued	(# or %)	1
Fines collected	(# and \$)	0
Estimated Complaints/concerns received from public	(#)	10

## Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control (Note: Sites currently under construction)	(%)	95
Site inspections completed	(# or %)	62
Estimated volume of stormwater recharged (Note: No info – difficult to estimate)	(gpy)	

## Operations and Maintenance

Average frequency of catch basin inspection and/or cleaning (non-commercial/non-arterial streets)	(times/yr)	1/yr
Average frequency of catch basin inspection and/or cleaning (commercial/arterial or other critical streets)	(times/yr)	2/yr
Total number of structures cleaned (Approximate)	(#)	1,400
Storm drain cleaned (Note: Drain lines are cleaned as needed)	(LF or mi.)	See Note
Qty. of screenings/debris removed from storm sewer infrastructure Catch Basin Cleanings tons disposed	(lbs. or tons)	1,469 tons
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.) Currently used as daily cover at in state Landfill.		Landfill
Est. Cost of catch basin cleanings disposal (\$22/ton)	(\$)	\$32,400.00

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	Once a week
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	Every Night
Qty. of sand/debris sweeping disposed (Note: Approximately 10,300 lane miles swept)	(lbs. or tons)	924 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) daily cover.	(location)	Landfill
Cost of sweepings disposal (\$18/Ton)	(\$)	\$16,650.00
Mechanical street sweepers purchased/leased (Own and operate)	(#)	3
Vacuum street sweepers specified in contracts	(y/n)	N

Reduction in application on public land of: (“N/A” = not used; “100%” = elimination)		
▪ Fertilizers (Note: Park Division uses approx. 9000 lbs/yr on athletic fields)	(lbs. or %)	0 (See Note)
▪ Herbicides	(lbs. or %)	N/A
▪ Pesticides	(lbs. or %)	N/A
Anti-/De-Icing products and ratios (Note: An estimated 6,074 tons of salt (NaCl) and 72 tons of sand mix were applied during the winter season. Fifteen trucks conduct the de-icing operations.	% NaCl % CaCl <sub>2</sub> % MgCl <sub>2</sub> % CMA % Kac % KCl % Sand	See Note
Pre-wetting techniques utilized	(y/n)	N

Manual control spreaders used	(y/n)	Y
Automatic or Zero-velocity spreaders used	(y/n)	Y
Estimated net reduction in typical year salt application	(lbs. or %)	0
Salt pile(s) covered in storage shed(s)	(y/n)	Y
Storage shed(s) in design or under construction (Note: Bins constructed at DPW Operations area)	(y/n)	See Note

**Part VI. Discussion of activities for the next reporting cycle**

The following is a discussion of activities planned for the next reporting cycle:

- Continue IDDE program,
- continue funding Storm Water Program management, maintenance, operations, and CIP,
- work on educating the general public and Town staff of storm water related issues,
- and continue to implement best management practices (drainage swales, onsite retention/detention, and other water quality improvement work) and other techniques like Low Impact Design (LID) where feasible on new developments, re-developments, and Town owned sites.
- File NOI for new MS4 permit.