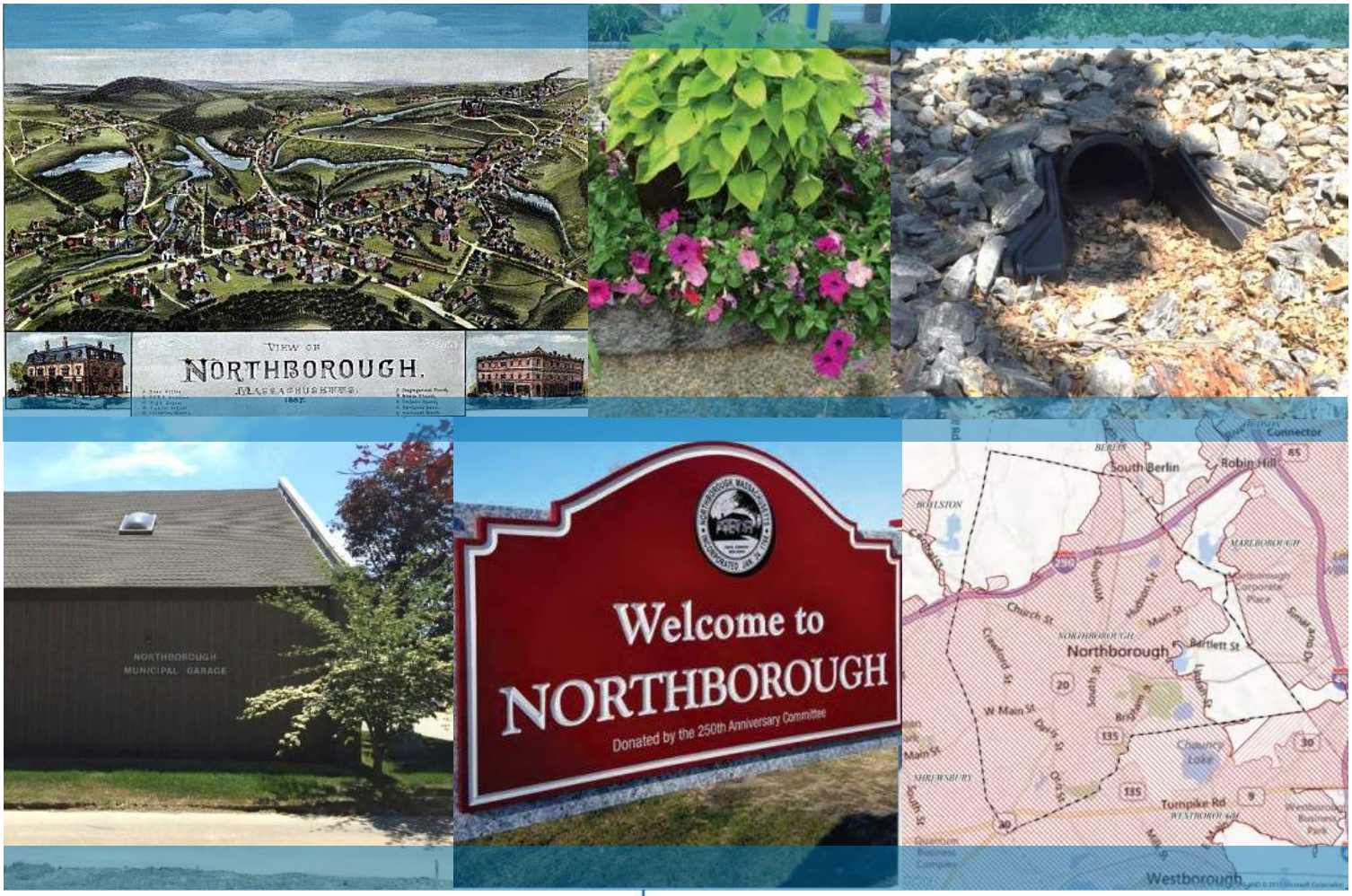


Tighe&Bond

Stormwater Management Plan

Prepared For:

Town of Northborough

September 2018

Updated October 2020

Table of Contents

List of Figures

List of Tables

Appendices

J:\N\N1182 Northborough, MA SWPP\02 SWMP\Report\Northborough SWMP.docx

Section 1
Introduction

Northborough is located in Worcester County in central Massachusetts, approximately 40 miles west of Boston. It is abutted by the Towns of Shrewsbury and Boylston to the west, the Town of Berlin to the north, the City of Marlborough to the west, and the Town of Westborough to the south. There are approximately 0.2 square miles of water within its 18.8 square mile footprint.

Figure 1-1 Location of Northborough, Massachusetts

According to the 2010 United States (U.S.) Census, Northborough is home to 14,155 residents in 5,110 households.

Protecting the quality of Northborough's water resources, including lakes, ponds, rivers, and groundwater supplies is a priority for the Town of Northborough. Pollutants from stormwater runoff are a contributing factor to the impairment of Northborough's waterbodies, including high nutrient levels and bacterial contamination. The Town has developed stormwater policy initiatives, provided education to its businesses and citizens, publicly discussed the issues related to stormwater runoff, and offered many opportunities for residents and businesses to pitch in with clean-up efforts.

1.1 Purpose of this Plan

In an on-going effort to minimize stormwater impacts within Northborough, the Town has developed this Stormwater Management Plan (SWMP). The SWMP is required by the U.S. Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts ("Small MS4 General Permit"). The SWMP describes and details the activities and measures that will be implemented by Northborough to meet the terms and conditions of the permit.

The SWMP will be updated and/or modified during the permit term as the Town's activities are modified, changed, or updated to meet permit conditions. Other requirements of the Small MS4 General Permit, such as a Notice of Intent (NOI), Authorization to Discharge letter, and documentation showing Endangered Species Act and Historic Properties eligibility criteria have been certified, and are located in the Appendices of this Plan.

1.2 Regulatory Requirements

1.2.1 Overview of EPA's NPDES MS4 Program

Through the NPDES program, the EPA nationally regulates the discharge of stormwater runoff that is transported into local water bodies via MS4s. EPA's MS4 stormwater program was enacted in two phases:

- Phase I, issued in 1990, requires *medium* and *large* cities or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges.
- Phase II, issued in 1999, requires regulated *small* MS4s in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges.

A **municipal separate storm sewer system (MS4)** is a conveyance or system of conveyances that is:

- owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.,
- designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches),
- not a combined sewer, and
- not part of a sewage treatment plant, or publicly owned treatment works (POTW).

In Massachusetts, the EPA Region 1 and the Massachusetts Department of Environmental Protection (MassDEP) jointly administer the municipal stormwater program. EPA and MassDEP originally authorized Northborough to discharge stormwater in 2003 under a *NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems*, known as the "2003 General Permit." Under this permit, the Town has developed and implemented a Stormwater Management Program to reduce the contamination of stormwater runoff.

The 2003 General Permit expired in May 2008, but remained in full force and effect until a replacement permit was issued on April 13, 2016. The reissued NPDES *General Permit for Stormwater Discharges from Small MS4 in Massachusetts* substantially increases stormwater management requirements and mandates specific timelines for compliance. On June 30, 2017, an EPA stay delayed the effective date of the General Permit until July 1, 2018. The MassDEP also adopted this delayed effective date.

This SWMP was developed to be consistent with the requirements of the 2016 Small MS4 General Permit for Massachusetts. Once implemented, the SWMP described herein will satisfy the requirements for compliance under the 2016 General Permit.

The new General Permit is intended to be more prescriptive than the 2003 General Permit, and to build upon the regulations already in place. The new General Permit substantially increases stormwater management requirements and mandates specific timelines for compliance. A few of the major differences for each minimum control measure are summarized in the following points:

- **Public Education and Outreach**: More specific messages required and prescriptive deadlines compared to the 2003 General Permit.

- **Public Involvement and Participation**: No substantial change from the 2003 General Permit.
- **Illicit Discharge Detection and Elimination (IDDE) Program**: Complete drainage system mapping, building on outfall mapping developed under the 2003 General Permit. Add interconnections to the outfall inventory. Delineate catchment areas and prioritize catchment investigations. Perform dry weather screening and sampling of high priority and low priority MS4 interconnections and outfall by the end of Year 3. Perform wet weather screening in the spring for the catchments that indicate the presence of one or more System Vulnerability Factors. Complete catchment investigations. For impaired waters without Total Maximum Daily Loads (TMDLs), implement a multi-step approach to address the discharges including BMPs, source identification, and an evaluation of retrofit feasibility.
- **Construction Site Stormwater Runoff Control**: If it does not already exist, add inspection and enforcement to the site plan review procedure.
- **Stormwater Management in New Development and Redevelopment**: For new development, retain the first 1 inch of runoff from all impervious surfaces on site, or provide pollutant removal with a BMP. For redevelopment, retain the first 0.80 inches of runoff from all impervious surfaces on site or provide pollutant removal with a BMP. Offsite mitigation may be used for redevelopment projects. Evaluate local code for consistency with smart growth principles and green infrastructure.
- **Good Housekeeping and Pollution Prevention**: Develop a program to repair and rehabilitate the MS4 infrastructure. Sweep/clean municipal streets once in the spring. Include all activities that occur at a municipal facility and potential pollutants associated with each activity in the stormwater pollution prevention plan (SWPPP) for the facility.

1.3 Summary of Northborough's Stormwater Management Program under the 2003 Small MS4 General Permit

The Town of Northborough meets EPA's regulatory threshold for Phase II of the MS4 program, and therefore is required to be covered under a NPDES permit for its stormwater discharges from the MS4 in its Urbanized Area. The Town of Northborough is charged by the EPA with operating and maintaining its MS4 to manage stormwater runoff, as well as to protect public health and safety, preserve environmental resources, and safeguard town character.

Urbanized Areas (also known as "regulated areas") are defined by the latest U.S. decennial census. On March 26, 2012, the Census Bureau published the final listing of urbanized areas for the 2010 census. An urbanized area encompasses a densely settled territory that consists of core census block groups or blocks that have a population of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile or are included to link outlying densely settled territory

with a densely settled urban core.[1] According to EPA Region 1, the area covered by either the 2000 census or the 2010 census are regulated by EPA under the MS4 program. Therefore, most of Northborough is regulated, as seen in Figure 1-2, and the SWMP must be implemented within the urbanized areas of Town.[2]

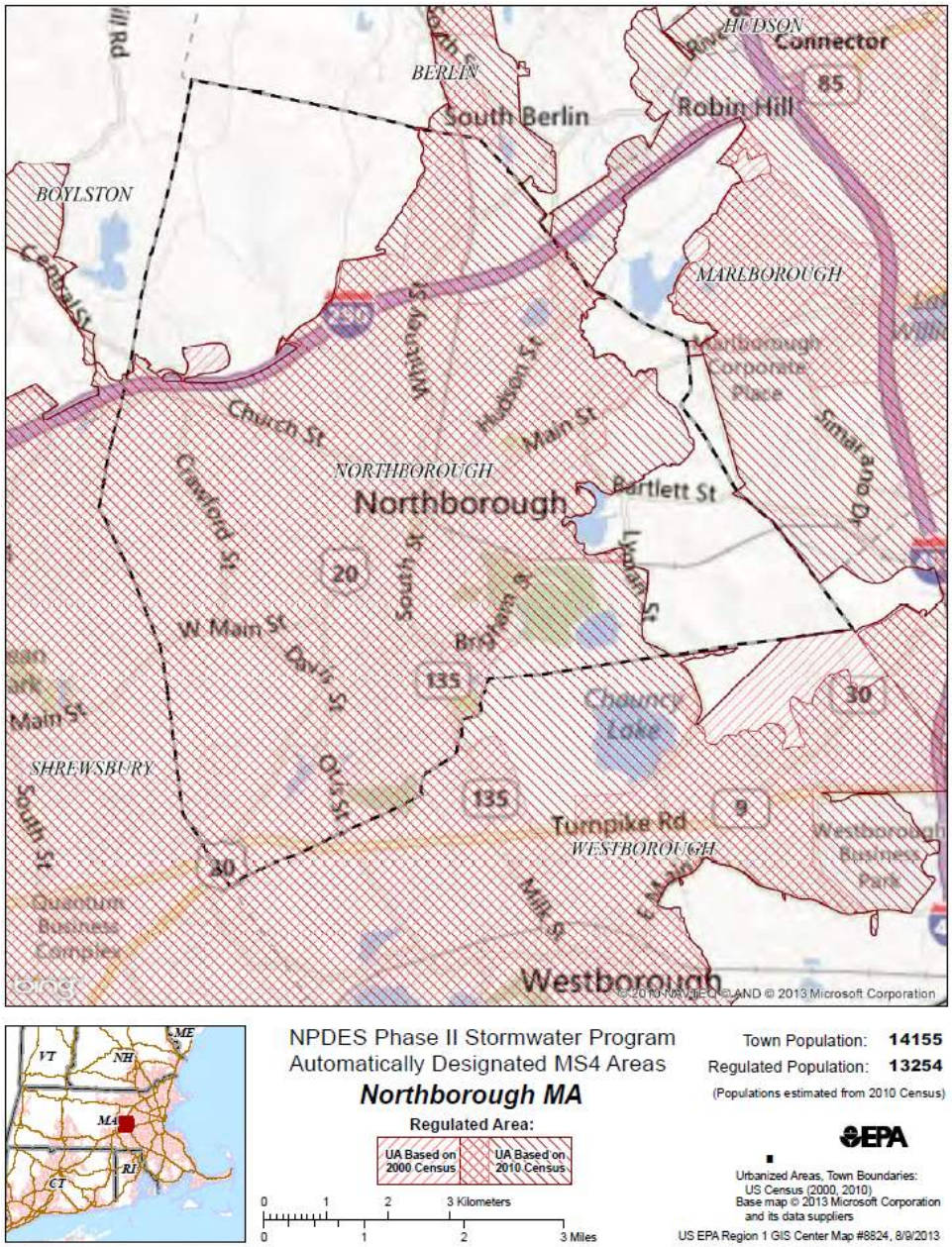


Figure 1-2 Town of Northborough's Urbanized Area based on 2000 and 2010 census

[1] U.S. EPA. *Fact Sheet: Draft General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts.* September 2014. For a complete definition of Urbanized Area see Federal Register, August 24, 2011. Vol. 76 No. 164 p. 53030. URL: http://www2.census.gov/geo/pdfs/reference/fedreg/fedregv76n164.pdf.

[2] U.S. EPA, 2014.

Northborough's stormwater management program is managed within the Department of Public Works (DPW). Currently, stormwater management tasks are carried out by various Town departments and volunteer boards, including the DPW, Engineering Department, GIS Department, Planning Department, and Planning Board.

The Town of Northborough has achieved nearly all of the measurable goals for the BMPs selected in the 2003 Notice of Intent and those added in subsequent years to reflect unplanned stormwater activities by the Town. The following paragraphs include brief descriptions of current practices the Town undertakes as part of its Stormwater Management Program.

1.3.1 MCM 1 - Public Education and Outreach

The Town has been able to provide a multi-media public education program related to nonpoint source pollution and stormwater management targeted primarily at a residential audience but including information relevant to developers, businesses, and institutions. The Town has achieved this by distributing educational and outreach materials at community events (i.e., Earth Day Recycling) and at many Town buildings, airing stormwater messages on local cable channels, incorporating educational programs into the local school curriculum, and publishing SWMP resources and accomplishments on the Town's webpage.

1.3.2 MCM 2 – Public Involvement and Participation

Notice of public meetings complies with State and Local public meeting notice requirements and there are opportunities for residents of all ages to participate in Northborough's stormwater program and overall environmental stewardship. This includes a poster display at the Town Hall, a Household Hazardous Waste Collection event, an upcycling/recycling event, and a Spring Stream Cleanup.

1.3.3 MCM 3 – Illicit Discharge and Detection Elimination

In 2008 Northborough adopted the *Illicit Discharges to the Municipal Storm Drain System* Bylaw, which regulates illicit discharges and illegal connections to the MS4. The Highway Department serves as the enforcement agency and has developed a spill response plan to handle and track spills and an online reporting form for suspected illegal discharges. The Public Works, Engineering, and Planning Departments also receive calls regarding IDDE.

Northborough has satisfied the mapping requirements of the 2003 General Permit and has begun working towards the requirements in the 2016 Small MS4 General Permit.

Town staff have been trained on illicit discharges and stormwater outfall investigations and sampling as well as mobile data collection using the Collector Application. Town staff respond to calls related to solid waste dumping and respond as necessary to address the issue.

1.3.4 MCM 4 – Construction Site Stormwater Runoff Control and MCM 5 – Post-Construction Stormwater Management

The majority of projects in Northborough that disturb one acre or greater alone or as part of a common plan of development are regulated under *Wetlands Bylaw* and regulations, *Subdivision Regulations*, or Site Plan Approval or Special Permits under the *Zoning Bylaw*. For the instances when a project does not require one of these local permits (such as Approval Not Required for single-family construction outside of Wetlands jurisdiction), two

additional local laws regulate construction site runoff and post-construction stormwater management. The Earthwork Bylaw, administered by the Earthwork Board, states that "No person, firm or corporation shall remove or import in excess of one hundred (100) cubic yards of soil, loam, sand, gravel, stone or other earth material from or to any land not in public use first obtaining a permit therefor from the earthwork board." In April 2009, Northborough amended the *Zoning Bylaw* with Section 7-09-010 *Land clearing and grading*, which requires Site Plan Approval for "any clearing or grading of more than 20,000 sq. ft. of land, or in increments such that the total land area of abutting property within the control of any person graded in a twelve (12) month period will exceed 20,000 sq. ft." This section of the Zoning Bylaw includes provisions for proper erosion and sediment control during construction, final stabilization after construction, and inspections and monitoring. The Town also manages construction solid waste by sending out permits to garbage haulers to require dumpster registrations.

1.3.5 MCM 6 – Pollution Prevention and Good Housekeeping

The Town implements Good Housekeeping Standard Operating Procedures and employee training for numerous actions to reduce pollutant runoff from municipal operations, including catch basin cleaning, street sweeping, staff training, storing oil and hazardous materials properly, covering winter deicing materials, vehicle washing and maintenance, park and landscape maintenance, culverts and outfall cleaning, informal site visits to examine practices at existing facilities, follow-up facility visits, and repairs and improvement to the storm drain system.

1.3.6 Additional Permit Requirements

Groundwater Recharge and Infiltration: Through implementation of the Wetlands Bylaw and Regulations and Zoning Bylaws the Town evaluates site conditions relative to stormwater infiltration. Additionally, the Town of Northborough Zoning Bylaw includes infiltration design requirements in the Groundwater Protection Overlay District which promote surface infiltration and require artificial recharge when lot impervious exceeds specific percentages.

Public Drinking Water Supply Requirements: The Town of Northborough Zoning Bylaw Groundwater Protection Overlay District ensures adequate drinking water quality and quantity, preserves and protects drinking water supplies, conserves natural resources, and prevents contamination of the environment. The Town considers water supply sources and protection areas a priority for stormwater management, particularly IDDE activities.

Record Keeping: The Town of Northborough maintains stormwater management program records that are organized by year and are stored in both paper and digital format.

Water Quality Impaired Waters and Total Maximum Daily Load (TMDL) Allocations: Northborough's stormwater program is addressing many of the current requirements for discharges to impaired waterbodies. Through implementation of its current stormwater program, the Town is addressing the discharge of the pollutants of concern.

1.3.7 Building on 2003 BMPs

According to Section 1.10.b of the 2016 General Permit, Northborough must modify or update the BMPs being implemented under the 2003 General Permit to meet the terms and conditions of part 2.3 of the new General Permit. Appendix B includes a list of BMPs completed under the 2003 Small MS4 General Permit and BMPs included in the Notice of

Intent and SWMP which comply with the 2016 Small MS4 General Permit. This list identifies how the intent of each 2003 BMP is being met under the 2016 BMPs (further description of 2016 BMPs is included in Section 3 of this SWMP).

1.4 General Eligibility Determination

Section 1.2.1 of the Small MS4 General Permit authorizes the discharge of stormwater from small MS4s if the MS4 is determined to meet general eligibility criteria:

- *Small MS4 within the Commonwealth of Massachusetts*

  The Town of Northborough is located within Worcester County, Massachusetts.

- *Not a large or medium MS4 as defined in 40 CFR 122.26(b)(4) or (7)*

  The population of Northborough is 14,155 according to the 2010 Census, the MS4 is not within a designated County, and the Town has not been designated by the Director as part of a large or medium MS4.

- *Located either fully or partially within an urbanized area as determined by the 2010 Census or Located in a geographic area designated by EPA as requiring a permit*

  Figure 1-2 shows the Regulated MS4 Areas for the Town of Northborough, based on 2000 and 2010 census listings. A large portion of Northborough is designated as an urbanized area.

1.5 Special Eligibility Determinations

1.5.1 Endangered Species

On behalf of the Town of Northborough, Tighe & Bond completed the National Endangered Species Eligibility Determination screening process in accordance with Part 1.9.1 and Appendix C of the Small MS4 General Permit, and determined that the Town of Northborough meets **Criterion C**, where it has been determined that the Town's stormwater discharges and discharge related activities will have "no affect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Refer to Appendix C of the SWMP for supporting information, including the USFWS Official Species List for the project area and the Endangered Species Act Certification.

1.5.2 Historic Properties

On behalf of the Town of Northborough, Tighe & Bond completed the National Historic Preservation Act Eligibility Determination screening process in accordance with Part 1.9.2 and Appendix D of the Small MS4 General Permit, and determined that the Town of Northborough meets **Criterion A**, as the discharges do not have the potential to cause effects on historic properties. Please refer to Appendix D of the SWMP for supporting information, including a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures in the Town of Northborough's regulated area downloaded from the Massachusetts Cultural Resource Information System (MACRIS).

1.6 Authorization for Northborough to Discharge Stormwater

A NOI must be submitted within 90 days of the effective date of the permit. A copy of the NOI is included in Appendix A. Documentation of the Town of Northborough's Authorization to Discharge by EPA will also be provided in Appendix A once issued by EPA. This written SWMP must be finalized within one (1) year of the effective date of the permit.

Section 2
Watershed Resources

2.1 Watershed Inventory

The Town of Northborough, Massachusetts is located entirely within the Sudbury-Assabet-Concord (SuAsCo) Watershed, as shown in Figure 2-1. This watershed is made up of three major rivers and a network of tributaries which drain into the Merrimack River, as shown in Figure 2-2.

The SuAsCo Watershed encompasses most of central Massachusetts and extends from the town of Hopkinton to the City of Lowell. The watershed is bordered by the Blackstone River and Nashua River Watersheds to the west; the Charles River and Shawsheen River Watersheds to the east; and the Merrimack River Watershed to the north.

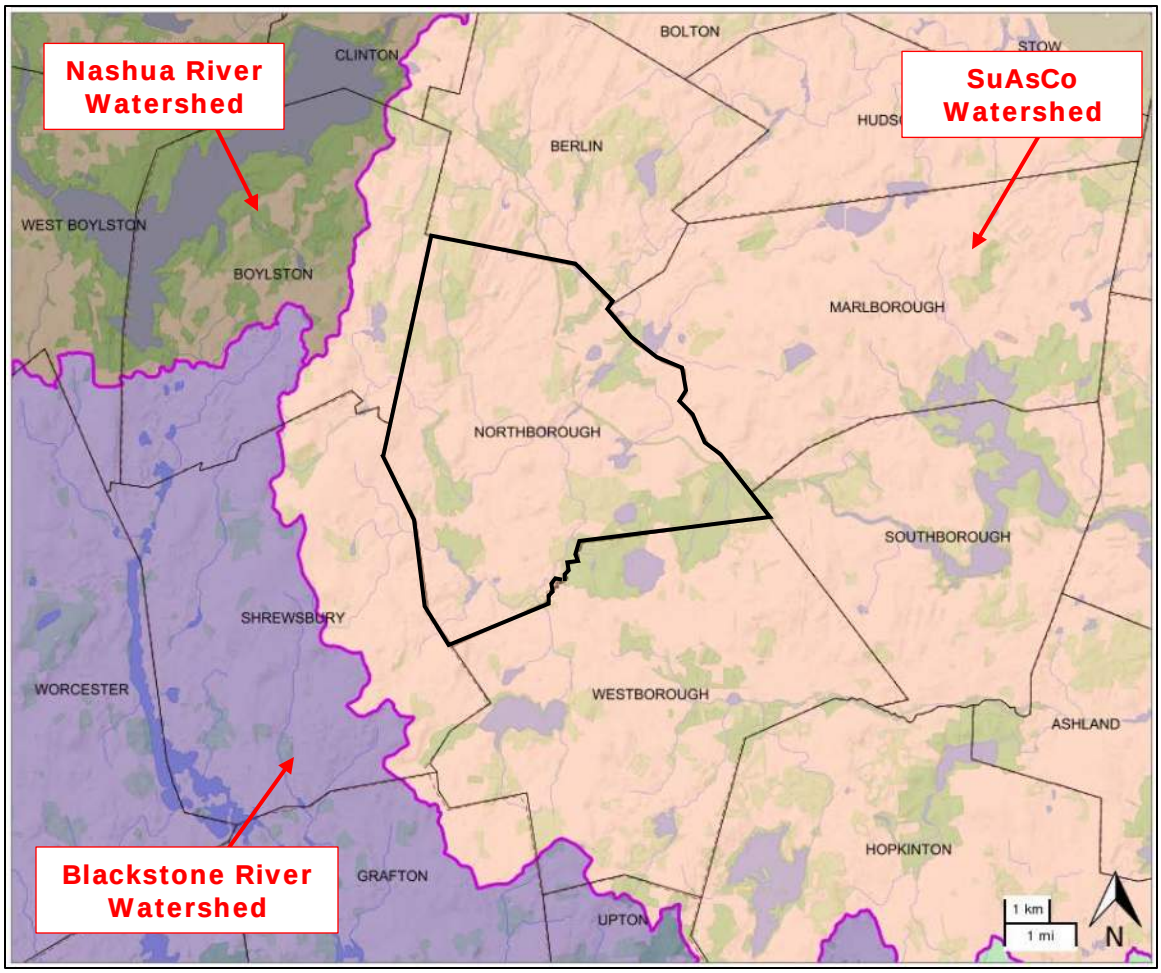


Figure 2-1 Northborough is in the SuAsCo Watershed[3]

[3] Created using the MassGIS OLIVER online mapping tool.

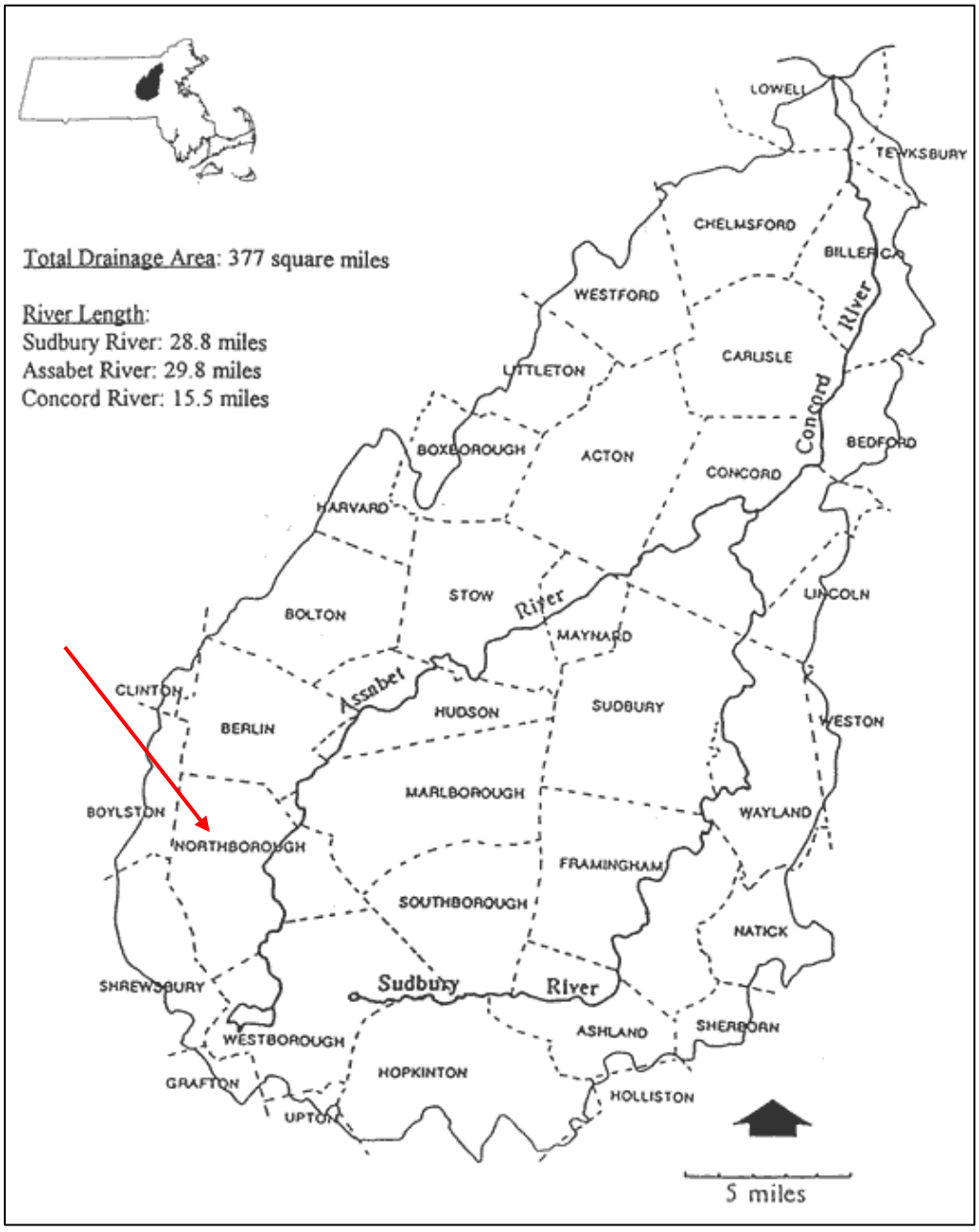


Figure 2-2 Rivers of the SuAsCo Watershed[4]

[4] Source: SuAsCo Watershed Community Council website: http://suasco.org/watershed-3/suasco-towns/

Table 2-1 identifies the natural drainage basins within the Town of Northborough for waterbodies that are included in the 2014 Integrated List of Waters (see discussion in Section 2.2 for additional information). Note that there are additional waterbodies within Town that are not included in the Integrated List. The NOI includes a more comprehensive list of the waterbodies that receive stormwater discharges from the MS4 and excludes waters where stormwater does not directly discharge.

Table 2-1
Natural Drainage Basins within Northborough

Major Basin	Main Stem Basin
SuAsCo Watershed	MA82B-18 – Cold Harbor Brook
	MA82B-20 – Hop Brook
	MA82099 – Smith Pond
	MA82100 – Solomon Pond
	MA82007 – Bartlett Pond
	MA82070 – Little Chauncy Pond
	MA82B-02 – Assabet River
	MA82B-03 – Assabet River

To meet the requirements of the Clean Water Act (CWA) Section 303(d), Massachusetts must assess and categorize surface waterbodies for attainment of designated uses (such as habitat for aquatic wildlife, aquatic wildlife consumption, and primary and secondary recreation), as well as identify any waterbodies that are not expected to meet surface water quality standards after implementation of controls. These sources are prioritized for establishing TMDLs for use in permit setting. Massachusetts meets the CWA reporting requirements through the development of an Integrated List of Waters, in which waters in the Commonwealth are categorized for attainment of designated uses. The Integrated List assigns each waterbody or waterway with one of five categories:

- **Category 1**: waters that are unimpaired and not threatened for all designated uses
- **Category 2**: waters that are unimpaired for some uses and not assessed for others
- **Category 3**: waters with insufficient information to make assessments for any uses
- **Category 4a**: waters with a completed TMDL
- **Category 4c**: waters that are impaired or threatened for one or more uses, but not by a pollutant and therefore not requiring the calculation of a TMDL
- **Category 5**: waters that are impaired or threatened for one or more uses and requiring a TMDL

Waterbodies classified as Category 4a (waterbodies with a TMDL) and Category 5 (“water quality limited” waterbodies) do not meet CWA designated uses, and stormwater pollutants of concern will need to be addressed per General Permit requirements.

Water quality within the SuAsCo Watershed was assessed by the Massachusetts Department of Environmental Protection, Division of Watershed Management in 2001.[6] See the applicable MassDEP report for further information.

2.2.1 2014 Integrated List of Waters

As of the date of this SWMP, Massachusetts waters categorized as impaired surface waters were identified in the Final Massachusetts Year 2014 Integrated List of Waters.[7] Waterbodies identified on Integrated List within Northborough are listed in Table 2-2.

Table 2-2
Summary of 2014 Integrated List of Waters - Status of Northborough's Receiving Waters

Category 5 Waters: waters requiring a TMDL		
Indicator contributing to impairment:	Assabet River MA82B-02	Assabet River MA82B-03
Aquatic Macroinvertebrate Bioassessments	X	
Debris/Floatables/Trash*		X
Dissolved Oxygen	X	
Excess Algal Growth		X
Fecal Coliform	X	X
Non-Native Aquatic Plants*		X
Nutrient/Eutrophication Biological Indicators	X	
Taste and Odor		X
Total Phosphorus	X	X
Category 4c Waters: Impairment not caused by a pollutant – TMDL not required		
Impairment cause:	Bartlett Pond MA82007	Little Chauncy Pond MA82070
Eurasian Water Milfoil, Myriophyllum spicatum*	X	
Non-Native Aquatic Plants*	X	X
Category 3 Waters: no uses assessed		
Smith Pond MA82099	Solomon Pond MA82100	
Category 2 Waters: attaining some uses; other uses not assessed		
Uses attained:	Cold Harbor Brook MA82B-18	Hop Brook MA82B-20
Aesthetic	X	X
Fish, other Aquatic Life and Wildlife	X	X

*TMDL not required (Non-pollutant)

[6] MassDEP, Division of Watershed Management, "SuAsCo Watershed 2001 Water Quality Assessment Report".
[7] MassDEP, Bureau of Water Resources "Final Massachusetts Year 2014 Integrated List of Waters". December 2015. Accessed online June 2018 at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf.

2.2.2 Pollutants of Concern

Based on the 2014 Integrated List of Waters, the pollutants of concern for Northborough's impaired waters related to stormwater include bacteria, nutrients, and dissolved oxygen concentrations. More information about these pollutants and their potential sources are included in Appendix E.

2.2.3 Applicable TMDLs

Two segments of one river within the Town of Northborough are identified as Category 5 waters (impaired and requiring a TMDL), as described in Section 2.2.1 of this SWMP. Currently, only one TMDL is established and final for Northborough. The *Assabet River Total Maximum Daily Load for Total Phosphorus* includes the two segments of the Assabet River within Northborough.

Section 3
Best Management Practices (BMPs) to Address Minimum Control Measures (MCMs)

This section includes descriptions of each BMP included in Northborough's NOI, an implementation plan, guidelines and resources, and lists of important documentation to best address the MCMs in the General Permit.

3.1 MCM 1: Public Education and Outreach

Objective: *The permittee shall implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that pollutants in stormwater are reduced.*

This section of the SWMP describes how to comply with the Public Education and Outreach requirements in General Permit Section 2.3.2.

3.1.1 MCM 1 BMPs from NOI

BMP ID	BMP Media / Category	BMP Description	Targeted Audience	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
1A	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including proper pet waste management, proper use of pesticides and fertilizers). Educational topics will include but are not limited to those in Part 2.3.2.d.i	Residents	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1B	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including proper lawn maintenance, parking lot sweeping). Educational topics will include but are not limited to those in Part 2.3.2.d.ii	Businesses, Institutions, and Commercial Facilities	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

BMP ID	BMP Media / Category	BMP Description	Targeted Audience	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
1C	Multi-media methods (including web and permit application attachment)	Education and outreach on stormwater management topics of significance in Northborough (including proper erosion and sedimentation control, permit requirements, and design standards). Educational topics will include but are not limited to those in Part 2.3.2.d.iii	Developers (Construction)	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1D	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including pollution prevention, illicit discharges, information about the Multi-Sector General Permit). Educational topics will include but are not limited to those in Part 2.3.2.d.iv	Industrial Facilities	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

3.1.2 MCM 1 Implementation Plan

BMP 1A Education and Outreach to Residents

Education and outreach goals for BMP 1A include:

- Increasing awareness of the impact of human activities on stormwater runoff and water quality;
- Changing residential behavior over time; and
- Reaching broad audiences with information that appeals to a diverse public.

Northborough will provide educational materials and general outreach to residents for stormwater management topics relevant to the Town. Topics may include:

- Information about Northborough's impaired waterbodies;
- Effects of outdoor activities such as lawn care on water quality (use of pesticides, herbicides, and fertilizers);
- Benefits of appropriate on-site infiltration of stormwater;
- Effects of automotive work and car washing on water quality;
- Proper disposal of swimming pool water; and
- Proper management of pet waste.

The Town will build upon the existing public education and outreach program to disseminate educational materials to residents via the internet, committee meetings, and/or public posting. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program.

BMP 1B Education and Outreach to Businesses, Institutions, and Commercial Facilities

Education and outreach goals for BMP 1B include:

- Increasing awareness of business practices that may contribute to stormwater pollution;
- Changing behavior over time; and
- Improving compliance with local code.

Northborough will provide educational materials and general outreach to businesses, institutions, and commercial facilities within Town for stormwater management topics relevant to Northborough. Topics may include:

- Information about Northborough's impaired waterbodies;
- Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
- Benefits of appropriate on-site infiltration of stormwater;
- Building maintenance (use of detergents);
- Minimizing the use of salt or other de-icing and anti-icing materials;

- Proper storage of salt or other de-icing/anti-icing materials (cover/prevent runoff to storm system and contamination to groundwater);
- Proper storage of materials (emphasize pollution prevention);
- Proper management of waste materials and dumpsters (cover and pollution prevention);
- Proper management of parking lot surfaces (sweeping);
- Proper car care activities (washing of vehicles and maintenance); and
- Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs (discharges must be dechlorinated and otherwise free from pollutants).

The Town will build upon the existing public education and outreach program to disseminate educational materials to businesses, institutions, and commercial facilities within Town via the internet, committee meetings, and/or public posting. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program.

BMP 1C Education and Outreach to Developers

Education and outreach goals for BMP 1C include:

- Increasing awareness of the impact of construction activities on stormwater runoff and water quality;
- Changing developer behavior over time; and
- Improving compliance with local code.

Northborough will provide educational materials and general outreach to developers for stormwater management topics relevant to Northborough. Topics may include:

- Information about Northborough's impaired waterbodies;
- Proper sediment and erosion control management practices;
- Information about Low Impact Development (LID) principles and technologies; and
- Information about EPA's construction general permit (CGP).

The Town will build upon the existing public education and outreach program to disseminate educational materials to developers via the internet, committee meetings, and/or public posting. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program.

BMP 1D Education and Outreach to Industrial Facilities

Education and outreach goals for BMP 1D include:

- Increasing awareness of industrial activities that may contribute to stormwater pollution;

- Changing behavior over time; and
- Improving compliance with local code.

Northborough will provide educational materials and general outreach to industrial facilities within Town for stormwater management topics relevant to Northborough. Topics may include:

- Information about Northborough's impaired waterbodies;
- Equipment inspection and maintenance;
- Proper storage of industrial materials (emphasize pollution prevention);
- Proper management and disposal of wastes;
- Proper management of dumpsters;
- Minimization of use of salt or other de-icing/anti-icing materials;
- Proper storage of salt or other de-icing/anti-icing materials (cover/prevent runoff to storm system and groundwater contamination);
- Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking;
- Proper maintenance of parking lot surfaces (sweeping); and
- Requirements for coverage under EPA's Multi-Sector General Permit (MSGP).

The Town will build upon the existing public education and outreach program to disseminate educational materials to industrial facilities within Town via the internet, committee meetings, and/or public posting. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program.

3.1.3 MCM 1 Implementation Schedule

Outreach Method	PY1	PY2	PY3	PY4	PY5
Social media	■	■	■	■	■
Signage and brochures	■	■	■	■	■
Targeted outreach	👥		👥		
Targeted outreach		🤝		🤝	
Targeted outreach	🚜		🚜		
Targeted outreach		♻		♻	

👥 Residents
🤝 Businesses, Institutions, and Commercial Facilities
🚜 Developers
♻ Industrial Facilities
■ All Audiences

3.1.4 Public Education and Outreach Goals and Progress

Per Section 2.3.2.e of the General Permit, the public education and outreach program shall provide focused messages for specific audiences and show evidence that progress toward the goals of the program have been achieved. The following methods will be used by the Town to evaluate the effectiveness of the educational messages and overall education program:

- Track changes in behavior for specific issues addressed with education throughout the permit term (e.g., issues with erosion/sediment control during construction, pet waste bags found in catch basins, etc.)

The above methods used to evaluate the effectiveness of the program, and any additional methods developed after the date of this SWMP, shall be tied to the defined goals of the program and the overall objective of **changes in behavior and knowledge**.

3.1.5 MCM 1 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the Public Education program.

EPA Public Education
https://cfpub.epa.gov/npstbx/

EPA Stormwater Management Program Resources – Public Education
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#peo

EPA Stormwater Education Toolkit (SET)
http://www.stormwater.ucf.edu/toolkit/

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#edu

MassDEP Public Education
https://www.mass.gov/guides/stormwater-outreach-materials-to-help-towns-comply-with-the-ms4-permit

Developing an Effective Stormwater Education and Outreach Program for Your Community
http://www.urbanwaterslearningnetwork.org/wp-content/uploads/2016/04/Manual-Stormwater-Education-and-Outreach_2014.pdf

Central Massachusetts Regional Stormwater Coalition
http://centralmastormwater.org/Pages/crsc_toolbox/documents

3.1.6 MCM 1 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 1. See Section 5 of this Plan for additional record keeping information.

- ☐ All educational materials provided to target audiences
- ☐ Distribution lists for target audiences
- ☐ Dates of distribution of educational materials
- ☐ Note educational goals and opinion on effectiveness based on results tracked; modify education and outreach program if necessary

3.2 MCM 2: Public Involvement and Participation

Objective: *The permittee shall provide opportunities to engage the public to participate in the review and implementation of the SWMP.*

This section of the SWMP describes how to comply with the Public Involvement and Participation requirements in General Permit Section 2.3.3.

3.2.1 MCM 2 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
2A	Public Review	SWMP review (Plan and reports available on web and public meetings)	Engineering	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	2018 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Northborough's stormwater program (including clean up events). Specific activities, schedule, and lead departments are included in the SWMP.	Engineering	Ongoing compliance	2018 (PY1)

3.2.2 MCM 2 Implementation Plan

BMP 2A Stormwater Management Plan Public Review

Northborough shall provide the public with an opportunity to review this Stormwater Management Plan prior to finalizing it, and with other opportunities to participate in the Town's Stormwater Program on an annual basis.

While the Engineering Department is the responsible party for this BMP, multiple Town Departments can help aid in successful implementation, as public participation in stormwater management initiatives often crosses Departments.

The draft SWMP and NOI were posted online and available for review for approximately one week to solicit input from the general public. They were also presented at a Town of Northborough Conservation Commission public meeting on September 10, 2018, which included discussion about the comments received. The SWMP and NOI were finalized after incorporating public feedback.

BMP 2B Public Participation in Stormwater Management Program

Public involvement and participation goals for BMP 2B include:

- Increasing public involvement in and knowledge of Northborough's stormwater program; and
- Improving water quality through local clean up and waste collection events.

Northborough shall continue to provide notice for public meetings per Massachusetts General Law requirements, including meetings pertaining to the Stormwater Management Program.

The Town shall continue to provide annual opportunities for public participation in the Program. These opportunities may include, but are not limited to:

- Hazardous waste drop off day;
- Annual upcycling/recycling day; and/or
- Spring stream clean up.

Appendix E includes a document with helpful tips for organizing and conducting volunteer clean-up events that Northborough may reference. The Town shall document all public participation activities in the Annual Reports, and documentation should seek to quantify results or impact to better evaluate the public involvement and participation program effectiveness.

3.2.3 MCM 2 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
2A Stormwater Management Plan Public Review	●	●	●	●	●
2B Public Participation in Stormwater Management Program	⟷	⟷	⟷	⟷	⟷

● = annual requirement

⟷ = ongoing requirement

3.2.4 MCM 2 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the Public Involvement program.

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#inv

EPA Evaluation of the Role of Public Outreach and Stakeholder Engagement in Stormwater Funding Decisions in New England: Lessons from Communities
https://www.epa.gov/sites/production/files/2015-09/documents/eval-sw-funding-new-england.pdf

Manchester Urban Ponds Restoration Program: Tips for Organizing and Conducting Volunteer Clean-up Events
Available in Appendix E of this SWMP

Massachusetts Open Meeting Law Guide
http://www.mass.gov/ago/docs/government/oml/oml-guide.pdf

3.2.5 MCM 2 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 2. See Section 5 of this Plan for additional record keeping information.

- ☐ Public meeting dates and topics when stormwater management-related topic is discussed
- ☐ Dates of public participation activities and quantification of participation (such as number of volunteers/participants, number of bags collected, etc.)

3.3 MCM 3: Illicit Discharge Detection and Elimination (IDDE) Program

Objective: *The permittee shall implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges.*

This section of the SWMP describes how to comply with the Illicit Discharge Detection and Elimination Program requirements in General Permit Section 2.3.4.

3.3.1 MCM 3 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
3A	IDDE Ordinance/Bylaw	Complete. Continue to enforce and update if necessary.	Planning	Track illicit discharges identified and removed.	2018 (PY1)
3B	SSO Inventory	Develop SSO inventory in accordance of permit conditions	DPW/Engineering	Complete within one (1) year of effective date of permit. Track # of SSOs identified and removed annually	2018 (PY1)
3C	Storm sewer system map	Complete. Improve map during IDDE Program implementation	DPW/Engineering/ GIS	Update map within two (2) years of effective date of permit and complete full system map 10 years after effective date of permit	2018 (PY1)
3D	Written IDDE program	Update written IDDE Plan as necessary	DPW/Engineering	Complete within one (1) year of the effective date of permit and update as required	2018 (PY1)
3E-1	Assessment and Priority Ranking of Outfalls & Interconnections	Outfall/ Interconnection Inventory and Initial Ranking as part of BMP 3D	DPW/Engineering	Complete within one (1) year of the effective date of permit and update as necessary	2018 (PY1)

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
3E-2	Assessment and Priority Ranking of Outfalls & Interconnections	Dry Weather Outfall Screening & Sampling in accordance with IDDE Plan and permit conditions	DPW/Engineering	Complete three (3) years after effective date of permit. Track # of illicit discharges identified & volume removed. Summarize screening/ sampling results.	2018 (PY1)
3E-3	Assessment and Priority Ranking of Outfalls & Interconnections	Catchment Investigations according to IDDE Program and permit conditions	DPW/Engineering	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track # of illicit discharges identified & volume removed. Summarize screening/sampling results.	2019 (PY2)
3F	Employee Training	Train employees on IDDE implementation	DPW/Engineering	Train annually. Track employees trained, training topic, date/time, and materials presented.	2018 (PY1)

3.3.2 MCM 3 Implementation Plan

BMP 3A IDDE Ordinance/Bylaw

The IDDE program shall include adequate legal authority to prohibit, investigate, and eliminate illicit discharges and implement enforcement procedures and actions. Northborough has met this requirement by adopting a bylaw entitled *Illicit Discharges to the Municipal Storm Drain System* in 2008. This bylaw prohibits illicit discharges to the Town's drainage system. The Department of Public Works serves as the enforcement agency for the bylaw.

BMP 3A is complete.

BMP 3B SSO Inventory

The Town must identify all known locations where sanitary sewer overflows (SSOs) have discharged to the municipal drainage system within the past five (5) years and create an inventory that includes the following information:

- Location, date, time, and volume of each occurrence;
- Whether the discharge entered surface water or the MS4;
- Description, indicating known or suspected cause(s); and

- Mitigation and corrective measures planned and completed.

This inventory must be kept up to date and appended to this SWMP. Each municipal Department can aid in the development and maintenance of the inventory by reporting instances of SSOs found during field work to the DPW.

BMP 3C Storm Sewer System Map

A comprehensive map of Northborough's drainage system has been developed, and the Town has met many of the requirements of this BMP. All known outfalls are mapped. Town staff should continue to update the map as necessary to reflect newly discovered information, corrections or modifications, improved connectivity, and progress made.

BMP 3C is ongoing.

BMP 3D Written IDDE Program

Northborough shall develop and implement a town-wide IDDE Plan within one (1) year of the effective date of the permit which will include procedures and timelines developed in accordance with the final General Permit. The Town should continue to update and modify the Plan on an as-needed basis.

BMP 3E-1 Outfall/Interconnection Inventory and Initial Ranking

The Town shall assess and priority rank each outfall within the MS4 within three (3) years of the effective date of the permit in terms of their potential to have illicit discharges and SSOs, and the related public health significance.

BMP 3E-2 Dry Weather Outfall/Interconnection Screening and Sampling

Field investigations must be completed during dry weather conditions to confirm whether any Low or High Priority outfalls have dry weather flow, which may be indicative of illicit connections/discharges. The initial catchment delineation and priority ranking must be updated by the end of Permit Year 3 based on the data gathered in the field. All data gathered during implementation of this BMP must be reported annually.

BMP 3E-2 is ongoing.

BMP 3E-3 Outfall/Interconnection Catchment Investigations

Each catchment associated with an outfall or interconnection within the MS4 must be investigated based on identified System Vulnerability Factors (i.e., the likelihood that illicit discharges/connections exist) in that particular area. For all catchments, key junction manholes shall be opened and inspected for evidence of illicit connections during dry weather conditions. For catchments with one or more SVF, wet weather monitoring must be completed. The Town will identify the number of outfall catchments in the MS4 that have been evaluated using the catchment investigation procedure developed under BMP 3D. All data gathered during implementation of this BMP must be reported annually.

At the conclusion of field work for this BMP, the outfall/interconnection inventory should be updated and reprioritized for ongoing screening once every five years.

BMP 3F Employee Training

Employees involved in the IDDE Program must be trained annually on the Program, including how to recognize illicit discharges and SSOs in accordance with the IDDE Plan.

3.3.3 MCM 3 Implementation Schedule

EPA's implementation timeline for the IDDE Program is available in Appendix E.

BMP	PY1	PY2	PY3	PY4	PY5
3A IDDE Ordinance/Bylaw	✓				
3B SSO Inventory	●	●	●	●	●
3C Storm Sewer System Map	⟷	● ⟷	⟷	⟷	⟷
3D Written IDDE Program	●				
3E-1 Outfall/Interconnection Inventory and Initial Ranking			●		
3E-2 Dry Weather Screening and Sampling	⟷	⟷	⟷		
3E-3 Catchment Investigations		⟷	⟷	⟷	⟷
3F Employee Training	●	●	●	●	●

✓ = BMP complete
● = annual requirement or year due
⟷ = ongoing requirement

3.3.4 MCM 3 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the IDDE program. The Town-specific procedures in the IDDE Plan were developed using the IDDE Guidance Manual and New England Source Tracking Protocol linked below.

Center for Watershed Protection Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments
https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

EPA Stormwater Management Program Resources – IDDE
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#idde

EPA New England Bacterial Source Tracking Protocol
https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#ill

Northborough *Illicit Discharges to the Municipal Storm Drain System* Bylaw
http://www.codepublishing.com/MA/Northborough/#!/Northborough04/Northborough0412.html

Central Massachusetts Regional Stormwater Collaborative
http://centralmastormwater.org/Pages/crsc_toolbox/IDDEresources

3.3.5 MCM 3 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 3. See Section 5 of this Plan for additional record keeping information.

- ☐ Log of phone calls and complaints received regarding suspected illicit connections and other storm drain issues, including dates and actions taken;
- ☐ SSO inventory (updated annually), including the number of illicit discharges/ connections identified and/or removed and the volume of sewage removed;
- ☐ Drainage system map;
- ☐ Data collected during dry and wet weather outfall/interconnection investigations, including the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening results, and results of all analyses (summarize on an annual basis and for the entire permit term);
- ☐ Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure;
- ☐ Presence or absence of System Vulnerability Factors for each catchment;
- ☐ Data collected during key junction manhole investigations;
- ☐ Inspection and maintenance records; and
- ☐ Frequency and type of employee training, including employees trained, training topic, date/time, and materials presented.

3.4 MCM 4: Construction Site Stormwater Runoff Control

Objective: *To minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the permittee's MS4.*

This section of the SWMP describes how to comply with the Construction Site Stormwater Runoff Control requirements in General Permit Section 2.3.5.

3.4.1 MCM 4 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
4A	Construction Bylaw and Regulations	Modify local bylaw and regulations, if necessary, to contain new MS4 provisions per section 2.3.5.	Planning	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
4B	Construction Policy and Procedures	Develop and implement written procedures for site inspections and enforcement procedures per section 2.3.5.	Planning	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)

3.4.2 MCM 4 Implementation Plan

Per the General Permit, Northborough must develop and implement the following items, which will be adopted as either Bylaw/regulation modifications or a new policy or procedure. Note that while Northborough can choose to implement these items Town-wide, they are only required for disturbances within the regulated area that are greater than or equal to one (1) acre or less than one (1) acre if that disturbance is part of a larger common plan of development or sale that would disturb one (1) or more acres.

- A regulatory mechanism that requires the use of sediment and erosion control practices at construction sites, as well as controls for other wastes on constructions sites such as demolition debris, litter, and sanitary wastes;
- Written procedures for site inspections and enforcement of sediment and erosion control measures, including the responsible party for site inspections and enforcement authority, due within one (1) year of the effective date of the permit;
- Requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site;
- Requirements for construction site operators within the MS4 jurisdiction to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes; and
- Written procedures for site plan review and inspection and enforcement, due within one (1) year of the effective date of the permit.

BMP 4A Construction Bylaw and Regulations

The Town will continue to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the municipal drainage system from construction activities, including use of sediment and erosion control practices, “that result in a land disturbance of greater than or equal to one acre within the regulated area.” Refer to Section 1.3.4 of this SWMP for a description of applicable local bylaws and regulations. The Town will review the existing code with respect to the 2016 General Permit and modify it if needed.

BMP 4B Construction Policy and Procedures

Northborough shall develop written policies and procedures for site plan review, site inspections, and enforcement of sediment and erosion control measures (per General

Permit Section 2.3.5.c). They will include procedures for tracking the number of site reviews, inspections, and enforcement actions.

3.4.3 MCM 4 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
4A Construction Bylaw and Regulations	●				
4B Construction Policy and Procedures	●				

● = year due

3.4.4 MCM 4 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the Construction program.

EPA Construction General Permit SWPPP template, including inspection forms
https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents

Massachusetts Stormwater Handbook
https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

EPA Stormwater Management Program Resources – Construction Site Runoff Control
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#csrc

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#constr

Northborough *Stormwater Management and Land Disturbance* Bylaw
http://www.town.northborough.ma.us/Pages/NorthboroughMA_Building/ZoningBylaw.pdf

Central Massachusetts Regional Stormwater Coalition SOP 5: Construction Site Inspection
http://www.centralmastormwater.org/Pages/crsc_toolbox/Construction%20Inspection%20SOP_FINAL.pdf

Central Massachusetts Regional Stormwater Coalition SOP 6: Erosion and Sedimentation Control
http://www.centralmastormwater.org/Pages/crsc_toolbox/Erosion%20and%20Sedimentation%20Control%20SOP_FINAL.pdf

3.4.5 MCM 4 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 4. See Section 5 of this Plan for additional record keeping information.

- ☐ Number of site reviews, inspections, and enforcement actions; and
- ☐ Modifications to Northborough's bylaws, regulations, policies, and/or procedures as necessary.

3.5 MCM 5: Post-Construction Stormwater Management

Objective: *Reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites.*

This section of the SWMP describes how to comply with the Stormwater Management in New Development and Redevelopment requirements in General Permit Section 2.3.6.

3.5.1 MCM 5 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
5A	Post-Construction Bylaw and Regulations	Modify local bylaw and regulations to contain new MS4 provisions per section 2.3.6.a.	Planning	Modify existing bylaw and/or regulations if necessary within two (2) years of permit effective date	2019 (PY2)
5B	Assess street and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Planning	Complete report no later than (4) years of permit effective date	2020 (PY3)

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
5C	Assess allowing green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning	Complete report no later than (4) years of permit effective date	2020 (PY3)
5D	Retrofit Feasibility Assessment	Conduct detailed inventory of Town-owned properties and rank for retrofit potential	DPW/ Engineering	Complete report no later than four (4) years of permit effective date. Beginning in year 5 keep running list of at least five (5) retrofit sites	2020 (PY3)

3.5.2 MCM 5 Implementation Plan

BMP 5A Post-Construction Bylaw and Regulations

The Town will continue to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the municipal drainage system from post-construction activities, including use of sediment and erosion control practices, "that result in a land disturbance of greater than or equal to one acre within the regulated area." Refer to Section 1.3.4 of this SWMP for a description of applicable local bylaws and regulations. The Town will review the existing code with respect to the 2016 General Permit and modify it if needed.

Additionally, the Town must have procedures in place to require the submission of as-built plans after the completion of construction projects and ensure long-term operation and maintenance of stormwater management practices in place at construction sites. The majority of local stormwater permitting (through Wetlands, Subdivision, Zoning) require as-built plans but this is an opportunity to:

- Determine if there is additional information needed on record drawings;
- Require submittals that can be easily entered into GIS; and
- Determine a work flow for Town staff and departments to update stormwater databases for the record keeping and reporting required in Section 5 of this Plan.

BMP 5B Assess Street and Parking Lot Guidelines

Northborough shall develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover. This assessment shall be used to provide information to allow the Town to determine if changes to design standards for streets and parking lots can be made to support low impact design (LID) options. Input will be gathered from multiple Town departments, including the Planning Board. The final report will be appended to this SWMP once completed.

BMP 5C Assess Feasibility of Allowing Green Infrastructure

Northborough shall develop a report assessing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable when appropriate site conditions exist. The Town shall report annually its findings and progress towards making the practices allowable.

BMP 5D Retrofit Feasibility Assessment

The Town must identify at least five town-owned properties that could potentially be modified or retrofitted with BMPs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges through a reduction of impervious area. The inventory must be updated annually starting in Permit Year 5.

3.5.3 MCM 5 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
5A Post-Construction Bylaw and Regulations		●			
5B Assess Street and Parking Lot Guidelines				●	
5C Assess Feasibility of Allowing Green Infrastructure				●	
5D Retrofit Feasibility Assessment				●	

● = year due

3.5.4 MCM 5 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the Post-Construction program.

Massachusetts Stormwater Handbook
https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

EPA Stormwater Management Program Resources – Post Construction Stormwater Control
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#post

Northborough *Stormwater Management and Land Disturbance* Bylaw
http://www.town.northborough.ma.us/Pages/NorthboroughMA_Building/ZoningBylaw.pdf

Managing Stormwater in Your Community: A Guide for Building an Effective Post-Construction Program
https://www3.epa.gov/npdes/pubs/stormwaterinthecommunity.pdf

EPA Managing Stormwater with LID Practices: Addressing Barriers to LID
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/AddressingBarrier2LID.pdf

Metropolitan Area Planning Council LID Toolkit
https://www.mapc.org/resource-library/low-impact-development-toolkit/

Central Massachusetts Regional Stormwater Coalition SOP 5: Construction Site Inspection
http://www.centralmastormwater.org/Pages/crsc_toolbox/Construction%20Inspection%20SOP_FINAL.pdf

Central Massachusetts Regional Stormwater Coalition SOP 6: Erosion and Sedimentation Control
http://www.centralmastormwater.org/Pages/crsc_toolbox/Erosion%20and%20Sedimentation%20Control%20SOP_FINAL.pdf

3.5.5 MCM 5 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 5. See Section 5 of this Plan for additional record keeping information.

- ☐ Measures the Town has taken to ensure adequate long-term operation and maintenance of stormwater BMPs and to require submission of as-built plans;
- ☐ Retrofit inventory, including all sites that have been modified or retrofitted; and
- ☐ Modifications to Northborough's bylaws, regulations, policies, and/or procedures as necessary.

3.6 MCM 6: Good Housekeeping and Pollution Prevention

Objective: *The permittee shall implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned operations.*

This section of the SWMP describes how to comply with the Good Housekeeping and Pollution Prevention requirements in General Permit Section 2.3.7.

3.6.1 MCM 6 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
6A	Operation & Maintenance Program	Inventory and create O&M procedures for all permittee-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment	DPW/Engineering	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW/Engineering	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6C	Stormwater Pollution Prevention Plan (SWPPP)	Complete. Implement SWPPP for DPW Facility.	DPW/Engineering	Complete SWPPPs within two (2) years of permit effective date, implement in following years	2019 (PY2)

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
6D-1	Operation & Maintenance Program	Implement procedures to optimize catch basin cleaning developed under BMP 6B	DPW	Track frequency and material quantity of catch basin cleaning in town. In first Annual Report and in SWMP, document plan for optimizing catch basin cleaning.	2018 (PY1)
6D-2	Operation & Maintenance Program	Implement procedures for street and parking lot sweeping developed under BMP 6B	DPW	Annually track number of miles cleaned or the volume or mass of material removed.	2018 (PY1)
6D-3	Operation & Maintenance Program	Implement procedures for use and storage of deicing materials developed under BMP 6B	DPW	Implement program for winter road maintenance throughout permit term.	2018 (PY1)
6D-4	Operation & Maintenance Program	Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	DPW	Develop an inventory of Town-owned BMPs within two (2) years of permit effective date. Report on inspection and maintenance conducted annually.	2018 (PY1)

3.6.2 MCM 6 Implementation Plan

BMP 6A Operation and Maintenance Program for Municipal Facilities and Equipment

Northborough shall develop and implement a written operation and maintenance program for municipal facilities and equipment, including:

- Parks and open space;
- Buildings and facilities, including schools, where pollutants are exposed to stormwater runoff; and
- Vehicles and equipment.

The Town should also create an inventory of the municipally-owned facilities and equipment. The inventory and written program will be appended to this SWMP.

BMP 6B Operation and Maintenance Program for MS4 Infrastructure

The Town shall develop a written program describing the activities and procedures used to maintain MS4 infrastructure in a timely manner to reduce the discharge of pollutants from the MS4. The written program developed under this BMP will be appended to the SWMP.

BMP 6C Stormwater Pollution Prevention Plans

The Town has prepared a SWPPP for the Town's DPW facility. Northborough must implement the DPW facility SWPPP and develop and fully implement a SWPPP for other town-owned or operated waste handling facilities where pollutants are exposed to stormwater.

BMP 6D-1 Catch Basin Cleaning

The Town must clean and inspect catch basins to make sure that catch basins are no more than 50% full. Develop and implement a program to optimize routine inspections, cleaning, and maintenance of catch basins. If a catch basin is consistently less than 50% fill, the Town can reduce the frequency of cleanings. If a catch basin is more than 50% full during two consecutive cleanings/inspections, the Town must investigate the contributing drainage area for sources of excessive sediment loading abate contributing sources when possible. Store and dispose/reuse catch basin cleanings according to MassDEP policies.

BMP 6D-2 Street Sweeping

Establish and implement procedures for sweeping and/or cleaning streets and Town-owned parking lots. All streets must be swept and/or cleaned at least once per year in the spring (excluding rural streets with no curbs or catch basins). More frequent sweeping shall occur in targeted areas on the basis of pollutant load reduction potential. Store and dispose/reuse street sweepings according to MassDEP policies.

For rural streets with no curbs or catch basins, the Town must sweep at least once per year or develop a targeted inspection and sweeping plan for those streets.

BMP 6D-3 Deicing Materials

Establish and implement procedures for winter road maintenance, including the use and storage of salt and sand.

BMP 6D-4 Inspection and Maintenance of Town-Owned BMPs

The Town shall develop inspection and maintenance procedures and frequencies for all stormwater treatment structures. An important first step will be to improve the inventory, mapping, and record keeping procedures for Town-owned or operated stormwater BMPs, such as detention ponds and swales. The inventory should be developed within two (2) years of the permit effective date, per Section 2.3.4.5.a of the General Permit. All town-owned BMPs must be inspected annually at a minimum. Note that drainage manholes and catch basins are not considered stormwater treatment structures for this BMP (structure maintenance procedures will be developed and implemented under BMPs 6B and 6D-1).

3.6.3 MCM 6 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
6A O&M Program for Municipal Facilities and Equipment		●			
6B O&M Program for MS4 Infrastructure		●			
6C Stormwater Pollution Prevention Plans		●			
6D-1 Catch Basin Cleaning	●	↔	↔	↔	↔
6D-2 Street Sweeping		●	↔	↔	↔
6D-3 Deicing Materials		↔	↔	↔	↔
6D-4 Inspection and Maintenance of Town-Owned BMPs	●	●	●	●	●

● = annual requirement or year due

↔ = ongoing requirement

3.6.4 MCM 6 Guidelines and Resources

The following links include free or low-cost resources Northborough can use to supplement the Good Housekeeping and Pollution Prevention program. The Town should also refer to the Oil SPCC Plan, located in the DPW office.

EPA Stormwater Management Program Resources – Good Housekeeping
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#gh

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#poll

Center for Watershed Protection Municipal Pollution Prevention/Good Housekeeping Practices
http://cdrpc.org/wp-content/uploads/2015/05/CWP_Municipal_Pollution_Prevention.pdf

MassDEP Management of Catch Basin Cleanings
https://www.mass.gov/files/documents/2018/03/09/catch-basins.pdf

MassDEP Reuse & Disposal of Street Sweepings
https://www.mass.gov/files/documents/2018/05/14/street-sweepings.pdf

MassDEP Snow Disposal Guidance
https://www.mass.gov/guides/snow-disposal-guidance

Central Massachusetts Regional Stormwater Coalition SOP: Inspecting Constructed BMPs
http://centralmastormwater.org/Pages/crsc_toolbox/Constructed%20BMP%20Inspection%20SOP_FINAL.pdf

3.6.5 MCM 6 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 6. See Section 5 of this Plan for additional record keeping information.

- ☐ Inventory of municipal facilities and equipment;
- ☐ Plan for optimizing catch basin cleaning and metrics about the number of catch basins, quantity cleaned and inspected, and total volume of material removed from all catch basins;
- ☐ Miles of streets cleaned and the volume of material removed; and
- ☐ All records associated with inspection and maintenance activities.

Section 4
BMPs to Address Specific Waterbody Requirements

4.1 Impaired Waterbodies

As described in Section 2 of the SWMP, two segments of the Assabet River within Northborough were identified in the 2014 Integrated List of Waters as Category 5 waters needing a TMDL. Although one segment of the river (MA82B-02) is impaired for dissolved oxygen, no additional BMPs are required for this waterbody. The 2016 General Permit does not require BMPs or outreach to be completed for dissolved oxygen impairments beyond the outfall/interconnection monitoring described in the IDDE Plan.

Both segments of the Assabet River within Northborough are impaired for fecal coliform. Per Appendix H of the General Permit, the Town must comply with the additional requirements listed in Section 4.1.1 below to address bacteria or pathogens in their stormwater discharges.

4.1.1 Enhanced BMPs

General Permit Part 2.3.2: Public Education and Outreach

Northborough shall supplement the residential public education program with an annual message about the proper management of pet waste, including noting any existing bylaws where appropriate, and disseminating educational materials to dog owners at the time of issuance or renewal of a dog license. Education materials shall describe the detrimental impacts of improper management of pet waste, requirements for waste collection and disposal, and penalties for non-compliance.

The Town shall also provide information to owners of septic systems about proper maintenance in any catchment that discharges to a waterbody impaired for bacteria or pathogens (i.e., the Assabet River).

General Permit Part 2.3.4: Illicit Discharge

Northborough shall implement the IDDE program required by the General Permit and described in Section 3.3 of this SWMP. Additionally, catchments draining to any waterbody impaired for bacteria or pathogens shall be designated either Problem Catchments or High Priority in implementation of the IDDE program.

4.2 SuAsCo Watershed Nutrient TMDL

As described in Section 2.2.3 of the SWMP, a final TMDL for phosphorus has been developed for the SuAsCo Watershed. This TMDL requires that Towns discharging to the impaired waterways within the SuAsCo Watershed comply with requirements in Appendix F of the General Permit. These requirements are summarized below as they apply to Northborough's program.

4.2.1 Enhanced BMPs

General Permit Part 2.3.2: Public Education and Outreach

Northborough shall supplement the residential and business/commercial/institution public education program with an annual message about various topics, including:

- Spring – the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers;
- Summer – the proper management of pet waste, including noting any existing bylaws where appropriate; and
- Fall – the proper disposal of leaf litter.

General Permit Part 2.3.6: Stormwater Management in New Development and Redevelopment

Northborough shall adopt/amend an ordinance to include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal. Additionally, the Town shall include BMPs that infiltrate stormwater when possible.

General Permit Part 2.3.7: Good House Keeping and Pollution Prevention for Permittee Owned Operations

The Town shall establish a program to properly manage grass cuttings and leaf cuttings on Town-owned properties. This program should prohibit blowing organic waste onto impervious surfaces and increasing street sweeping to a minimum of two occurrences per year, once in the spring and at least once in the fall.

4.3 Additional Requirements for Discharges to Surface Drinking Water Supplies and Their Tributaries

According to Section 3.0 of the 2016 Small MS4 General Permit, MS4s that discharge to public surface drinking water supply sources or their tributaries should consider these waters a priority in the implementation of the SWMP. Additionally, Northborough should provide pretreatment and spill control measures to any stormwater discharges entering drinking water supply sources or their tributaries, and/or direct discharges should be avoided to the extent feasible.

Section 5
Program Evaluation, Record Keeping, and Reporting

5.1 Program Evaluation

The Town will annually self-evaluate its compliance with the terms and conditions of the 2016 General Permit, including the appropriateness of selected BMPs and progress toward defined measurable goals. The self-evaluation will be submitted as part of the Annual Report and maintained as part of the SWMP.

5.2 Record Keeping

The Town will keep all records required by the 2016 General Permit for **at least five years**, including, but not limited to the following key information:

- Monitoring results;
- Copies of reports;
- Records of outfall/interconnection screening;
- Follow-up and elimination of illicit discharges;
- Maintenance records; and
- Inspection records.

Checklists of record keeping items Northborough should maintain are also included under each BMP in Section 3 of the SWMP. Records relating to the 2016 General Permit, including the SWMP, will be made available to the public, as required by Section 4.2.c of the Permit.

5.3 Annual Reports

The Town will submit annual reports each year of the Small MS4 permit term, 90 days from the close of the reporting period (i.e., September 28). The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under the 2016 General Permit shall also cover the period from May 1, 2018 to the permit effective date, July 1, 2018. Under the 2016 General Permit, annual reports will consist of a simple update provided to EPA and more robust documentation included in Appendix F of this SWMP.

Per Section 4.4.b of the 2016 General Permit, the annual reports shall contain the following information:

i. A self-assessment review of compliance with the permit terms and conditions.

ii. An assessment of the appropriateness of the selected BMPs.

iii. The status of any plans or activities required by part 2.1 and/ or part 2.2, including:

- *Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response including all items required by part 2.1.1;*
- *For discharges subject to TMDL related requirements, identification of specific BMPs used to address the pollutant identified as the cause of impairment and assessment of the BMPs effectiveness at controlling the pollutant (part 2.2.1. and Appendix F) and any deliverables required by Appendix F;*
- *For discharges to water quality limited waters a description of each BMP required by Appendix H and any deliverables required by Appendix H.*

iv. An assessment of the progress towards achieving the measurable goals and objectives of each control measure in part 2.3 including:

- *Evaluation of the public education program including a description of the targeted messages for each audience; method of distribution and dates of distribution; methods used to evaluate the program; and any changes to the program.*
- *Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.*
- *Description of the activities related to implementation of the IDDE program including: status of the map; status and results of the illicit discharge potential ranking and assessment; identification of problem catchments; status of all protocols described in part 2.3.4.(program responsibilities and systematic procedure); number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; gallons of flow removed; identification of tracking indicators and measures of progress based on those indicators; and employee training.*
- *Evaluation of the construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.*
- *Evaluation of stormwater management for new development and redevelopment including status of ordinance development (2.3.6.a.ii.), review and status of the street design assessment (2.3.6.b.), assessments to barriers to green infrastructure (2.3.6.c), and retrofit inventory status (2.3.6.d.)*
- *Status of the O&M Programs required by part 2.3.7.a.*
- *Status of SWPPP required by part 2.3.7.b. including inspection results.*
- *Any additional reporting requirements in part 3.0.*

v. All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term, including but not limited to all data collected pursuant to part 2.3.4. The permittee shall also provide a description of any additional monitoring data received by the permittee during the reporting period.

vi. Description of activities for the next reporting cycle.

vii. Description of any changes in identified BMPs or measurable goals.

viii. Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.

5.4 SWMP Modifications

Per Section 4.1 of the 2016 General Permit, the Town shall complete the following tasks:

a. *The permittee shall annually self-evaluate its compliance with the terms and conditions of this permit and submit each self-evaluation in the Annual Report. The permittee shall also maintain the annual evaluation documentation as part of the SWMP.*

b. *The permittee shall evaluate the appropriateness of the selected BMPs in achieving the objectives of each control measure and the defined measurable goals. Where a BMP is found to be ineffective the permittee shall change BMPs in accordance with the provisions below. In addition, permittees may augment or change BMPs at any time following the provisions below:*

    - *Changes adding (but not subtracting or replacing) components or controls may be made at any time.*
    - *Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be made as long as the basis for the changes is documented in the SWMP by, at a minimum:*
        - *An analysis of why the BMP is ineffective or infeasible;*
        - *Expectations on the effectiveness of the replacement BMP; and*
        - *An analysis of why the replacement BMP is expected to achieve the defined goals of the BMP to be replaced.*

    The permittee shall indicate BMP modifications along with a brief explanation of the modification in each Annual Report.

c. *EPA or MassDEP may require the permittee to add, modify, repair, replace or change BMPs or other measures described in the annual reports as needed:*
    - *To address impacts to receiving water quality caused or contributed to by discharges from the MS4; or*
    - *To satisfy conditions of this permit*

    Any changes requested by EPA or MassDEP will be in writing and will set forth the schedule for the permittee to develop the changes and will offer the permittee the opportunity to propose alternative program changes to meet the objective of the requested modification.

The Town may update or revise the SWMP as needed as the Town's activities are modified, changed, or updated to meet permit conditions during the permit term. If it is necessary to modify or update the SWMP, the Town should follow this procedure to formalize the changes:

- Keep a log with a description of the modification, the date, and the name and signature of the person making it; and
- Re-sign and date the certification statement in Section 6 of this SWMP.

A SWMP amendment log and additional certification statements are located in Appendix G.

Section 6
SWMP 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 gathered and evaluated 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.

Name: Frederic E. Litchfield Jr, P.E. Title: Town Engineer

Signature: Frederic E Litchfield Jr Date: 3-12-19

A letter that authorizes the Town of Northborough Department of Public Works Director or Town Engineer to sign and certify certain documents prepared under the Small MS4 General Permit is included in Appendix H.

Appendix A

Notice of Intent
and
Authorization to Discharge Letter from EPA

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part I: General Conditions

General Information

Name of Municipality or Organization: Town of Northborough

State: MA

EPA NPDES Permit Number (if applicable): MAR041143

Primary MS4 Program Manager Contact Information

Name: Fred Litchfield

Title: Town Engineer

Street Address Line 1: Town Hall

Street Address Line 2: 63 Main Street

City: Northborough

State: MA

Zip Code: 01532

Email: flitchfield@town.northborough.ma.us

Phone Number: (508) 393-5015

Fax Number: (508) 393-6996

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed): http://www.town.northborough.ma.us/Pages/NorthboroughMA_DPW/stormwater

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☐ A ☐ B ☒ C

National Historic Preservation Act (NHPA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☒ A ☐ B ☐ C

☑ Check the box if your municipality or organization was covered under the 2003 MS4 General Permit

MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete? *(Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)*: 100%

If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

If outfall map is unavailable on the internet an electronic or paper copy of the outfall map must be included with NOI submission (see section V for submission options)

See Attached Map

Regulatory Authorities (if covered under the 2003 permit)

Illicit Discharge Detection and Elimination (IDDE) Authority Adopted? *(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)*: Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 04/29/08

Construction/Erosion and Sediment Control (ESC) Authority Adopted? *(Part II,III,IV or V, Subpart B.4.(a.) of 2003 permit)*: Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 04/27/09

Post- Construction Stormwater Management Adopted? *(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)*: Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 04/27/09

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part II: Summary of Receiving Waters

Please list the waterbody segments to which your MS4 discharges. For each waterbody segment, please report the number of outfalls discharging into it and, if applicable, any impairments.

Massachusetts list of impaired waters: *Massachusetts 2014 List of Impaired Waters-* http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf

Check off relevant pollutants for discharges to impaired waterbodies (see above 303(d) lists) without an approved TMDL in accordance with part 2.2.2.a of the permit. List any other pollutants in the last column, if applicable.

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Direct Discharge to Assabet River (MA82B-02)	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	Aquatic Macroinvertebrate Bioassessments, Fecal Coliform
Wetland/Tributary to Assabet River (MA82B-02)	16	☐	☐	☐	☐	☐	☐	☐	☐	☐	Aquatic Macroinvertebrate Bioassessments, Fecal Coliform
Direct Discharge to Assabet River (MA82B-03)	12	☐	☐	☐	☐	☐	☐	☐	☐	☐	Debris/Floatables/Trash, Non-Native Aquatic Plants, Fecal Coliform, Taste and Odor
Wetland/Tributary to Assabet River (MA82B-03)	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	Debris/Floatables/Trash, Non-Native Aquatic Plants, Fecal Coliform, Taste and Odor
Direct Discharge to Barefoot Brook	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Cold Harbor Brook	9	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Cold Harbor Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Hop Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Hop Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Howard Brook	11	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Howard Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Bartlett Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Cooledge Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetland/Tributary to Smith Pond	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Isolated Wetland	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Other Regulated MS4 Outfalls	177	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

Click to lengthen table

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMS). For municipalities/organizations whose MS4 discharges into a receiving water with an approved Total Maximum Daily Load (TMDL) and applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of Part III.

For each MCM, list each existing or proposed BMP by category and provide a brief description, responsible parties/departments, measurable goals, and the year the BMP will be employed (public education and outreach BMPs also require a target audience).

MCM 1: Public Education and Outreach

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
1A	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including proper pet waste management, proper use of pesticides and fertilizers). Educational topics will include but are not limited to those in Part 2.3.2.d.i	Residents	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1B	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including proper lawn maintenance, parking lot sweeping). Educational topics will include but are not limited to those in Part 2.3.2.d.ii	Businesses, Institutions, and Commercial Facilities	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
1C	Multi-media methods (including web and permit application attachment)	Education and outreach on stormwater management topics of significance in Northborough (including proper erosion and sedimentation control, permit requirements, and design standards). Educational topics will include but are not limited to those in Part 2.3.2.d.iii	Developers (Construction)	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1D	Multi-media methods (including web and print materials at public buildings)	Education and outreach on stormwater management topics of significance in Northborough (including pollution prevention, illicit discharges, information about the Multi-Sector General Permit). Educational topics will include but are not limited to those in Part 2.3.2.d.iv	Industrial Facilities	DPW	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 2: Public Involvement and Participation

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
2A	Public Review	SWMP review (Plan and reports available on web and public meetings)	Engineering	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	2018 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Northborough's stormwater program (including clean up events). Specific activities, schedule, and lead departments are included in the SWMP.	Engineering	Ongoing compliance	2018 (PY1)

This page intentionally left blank

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
3A	IDDE Ordinance/Bylaw	Complete. Continue to enforce and update if necessary.	Planning	Track illicit discharges identified and removed.	2018 (PY1)
3B	SSO Inventory	Develop SSO inventory in accordance of permit conditions	DPW/Engineering	Complete within one (1) year of effective date of permit. Track # of SSOs identified and removed annually	2018 (PY1)
3C	Storm sewer system map	Complete. Improve map during IDDE Program implementation	DPW/Engineering/ GIS	Update map within two (2) years of effective date of permit and complete full system map 10 years after effective date of permit	2018 (PY1)
3D	Written IDDE program	Update written IDDE Plan as necessary	DPW/Engineering	Complete within one (1) year of the effective date of permit and update as required	2018 (PY1)
3E-1	Assessment and Priority Ranking of Outfalls & Interconnections	Outfall/ Interconnection Inventory and Initial Ranking as part of BMP 3D	DPW/Engineering	Complete within one (1) year of the effective date of permit and update as necessary	2018 (PY1)
3E-2	Assessment and Priority Ranking of Outfalls & Interconnections	Dry Weather Outfall Screening & Sampling in accordance with IDDE Plan and permit conditions	DPW/Engineering	Complete three (3) years after effective date of permit. Track # of illicit discharges identified & volume removed. Summarize screening/ sampling results.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
3E-3	Assessment and Priority Ranking of Outfalls & Interconnections	Catchment Investigations according to IDDE Program and permit conditions	DPW/Engineering	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track # of illicit discharges identified & volume removed. Summarize screening/sampling results.	2019 (PY2)
3F	Employee Training	Train employees on IDDE implementation	DPW/Engineering	Train annually. Track employees trained, training topic, date/time, and materials presented.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 4: Construction Site Stormwater Runoff Control

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
4A	Construction Bylaw and Regulations	Modify local bylaw and regulations, if necessary, to contain new MS4 provisions per section 2.3.5.	Planning	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)
4B	Construction Policy and Procedures	Develop and implement written procedures for site inspections and enforcement procedures per section 2.3.5.	Planning	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)

This page intentionally left blank

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
5A	Post-Construction Bylaw and Regulations	Modify local bylaw and regulations to contain new MS4 provisions per section 2.3.6.a.	Planning	Modify existing bylaw and/or regulations if necessary within two (2) years of permit effective date	2019 (PY2)
5B	Assess street and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Planning	Complete report no later than four (4) years of permit effective date	2020 (PY3)
5C	Assess allowing green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning	Complete report no later than four (4) years of permit effective date	2020 (PY3)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
5D	Retrofit Feasibility Assessment	Conduct detailed inventory of Town-owned properties and rank for retrofit potential	DPW/ Engineering	Complete report no later than four (4) years of permit effective date. Beginning in year 5 keep running list of at least five (5) retrofit sites	2020 (PY3)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
6A	Operation & Maintenance Program	Inventory and create O&M procedures for all permittee-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment	DPW/Engineering	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW/Engineering	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6C	Stormwater Pollution Prevention Plan (SWPPP)	Complete. Implement SWPPP for DPW Facility.	DPW/Engineering	Complete SWPPPs within two (2) years of permit effective date, implement in following years	2019 (PY2)
6D-1	Operation & Maintenance Program	Implement procedures to optimize catch basin cleaning developed under BMP 6B	DPW	Track frequency and material quantity of catch basin cleaning in town. In first Annual Report and in SWMP, document plan for optimizing catch basin cleaning.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
6D-2	Operation & Maintenance Program	Implement procedures for street and parking lot sweeping developed under BMP 6B	DPW	Annually track number of miles cleaned or the volume or mass of material removed.	2018 (PY1)
6D-3	Operation & Maintenance Program	Implement procedures for use and storage of deicing materials developed under BMP 6B	DPW	Implement program for winter road maintenance throughout permit term.	2018 (PY1)
6D-4	Operation & Maintenance Program	Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	DPW	Develop an inventory of Town-owned BMPs within two (2) years of permit effective date. Report on inspection and maintenance conducted annually.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Total Maximum Daily Load (TMDL) Requirements

Use the drop-down menus to select the applicable TMDL, action description to meet the TMDL requirements, and the responsible department/parties. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Applicable TMDL	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Assabet River (Phosphorus)	Adhere to requirements in part A.V of Appendix F	DPW/Engineering/Planning

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Requirements Related to Water Quality Limited Waters

Use the drop-down menus to select the pollutant causing the water quality limitation and enter the waterbody ID(s) experiencing excursions above water quality standards for that pollutant. Choose the action description from the dropdown menu and indicate the responsible party. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Fecal Coliform	Assabet River (MA82B-02)	Adhere to requirements in part III of Appendix H	DPW/Engineering/Planning
Fecal Coliform	Assabet River (MA82B-03)	Adhere to requirements in part III of Appendix H	DPW/Engineering/Planning

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.1and 2.2.2 that you have identified as not applicable to your MS4 because you do not discharge to the impaired water body or a tributary to an impaired water body due to nitrogen or phosphorus. Provide all supporting documentation below or attach additional documents if necessary. Also, provide any additional information about your MS4 program below.

1. BMPs identified in the 2003 General Permit NOI have evolved over the permit term due to staff changes and Stormwater Program modifications. The intent of the 2003 BMPs are being met under the proposed 2016 General Permit BMPs included in the Stormwater Management Plan. The Plan describes how the BMPs under the 2003 permit fit into the new program, particularly where BMPs and/ or measurable goals that are outdated or no longer appropriate have been replaced or updated.

2. The National Endangered Species Eligibility Determination screening process has been completed and the Town of Northborough meets Criterion C. The Town's stormwater discharges and discharge related activities will have no affect on listed species or critical habitat. The Town will consult with U.S. Fish and Wildlife as needed during the permit term.

3. The National Historic Preservation Act Eligibility Determination screening process has been completed and the Town of Northborough meets Criterion A. The Town's stormwater discharges do not have the potential to cause effects on historic properties. The Town will consult with the State Historic Preservation Officer as needed during the permit term.

4. The outfalls and associated receiving waters in Part II are based on mapping as of September 2018 and are subject to change during implementation of the Stormwater Management Program as newly constructed outfalls are added to the map and inventory; locations are adjusted; or outfalls are removed if they are determined to be non-municipally owned/operated or reclassified as a BMP inlet, culvert, or other structure. Changes to the outfall inventory and mapping will be formalized in Annual Reports to EPA.

Detailed explanations of the above notes are included in the Town's Stormwater Management Plan.

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part V: 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: Dawn Rand

Title: Board of Selectmen Chair

Signature: Dawn L Rand

Date: Sept 24, 2013

[To be signed according to Appendix B, Subparogroph B.11, Standard Canditions]

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

Legend

Integrated List of Waters - Lakes, Estuaries Category

- 3-No uses assessed
- 4C-Impairment not caused by a pollutant
- 5-Impaired-TMDL required

Integrated List of Waters - Rivers

- 2-Attaining some uses; other uses not assessed
- 3-No uses assessed
- 5-Impaired-TMDL required

National Wetland Inventory Areas

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other
- Public Surface Water Supply
- Lake, Pond, River or Impoundment
- Rivers and Streams

- MS4 Regulated Urban Area (2000 Census)
- MS4 Regulated Urban Area (2010 Census)
- Major Basin Boundary
- Subbasin
- FEMA Flood Zone
- Town Boundary

1. Based on USGS Topo Map (1983)
2. MassGIS: 2014 Integrated List Data (2016), Major Drainage Basins (2003), Subbasins (2007), FEMA National Flood Hazard (2017), MassDOT Major Roads (2014)
3. Town of Northborough: Outfalls

N

0 1,000 2,000
Feet
1 inch = 1,300 feet

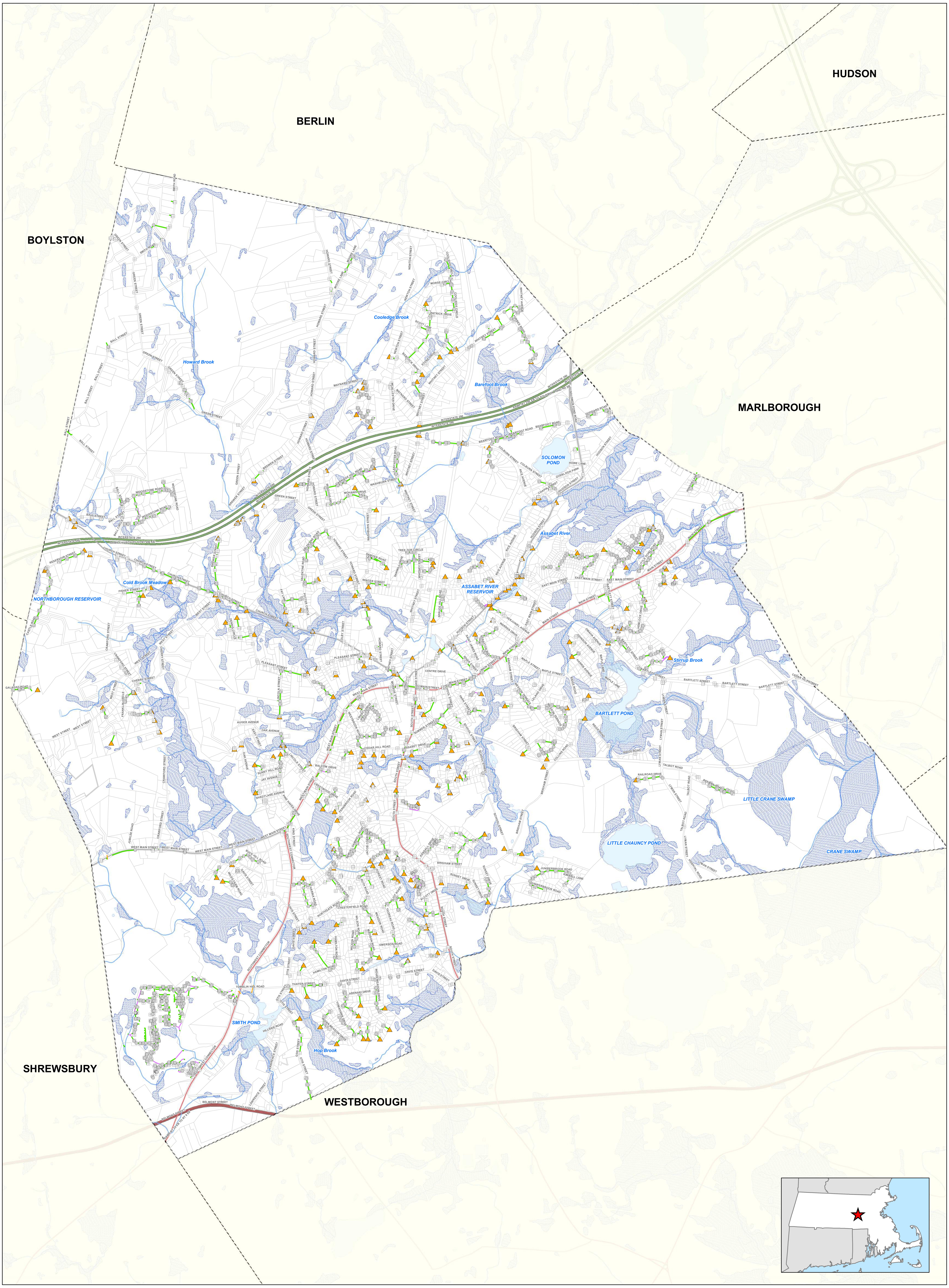
OUTFALLS AND RECEIVING WATERBODIES

Notice of Intent
Northborough, Massachusetts

June 2018

Tighe&Bond
Engineers | Environmental Specialists

G:\GIS\MA\NorthboroughMA\avproj\NOI Outfalls and Receiving Waterbodies Final.mxd



Legend

◎ Drain Manhole	☐ Parcels	**MassDOT Major Roads**
⊞ Catch Basin	⬚ Town Boundary	**Road Type**
▲ Outfalls	**MassDEP Hydrography**	🟩 Limited Access Highway
🟩 Drain Line	🟦 Public Surface Water Supply	🟥 Multi-lane Hwy, not limited access
🟪 Open Channel	🟦 Lake, Pond, River or Impoundment	🟥 Other Numbered Highway
🟧 Drain Culvert	▨ MassDEP Inland Wetlands	⬜ Major Road, Collector
	🟦 Stream/Intermittent Stream	

Notes
1. Town of Northborough: Stormwater Infrastructure

N

0 1,000 2,000
Feet
1 inch = 1,300 feet

STORMWATER INFRASTRUCTURE

Notice of Intent
Northborough, Massachusetts

September 2018

Tighe&Bond
Engineers | Environmental Specialists

\\Gis3\gisdata\GIS\MA\NorthboroughMA\avproj\StormwaterInfrastructure.mxd

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

VIA EMAIL

March 5, 2019

Dawn Rand
Board of Selectmen Chair

And;

Fred Litchfield
Town Engineer
Town Hall
63 Main Street
Northborough, MA. 01532
flitchfield@town.northborough.ma.us

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041143, Town of Northborough

Dear Fred Litchfield:

The 2016 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (MS4 General Permit) is a jointly issued EPA-MassDEP permit. Your Notice of Intent (NOI) for coverage under this MS4 General Permit has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA and MassDEP to discharge stormwater from your MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2022.**

For those permittees that certified Endangered Species Act eligibility under Criterion C in their NOI, this authorization letter also serves as EPA's concurrence with your determination that your discharges will have no effect on the listed species present in your action area, based on the information provided in your NOI.

As a reminder, your first annual report is due by **September 30, 2019** for the reporting period from May 1, 2018 through June 30, 2019.

Information about the permit and available resources can be found on our website: https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Should you have any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

Sincerely,

Thelma Murphy, Chief
Stormwater and Construction Permits Section
Office of Ecosystem Protection
United States Environmental Protection Agency, Region 1

and;

Lealdon Langley, Director
Wetlands and Wastewater Program
Bureau of Water Resources
Massachusetts Department of Environmental Protection

Appendix B

Summary of 2003 and 2016 MS4 General Permit BMPs

Appendix B
Summary of 2003 and 2016 MS4 General Permit BMPs

BMPs identified in the 2003 General Permit NOI have evolved over the permit term due to staff changes and Stormwater Program modifications. The intent of the 2003 BMPs are being met under the following proposed 2016 General Permit BMPs (BMPS current as of 2017 Annual Report):

1a – Distribute/Post Nonpoint Source Pollution Posters - now under BMP 1 (A-E)

1b – Air Stormwater Message on Local Cable Channel - now under BMP 1 (A-E)

1c – Obtain and Distribute auto repair shop brochures (*revised: Post brochures on Town Website*) - now under BMP 1 (A-E)

1d – Add Stormwater Information to Town's Website - now under BMPs 1 (A-E) and 2A

1e – Stormwater Flyer to Community Residents & post flyers on Town website - now under BMP 1A

1f – Stormwater Lesson Plan for Fifth Grade Students - now under BMPs 1A and 2B

1g – Stormwater Flyer to Community Businesses (*revised: Post flyers on the Town website*) - now under BMP 1B

1h – Stormwater Media Campaign (*revised: Post media information on the Town website*) - now under BMP 1 (A-E)

1i – Stormwater Video - now under BMP 1 (A-E)

2a – Stormwater Traveling Display - now under BMPs 1A and 2B

2b – Stormwater Poster Contest for Fifth Grade Students - now under BMP 2B

2c – Stormwater Photo Contest for High School Students - now under BMP 2B

2d – Implement Hazardous Materials Collection Day - now under BMP 2B

2e – Implement an Annual Volunteer Stream Clean-up Day - now under BMP 2B

3a – Map Outfalls and Receiving Waters - now under BMP 3C

3b – Review Existing Bylaws and Regulations - now under BMP 3A

3c – Develop Illicit Discharge Detection & Elimination Plan - now under BMP 3D

3d – Develop/Modify General Illicit Discharge Bylaw - now under BMP 3A

3e – Incorporate Information on Illicit Discharges into Public Education and Outreach Topics - now under BMP 1 (A-E)

3f – Setup and Advertise a Method for the Public to Report Illicit Discharges - now under BMP 2B

4a – Review Existing Regulations, and Monitoring & Enforcement Measures - now under BMP 4 (A-B)

4b – Develop/Modify Regulations, and Monitoring & Enforcement Measures - now under BMP 4 (A-B)

4c – Present New Regulations for Town Meeting Action - now under BMP 4A

4d – Establish a procedure for receipt of information submitted by the public - now under BMP 4B

5a – Review Existing Regulations, and Monitoring & Enforcement Measures - now under BMP 5A

5b – Develop/Modify Regulations, and Monitoring & Enforcement Measures - now under BMP 5A

5c – Present New Regulations for Town Meeting Action - now under BMP 5A

6a – Implement Street Sweeping Program - now under BMPs 6A and 6D.2

6b – Implement Catch Basin Cleaning Program - now under BMPs 6B and 6D.1

6c – Perform Site Visits to Examine Existing Practices at Facilities - now under BMPs 6A and 6C

6d – Train Municipal Employees at Each Facility - now under BMPs 6A and 6C

6e – Perform Follow-Ups to Ensure Required Practices are Met - now under BMP 6A and 6C

6f – Ensure Proper Maintenance of the Storm Drain System - now under 6B

7a – Prioritize Stormwater System Mapping Along the Assabet River - now under BMP 3C

7b – Perform Dry Weather Inspections of Outfalls Along the Assabet River - now under BMP 3E.2

Appendix C

Endangered Species Act Eligibility Criteria Documentation

Endangered Species Act Eligibility Certification

TO: Town of Northborough Stormwater Management Program Files

FROM: Tighe & Bond

COPY: Scott Charpentier, P.E, DPW Director

DATE: June 6, 2018

Tighe & Bond has completed the National Endangered Species Eligibility Determination screening process in accordance with Part 1.9.1 and Appendix C of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts (see Attachment A of this memorandum), effective July 1, 2018[1], and determined that the **Town of Northborough** meets **Criterion C**, where informal consultation with U.S. Fish and Wildlife Service (USFWS) resulted in a finding that the stormwater discharges and discharge related activities will have "no affect" on listed species or critical habitat.

Tighe & Bond followed EPA's screening process required by the 2016 Small MS4 General Permit as follows:

Tighe & Bond went to the USFWS Information for Planning and Consultation (IPaC) website[2] and created an IPaC Trust Resources Report, included in Attachment B of this memorandum. This Report lists the following species that may occur or could potentially be affected by activities in the Town:

- Northern Long-eared Bat

This report documents that there are no critical habitats in Northborough.

Tighe & Bond then went to the USFWS New England Field Office website for Endangered Species Reviews/Consultations[3] and selected the Massachusetts state list[4] to review which Towns have federally-listed species. A copy of the list of Federally Listed Endangered and Threatened Species in Massachusetts is included in Attachment C to this memorandum. Based on review of this list, the Northern Long-eared Bat is listed statewide.

Tighe & Bond then reviewed Step 1 Part B of the USFWS endangered species consultation, and visited the Massachusetts Natural Heritage and Endangered Species Program (NHESP) species information and conservation website about the Northern Long-eared Bat[5]. The NHESP website included a map showing the known locations of the Northern Long-eared Bat within Massachusetts. Attachment D to this memorandum includes a map showing there are no roost trees or hibernating locations within Northborough. Based on the results of the NHESP website review, Tighe & Bond determined there is no potential habitat for any listed species within the action area and therefore no further coordination is required with the

[1] Revised General Permit effective date according to June 29, 2017 EPA memorandum from EPA Region 1 Acting Regional Administrator.
[2] http://ecos.fws.gov/ipac/
[3] https://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm
[4] https://www.fws.gov/newengland/pdfs/MA%20species%20by%20town.pdf
[5] http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/rare-mammals/northern-long-eared-bat.html

USFWS. Attachment E to this memorandum provides the results of Tighe & Bond's informal consultation on behalf of the Town of Northborough with USFWS, including a "no species present" letter that states "no species are known to occur in the project area".

Step 1 – Determine if you can meet USFWS Criterion A

"USFWS Criterion A: You can certify eligibility, according to USFWS Criterion A, for coverage by this permit if, upon completing the Information, Planning, and Conservation (IPaC) online system process, you printed and saved the preliminary determination which indicated that federally listed species or designated critical habitats are not present in the action area. See Attachment 1 to Appendix C for instructions on how to use IPaC."

No, the Town of Northborough's IPaC action area contains the Northern Long-eared Bat.

Step 2 – Determine if You Can Meet Eligibility USFWS Criteria B

"USFWS Criterion B: You can certify eligibility according to USFWS Criteria B for coverage by this permit if you answer "Yes" to **all** of the following questions:

1) Does your action area contain one or more of the following species: Sandplain gerardia, Small whorled Pogonia, American burying beetle, Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?"

   No, the Town of Northborough's action area does not contain any of the above species.

Step 3 – Determine if You Can Meet Eligibility USFWS Criteria C

"You can certify eligibility according to USFWS Criterion C for coverage by this permit if you answer "Yes" to both of the following questions:

1) Does your action area contain one or more of the following species: Northern Long-eared Bat, Sandplain gerardia, Small whorled Pogonia and/or American burying beetle and does not contain any following species: Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?

   Yes, the Town of Northborough's action area contains the Northern Long-eared Bat, but none of the other subsequent species.

2) Did the assessment of your discharge and discharge related activities indicate that there would be "no affect" on listed species or critical habitat and EOA provided concurrence with your determination?

   Yes, Tighe & Bond performed an informal consultation with USFWS and determined that the Town's discharges and discharge related activities will have "no affect" on listed species or critical habitat (see discussion above).

3) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will conduct an endangered species screening for the proposed site and contact the USFWS if you determine that the new activity "may

affect" or is "not likely to adversely affect" listed species or critical habitat under the jurisdiction of the USFWS."

Yes, during the course of the permit term the Town of Northborough agrees to conduct an endangered species screening for the proposed site and contact USFWS if they plan to install a structural BMP not identified in the NOI.

Tighe & Bond's review of all questions under Step 3 resulted in "Yes" and thereby we determined the Town of Northborough's action area meets the endangered species' eligibility requirements included in Criterion C.

J:\N\N1182 Northborough, MA SWPP\02 NOI\ESA Eligibility\Endangered Species Act Eligibility Certification.docx

Attachment A

Appendix C of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts

APPENDIX C
ENDANGERED SPECIES GUIDANCE

A. Background

In order to meet its obligations under the Clean Water Act and the Endangered Species Act (ESA), and to promote the goals of those Acts, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by this general permit do not adversely affect endangered and threatened species or critical habitat. Applicants applying for permit coverage must assess the impacts of their stormwater discharges and discharge-related activities on federally listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat") to ensure that those goals are met. Prior to obtaining general permit coverage, applicants must meet the ESA eligibility provisions of this permit by following the steps in this Appendix[1].

Applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited "take" of listed species[12]. The term "Take" is used in the ESA to include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. "Harass" is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Many of the measures required in this general permit and in these instructions to protect species may also assist in ensuring that the applicant's activities do not result in a prohibited take of species in violation of section 9 of the ESA. If the applicant has plans or activities in an area where endangered and threatened species are located, they may wish to ensure that they are protected from potential take liability under ESA section 9 by obtaining an ESA section 10 permit or by requesting formal consultation under ESA section 7. Applicants that are unsure whether to pursue a section 10 permit or a section 7 consultation for takings protection should confer with the appropriate United States Fish and Wildlife Service (USFWS) office or the National Marine Fisheries Service (NMFS), (jointly the Services).

Currently, there are 20 species of concern for applicants applying for permit coverage, namely the Dwarf wedgemussel *(Alasmidonta heterodon)*, Northeastern bulrush (*Scirpus ancistrochaetus*), Sandplain gerardia *(Agalinis acuta)*, Piping Plover (*Charadrius melodus*), Roseate Tern (*Sterna dougallii*), Northern Red-bellied cooter (*Pseudemys rubriventis)*, Bog Turtle (*Glyptemys muhlenbergii*), Small whorled Pogonia (*Isotria medeoloides*), Puritan tiger beetle (*Cicindela puritana*), American burying beetle (*Nicrophorus americanus*), Northeastern beach tiger beetle (*Cicindela dorsalis*), Northern Long-eared Bat *(Myotis septentriolis)*Atlantic Sturgeon *(Acipenser oxyrinchus*), Shortnose Sturgeon *(Acipenser brevirostrum)*, North Atlantic Right Whale (*Eubalaena glacialis*) Humpback Whale *(Megaptera novaengliae)*, Fin Whale (*Balaenoptera physalus)*, Kemp's Ridley Sea Turtle *(Lepidochelys kempii)*, Loggerhead Sea Turtle *(Caretta caretta)*, Leatherback Sea Turtle *(Dermochelys coriacea)*, and the Green Turtle *(Chelonia*

[1] EPA strongly encourages applicants to begin this process at the earliest possible stage to ensure the notification requirements for general permit coverage are complete upon Notice of Intent (NOI) submission.
[2] Section 9 of the ESA prohibits any person from "taking" a listed species (e.g. harassing or harming it) unless: (1) the taking is authorized through an "incidental take statement" as part of completion of formal consultation according to ESA section 7; (2) where an incidental take permit is obtained under ESA section 10 (which requires the development of a habitat conversion plan; or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

mydas). The Atlantic Sturgeon, Shortnose Sturgeon, North Atlantic Right Whale, Humpback Whale, Fin Whale, Loggerhead Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle and Green Turtle are listed under the jurisdiction of NMFS. The Dwarf wedgemussel, Northeastern bulrush, Sandplain gerardia, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Small whorled Pogonia, Roseate Tern, Puritan tiger beetle, Northeastern beach tiger beetle, Northern Long-eared Bat and American burying beetle are listed under the jurisdiction of the U.S. Fish and Wildlife Service.

Any applicant seeking coverage under this general permit, must consult with the Services where appropriate. When listed species are present, permit coverage is only available if EPA determines, or the applicant determines and EPA concurs, that the discharge or discharge related activities will have "no affect" on the listed species or critical habitat, or the applicant or EPA determines that the discharge or discharge related activities are "not likely to adversely affect" listed species or critical habitat and formal or informal consultation with the Services has been concluded and results in written concurrence by the Services that the discharge is "not likely to adversely affect" an endangered or threatened species or critical habitat.

EPA may designate the applicants as non-Federal representatives for the general permit for the purpose of carrying out formal or informal consultation with the Services (See 50 CFR §402.08 and §402.13). By terms of this permit, EPA has automatically designated operators as non-Federal representatives for the purpose of conducting formal or informal consultation with the U.S. Fish and Wildlife Service. EPA has not designated operators as non-Federal representatives for the purpose of conducting formal or informal consultation with the National Marine Fisheries Service. EPA has determined that discharges from MS4s are not likely to adversely affect listed species or critical habitat under the jurisdiction of the National Marine Fisheries Service. EPA has initiated informal consultation with the National Marine Fisheries Service on behalf of all permittees and no further action is required by permittees in order to fulfill ESA requirements of this permit related to species under the jurisdiction of NMFS

B. The U.S. Fish and Wildlife Service ESA Eligibility Process

Before submitting a notice of intent (NOI) for coverage by this permit, applicants must determine whether they meet the ESA eligibility criteria by following the steps in Section B of this Appendix. Applicants that cannot meet the eligibility criteria in Section B must apply for an individual permit.

The USFWS ESA eligibility requirements of this permit relating to the Dwarf wedgemussel, Northeastern bulrush, Sandplain gerardia, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Small whorled Pogonia, Roseate Tern, Puritan tiger beetle, Northeastern beach tiger beetle, Northern Long-eared Bat and American burying beetle may be satisfied by documenting that one of the following criteria has been met:

USFWS Criterion A: No endangered or threatened species or critical habitat are in proximity to the stormwater discharges or discharge related activities.

USFWS Criterion B: In the course of formal or informal consultation with the Fish and Wildlife Service, under section 7 of the ESA, the consultation resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by USFWS on a finding that the stormwater discharges and

discharge related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation).

USFWS Criterion C: Using the best scientific and commercial data available, the effect of the stormwater discharge and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the applicant and affirmed by EPA, that the stormwater discharges and discharge related activities will have "no affect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the USFWS.

1. The Steps to Determine if the USFWS ESA Eligibility Criteria Can Be Met

To determine eligibility, you must assess the potential effects of your known stormwater discharges and discharge related activities on listed species or critical habitat, PRIOR to completing and submitting a Notice of Intent (NOI). You must follow the steps outlined below and document the results of your eligibility determination.

Step 1 – Determine if you can meet USFWS Criterion A

USFWS Criterion A: You can certify eligibility, according to USFWS Criterion A, for coverage by this permit if, upon completing the Information, Planning, and Conservation (IPaC) online system process, you printed and saved the preliminary determination which indicated that federally listed species or designated critical habitats are not present in the action area. See Attachment 1 to Appendix C for instructions on how to use IPaC.

If you have met USFWS Criterion A skip to Step # 4.

If you have not met USFWS Criterion A, go to Step # 2.

Step 2 – Determine if You Can Meet Eligibility USFWS Criteria B

USFWS Criterion B: You can certify eligibility according to USFWS Criteria B for coverage by this permit if you answer "Yes" to **all** of the following questions:

1) Does your action area contain one or more of the following species: Sandplain gerardia, Small whorled Pogonia, American burying beetle, Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?
   AND
2) Did your assessment of the discharge and discharge related activities indicate that the discharge or discharge related activities "may affect" or are "not likely to adversely affect" listed species or critical habitat?
   AND
3) Did you contact the USFWS and did the formal or informal consultation result in either a "no jeopardy" opinion by the USFWS (for formal consultation) or concurrence by the

USFWS that your activities would be "not likely to adversely affect" listed species or critical habitat (for informal consultation)?
AND

4) Do you agree to implement all measures upon which the consultation was conditioned?
5) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will re-initiate informal or formal consultation with USFWS as necessary?

Use the guidance below Step 3 to understand effects determination and to answer these questions.

If you answered "Yes" to all four questions above, you have met eligibility USFWS Criteria B. Skip to Step 4.

If you answered "No" to any of the four questions above, go to Step 3.

Step 3 – Determine if You Can Meet Eligibility USFWS Criterion C

USFWS Criterion C: You can certify eligibility according to USFWS Criterion C for coverage by this permit if you answer "Yes" to both of the following question:

1) Does your action area contain one or more of the following species: Northern Long-eared Bat, Sandplain gerardia, Small whorled Pogonia and/or American burying beetle and **does not** contain one any following species: Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?[3]
OR
2) Did the assessment of your discharge and discharge related activities and indicate that there would be "no affect" on listed species or critical habitat and EPA provided concurrence with your determination?
3) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will to conduct an endangered species screening for the proposed site and contact the USFWS if you determine that the new activity "may affect" or is "not likely to adversely affect" listed species or critical habitat under the jurisdiction of the USFWS.

Use the guidance below to understand effects determination and to answer these questions.

If you answered "Yes" to both the question above, you have met eligibility USFWS Criterion C. Go to Step 4.

If you answered "No" to either of the questions above, you are not eligible for coverage by this permit. You must submit an application for an individual permit for your stormwater discharges. (See 40 CFR 122.21).

USFWS Effects Determination Guidance:

If you are unable to certify eligibility under USFWS Criterion A, you must assess whether your stormwater discharges and discharge-related activities "may affect", will have "no affect" or are "not likely to adversely affect" listed species or critical habitat. "Discharge-related activities" include: activities which cause, contribute to, or result in point source stormwater pollutant discharges; and measures to provide treatment for stormwater discharges including the siting, construction and operational procedures to control, reduce or prevent water pollution. Please be aware that no protection from incidental take liability is provided under this criterion.

The scope of effects to consider will vary with each system. If you are having difficulty in determining whether your system is likely to cause adverse effects to a listed species or critical habitat, you should contact the USFWS for assistance. In order to complete the determination of effects it may be necessary to follow the formal or informal consultation procedures in section 7 of the ESA.

Upon completion of your assessment, document the results of your effects determination. If your results indicate that stormwater discharges or discharge related activities will have "no affect" on threatened or endangered species or critical habitat and EPA concurs with your determination, you are eligible under USFWS Criterion C of this Appendix. Your determination may be based on measures that you implement to avoid, eliminate, or minimized adverse effects.

If the determination is "May affect" or "not likely to adversely affect" you must contact the USFWS to discuss your findings and measures you could implement to avoid, eliminate, or minimize adverse effects. If you and the USFWS reach agreement on measures to avoid adverse effects, you are eligible under USFWS Criterion B. Any terms and/or conditions to protect listed species and critical habitat that you relied on in order to complete an adverse effects determination, must be incorporated into your Storm Water Management Program (required by this permit) and implemented in order to maintain permit eligibility.

If endangered species issues cannot be resolved: If you cannot reach agreement with the USFWS on measures to avoid or eliminate adverse effects then you are not eligible for coverage under this permit. You must seek coverage under an individual permit.

Effects from stormwater discharges and discharge-related activities which could pose an adverse effect include:

- *Hydrological:* Stormwater discharges may cause siltation, sedimentation, or induce other changes in receiving waters such as temperature, salinity or pH. These effects will vary with the amount of stormwater discharged and the volume and condition of the receiving water. Where a discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.
- *Habitat:* Excavation, site development, grading and other surface disturbance activities, including the installation or placement of treatment equipment may adversely affect listed species or their habitat. Stormwater from the small MS4 may inundate a listed species habitat.

- *Toxicity:* In some cases, pollutants in the stormwater may have toxic effects on listed species.

Step 4 - Document Results of the Eligibility Determination

Once the USFWS ESA eligibility requirements have been met, you shall include documentation of USFWS ESA eligibility in the Storm Water Management Program required by the permit. Documentation for the various eligibility criteria are as follows:

- USFWS Criterion A: A copy of the IPaC generated preliminary determination letter indicating that no listed species or critical habitat is present within your action area. You shall also include a statement on how you determined that no listed species or critical habitat are in proximity to your stormwater system or discharges.
- USFWS Criterion B: A dated copy of the USFWS letter of concurrence on a finding of "no jeopardy" (for formal consultation) or "not likely to adversely affect" (for informal consultation) regarding the ESA section 7 consultation.
- USFWS Criterion C: A dated copy of the EPA concurrence with the operator's determination that the stormwater discharges and discharge-related activities will have "no affect" on listed species or critical habitat.

C. Submittal of Notice of Intent

Once the ESA eligibility requirements of Part C of this Appendix have been metyoumay submit the Notice of Intent indicating which Criterion you have met to be eligible for permit coverage. Signature and submittal of the NOI constitutes your certification, under penalty of law, of eligibility for permit coverage under 40 CFR 122.21.

D. Duty to Implement Terms and Conditions upon which Eligibility was Determined

You must comply with any terms and conditions imposed under the ESA eligibility requirements to ensure that your stormwater discharges and discharge related activities do not pose adverse effects or jeopardy to listed species and/or critical habitat. You must incorporate such terms and conditions into your Storm Water Management Program as required by this permit. If the ESA eligibility requirements of this permit cannot be met, then you may not receive coverage under this permit and must apply for an individual permit.

E. Services Information

United States Fish and Wildlife Service Office

National websites for Endangered Species Information:
Endangered Species home page: http://endangered.fws.gov
ESA Section 7 Consultations: http://endangered.fws.gov/consultation/index.html
Information, Planning, and Conservation System (IPAC): http://ecos.fws.gov/ipac/

U.S. FWS – Region 5
Supervisor

New England Field Office
U.S. Fish and Wildlife Services
70 Commercial Street, Suite 300
Concord, NH 03301

Natural Heritage Network

The Natural Heritage Network comprises 75 independent heritage program organizations located in all 50 states, 10 Canadian provinces, and 12 countries and territories located throughout Latin America and the Caribbean. These programs gather, manage, and distribute detailed information about the biological diversity found within their jurisdictions. Developers, businesses, and public agencies use natural heritage information to comply with environmental laws and to improve the environmental sensitivity of economic development projects. Local governments use the information to aid in land use planning.

The Natural Heritage Network is overseen by NatureServe, the Network's parent organization, and is accessible on-line at: http://www.natureserve.org/nhp/us_programs.htm, which provides websites and other access to a large number of specific biodiversity centers.

U.S. Fish and Wildlife IPaC system instructions

Use the following protocol to determine if any federally listed species or designated critical habitats under USFWS jurisdiction exist in your action area:

Enter your project specific information into the "Initial Project Scoping" feature of the Information, Planning, and Conservation (IPaC) system mapping tool, which can be found at the following location:

http://ecos.fws.gov/ipac/

a. Indicate the action area[1] for the MS4 by either:
    a. Drawing the boundary on the map or by uploading a shapefile.
    Select "Continue"

c. Click on the "SEE RESOURCE LIST" button and on the next screen you can export a trust resources list.This will provided a list of natural resources of concern, which will include an Endangered Species Act Species list. You may also request an official species list under "REGULATORY DOCUMENTS" Save copies and retain for your records

[1] The action area is defined by regulation as all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action (50 CFR §402.02). This analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

The documentation used by a Federal action agency to initiate consultation should contain a description of the action area as defined in the Services' regulations and explained in the Services' consultation handbook. If the Services determine that the action area as defined by the action agency is incorrect, the Services should discuss their rationale with the agency or applicant, as appropriate. Reaching agreement on the description of the action area is desirable but ultimately the Services can only consult when an action area is defined properly under the regulations.

For storm water discharges or discharge related activities, the action area should encompass the following:

- The immediate vicinity of, or nearby, the point of discharge into receiving waters.
- The path or immediate area through which or over which storm water flows from the municipality to the point of discharge into the receiving water. This includes areas in the receiving water downstream from the point of discharge.
- Areas that may be impacted by construction or repair activities. This extends as far as effects related to noise (from construction equipment, power tools, etc.) and light (if work is performed at night) may reach.

The action area will vary with the size and location of the outfall pipe, the nature and quantity of the storm water discharges, and the type of receiving waters, among other factors.

Attachment B

Northborough IPaC Trust Resources Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
PHONE: (603)223-2541 FAX: (603)223-0104
URL: www.fws.gov/newengland

Consultation Code: 05E1NE00-2017-SLI-0947 February 28, 2017
Event Code: 05E1NE00-2017-E-01726
Project Name: Northborough NOI

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Northborough NOI

Official Species List

Provided by:

New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
(603) 223-2541
http://www.fws.gov/newengland

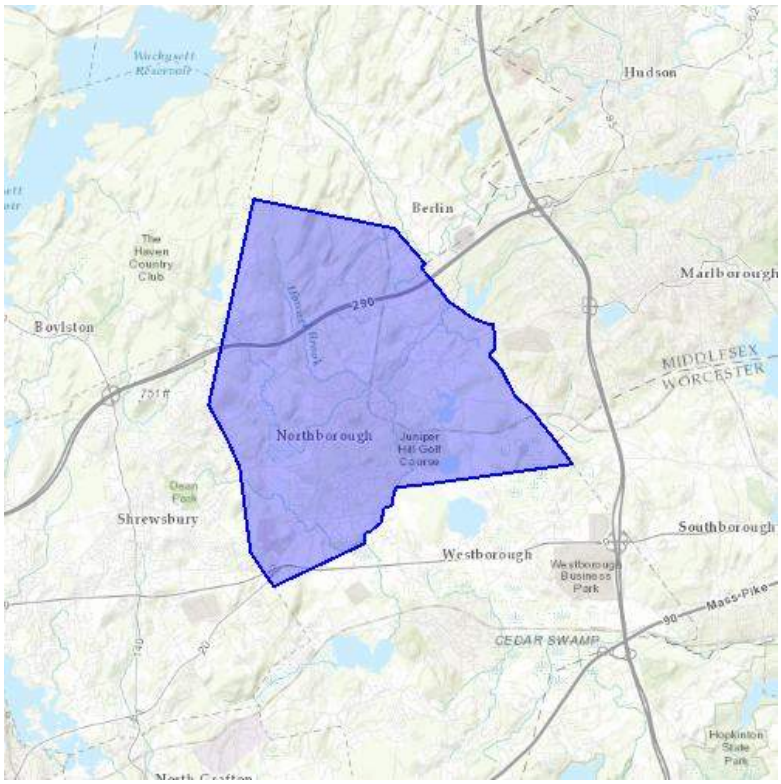
Consultation Code: 05E1NE00-2017-SLI-0947
Event Code: 05E1NE00-2017-E-01726

Project Type: Regulation Promulgation

Project Name: Northborough NOI
Project Description: This project is applying for coverage under the 2016 MS4 General Permit. The project consists of the entire area of the Town of Northborough's small municipal separate storm sewer systems (MS4) that falls within the urbanized area of the town. Based on EPA's 2016 MS4 General Permit Northborough must apply for permit coverage for the Town's MS4 stormwater discharges and assess the impacts of the stormwater discharges and discharge-related activities on endangered and threatened species, and designated critical habitats that fall within the areas that fall within the MS4.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Middlesex, MA | Worcester, MA

Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Attachment C

Federally Listed Endangered and Threatened Species in Massachusetts

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

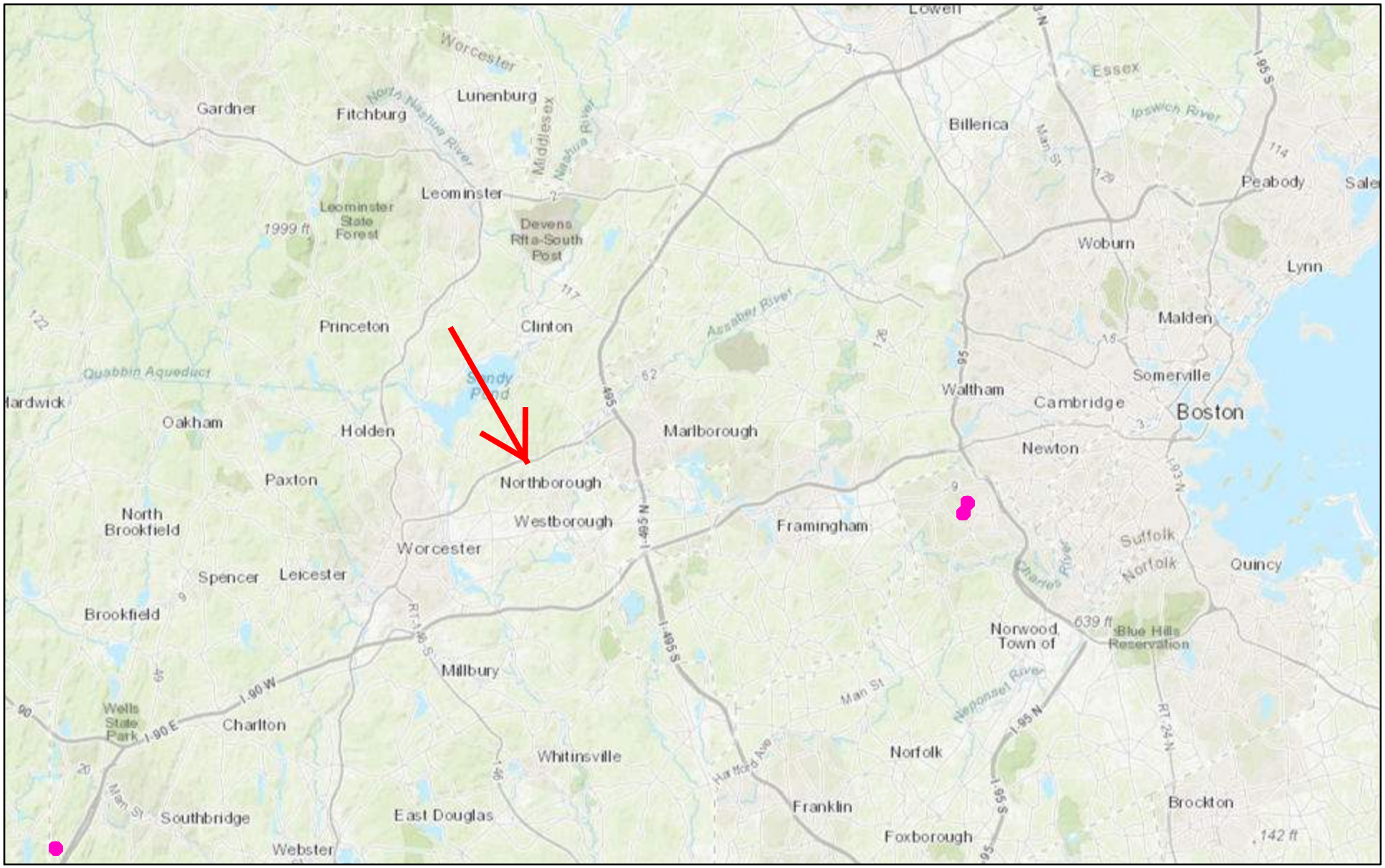
[1]Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

Updated 02/05/2016

Attachment D

Northern Long-eared Bat Location Map


Worcester
Lowell
Essex
Gardner
Fitchburg
Lunenburg
North Nashua River
Middlesex
Nashua River
Billerica
Ipswich River
Peabody
Leominster
Leominster State Forest
1999 ft
Devens Rfta-South Post
Woburn
Lynn
Princeton
Clinton
Assabet River
Malden
Quabbin Aqueduct
Sandy Pond
Somerville
Waltham
Cambridge
Boston
Oakham
Holden
Marlborough
Newton
Paxton
Northborough
North Brookfield
Westborough
Framingham
Worcester
Suffolk
Norfolk
Quincy
Spencer
Leicester
Charles River
Brookfield
Norwood, Town of
639 ft
Blue Hills Reservation
Millbury
Wells State Park
I-90 W
I-90 E
Charlton
Main St
Whitinsville
Norfolk
Franklin
Brockton
Southbridge
East Douglas
Foxborough
Webster
142 ft
I-495 N
I-495 S
I-95 N
I-95 S
RT-146 S
RT-24 N
0 5 7 1 im
0 5 1 2 km

Attachment E

U.S. Fish and Wildlife Review Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 8, 2018

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm (accessed January 2018)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact David Simmons of this office at 603-227-6425 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Appendix D

Historic Properties Eligibility Criteria Documentation

National Historic Preservation Act Eligibility Certification

TO: Town of Northborough Stormwater Management Program Files

FROM: Tighe & Bond

COPY: Scott Charpentier, P.E, DPW Director

DATE: July 25, 2018

Tighe & Bond has completed the National Historic Preservation Act Eligibility Determination screening process in accordance with Part 1.9.2 and Appendix D of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts (see Attachment A of this memorandum), effective July 1, 2018[1], and determined that the **Town of Northborough** meets **Criterion A: the discharges do not have the potential to cause effects on historic properties.**

Tighe & Bond followed the screening process included in Appendix D and has determined Northborough is an existing facility authorized by the previous permit and therefore meets Criterion A (see Question 1 in Appendix D of the Permit) and is not, as part of developing and submitting the Notice of Intent for permit coverage, undertaking any activity involving subsurface land disturbance less than an acre. Based on this screening process, the Town of Northborough's stormwater discharges, allowable non-stormwater discharges, and stormwater discharge-related activities will not have an effect on a property that is listed or eligible for listing on the National Register of Historic Properties (NRHP) and no further action is necessary at this time.

Attachment B to this memorandum includes a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures downloaded from the Massachusetts Cultural Resource Information System (MACRIS) that is current as of June 19, 2018. If the Town undertakes construction on or around a property that is listed or eligible for listing, the Town will coordinate with the State Historic Preservation Officer (SHPO) (i.e. the Massachusetts Historical Commission) by submitting a Project Notification Form and associated documentation for the project. As applicable for each project, the Town will implement measures to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO. If the Town fails to document and implement such measures, those discharges are ineligible for coverage under EPA's Small MS4 General Permit.

J:\N\N1182 Northborough, MA SWPP\02 NOI\HP\Historic Preservation Act Eligibility Certification.docx

[1] Revised General Permit effective date according to June 29, 2017 EPA memorandum from EPA Region 1 Acting Regional Administrator.

Attachment A

Appendix D of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts

Appendix D
National Historic Preservation Act Guidance

Background

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of Federal "undertakings" on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. The term federal "undertaking" is defined in the NHPA regulations to include a project, activity, or program of a federal agency including those carried out by or on behalf of a federal agency, those carried out with federal financial assistance, and those requiring a federal permit, license or approval. See 36 CFR 800.16(y). Historic properties are defined in the NHPA regulations to include prehistoric or historic districts, sites, buildings, structures, or objects that are included in, or are eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. See 36 CFR 800.16(1).

EPA's issuance of a National Pollutant Discharge Elimination System (NPDES) General Permit is a federal undertaking within the meaning of the NHPA regulations and EPA has determined that the activities to be carried out under the general permit require review and consideration, in order to be in compliance with the federal historic preservation laws and regulations. Although individual submissions for authorization under the general permit do not constitute separate federal undertakings, the screening processes provides an appropriate site-specific means of addressing historic property issues in connection with EPA's issuance of the permit. To address any issues relating to historic properties in connection with the issuance of this permit, EPA has included a screening process for applicants to identify whether properties listed or eligible for listing on the National Register of Historic Places are within the path of their discharges or discharge-related activities (including treatment systems or any BMPs relating to the discharge or treatment process) covered by this permit.

Applicants seeking authorization under this general permit must comply with applicable, State, Tribal, and local laws concerning the protection of historic properties and places and may be required to coordinate with the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO) and others regarding effects of their discharges on historic properties.

Activities with No Potential to Have an Effect on Historic Properties

A determination that a federal undertaking has no potential to have an effect on historic properties fulfills an agency's obligations under NHPA. EPA has reason to believe that the vast majority of activities authorized under this general permit will have no potential effects on historic properties. This permit typically authorizes discharges from existing facilities and requires control of the pollutants discharged from the facility. EPA does not anticipate effects on historic properties from the pollutants in the authorized discharges. Thus, to the extent EPA's issuance of this general permit authorizes discharges of such constituents, confined to existing channels, outfalls or natural drainage areas, the permitting action does not have the potential to cause effects on historical properties.

In addition, the overwhelming majority of sources covered under this permit will be facilities that are seeking renewal of previous permit authorization. These existing dischargers should have already addressed NHPA issues in the previous general permit as they were required to certify that they were either not affecting historic properties or they had obtained written agreement from

the applicable SHPO or THPO regarding methods of mitigating potential impacts. To the extent this permit authorizes renewal of prior coverage without relevant changes in operations the discharge has no potential to have an effect on historic properties.

Activities with Potential to Have an Effect on Historic Properties

EPA believes this permit may have some potential to have an effect on historic properties the applicant undertakes the construction and/or installation of control measures that involve subsurface disturbance that involves less than 1 acre of land. (Ground disturbances of 1 acre or more require coverage under the Construction General Permit.) Where there is disturbance of land through the construction and/or installation of control measures, there is a possibility that artifacts, records, or remains associated with historic properties could be impacted. Therefore, if the applicant is establishing new or altering existing control measures to manage their discharge that will involve subsurface ground disturbance of less than 1 acre, they will need to ensure (1) that historic properties will not be impacted by their activities or (2) that they are in compliance with a written agreement with the SHPO, THPO, or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties.

Examples of Control Measures Which Involve Subsurface Disturbance

The type of control measures that are presumptively expected to cause subsurface ground disturbance include:

- Dikes
- Berms
- Catch basins, drainage inlets
- Ponds, bioretention areas
- Ditches, trenches, channels, swales
- Culverts, pipes
- Land manipulation; contouring, sloping, and grading
- Perimeter Drains
- Installation of manufactured treatment devices

EPA cautions applicants that this list is non-inclusive. Other control measures that involve earth disturbing activities that are not on this list must also be examined for the potential to affect historic properties.

Certification

Upon completion of this screening process the applicant shall certify eligibility for this permit using one of the following criteria on their Notice of Intent for permit coverage:

> **Criterion A**: The discharges do not have the potential to cause effects on historic properties.

Criterion B: A historic survey was conducted. The survey concluded that no historic properties are present. Discharges do not have the potential to cause effects on historic properties.

Criterion C: The discharges and discharge related activities have the potential to have an effect on historic properties, and the applicant has obtained and is in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties.

Authorization under the general permit is available only if the applicant certifies and documents permit eligibility using one of the eligibility criteria listed above. Small MS4s that cannot meet any of the eligibility criteria in above must apply for an individual permit.

Screening Process

Applicants or their consultant need to answer the questions and follow the appropriate procedures below to assist EPA in compliance with 36 CFR 800.

Question 1*:* Is the facility an existing facility authorized by the previous permit or a new facility and the applicant is not undertaking any activity involving subsurface land disturbance less than an acre?

YES - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.
The applicant should certify eligibility for this permit using Criterion A on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has "no potential to cause effects" (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

NO- Go to Question 2.

Question 2*:* Is the property listed in the National Register of Historic Places or have prior surveys or disturbances revealed the existence of a historic property or artifacts?

NO - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.
The applicant should certify eligibility for this permit using Criterion B on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has "no potential to cause effects" (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

YES - The applicant or their consultant should prepare a complete information submittal to the SHPO. The submittal consists of:

- Completed Project Notification Form- forms available at http://www.sec.state.ma.us/mhc/mhcform/formidx.htm;

- USGS map section with the actual project boundaries clearly indicated; and
- Scaled project plans showing existing and proposed conditions.

(1) Please note that the SHPO does not accept email for review. Please mail a paper copy of your submittal (Certified Mail, Return Receipt Requested) or deliver a paper copy of your submittal (and obtain a receipt) to:

State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Blvd.
Boston MA 02125.

(2) Provide a copy of your submittal and the proof of MHC delivery showing the date MHC received your submittal to:

NPDES Permit Branch Chief
US EPA Region 1 (OEP06-1)
5 Post Office Square, Suite 100
Boston MA 02109-3912.

The SHPO will comment within thirty (30) days of receipt of complete submittals, and may ask for additional information. Consultation, as appropriate, will include EPA, the SHPO and other consulting parties (which includes the applicant). The steps in the federal regulations (36 CFR 800.2 to 800.6, etc.) will proceed as necessary to conclude the Section 106 review for the undertaking. **The applicant should certify eligibility for this permit using Criterion C on their Notice of Intent for permit coverage.**

Attachment B

Massachusetts Cultural Resource Information System (MACRIS)
List of federal- and state-listed historic areas, buildings, burial grounds, objects, and structures

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Northborough; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
NBO.A	Meeting House Common Historic District		Northborough	
NBO.B	Northborough Town Hall Complex		Northborough	
NBO.C	Chapinville Mill Area		Northborough	
NBO.D	Woodside - Davisville		Northborough	
NBO.E	West Main Street Area		Northborough	
NBO.F	Main Street Area		Northborough	
NBO.G	Massachusetts State Hospitals and State Schools		Northborough	
NBO.H	Wachusett Aqueduct Linear District		Northborough	
NBO.I	Water Supply System of Metropolitan Boston		Northborough	
NBO.J	Westborough State Hospital		Northborough	
NBO.K	Goodnow - Bartlett Farmstead		Northborough	
NBO.L	Davis, George C. House		Northborough	
NBO.M	First Church of Northborough - Unitarian Church		Northborough	
NBO.N	Allen Court Mill Houses		Northborough	
NBO.O	Allen Street Mill Houses		Northborough	
NBO.P	Hudson Street Mill Houses		Northborough	
NBO.Q	River Street Area		Northborough	
NBO.R	School Street - Summer Street Area		Northborough	
NBO.S	Northborough Single Building Local Historic District		Northborough	
NBO.224	Wood, David F. Woolen Mill Worker Housing	2-4 Allen Ct	Northborough	c 1866
NBO.225	Wood, David F. Woolen Mill Worker Housing	6-8 Allen Ct	Northborough	c 1866
NBO.226	Wood, David F. Woolen Mill Worker Housing	10-12 Allen Ct	Northborough	c 1866
NBO.227	Wood, David F. Woolen Mill Worker Housing	14-16 Allen Ct	Northborough	c 1866
NBO.228	Wood, David F. Woolen Mill Worker Housing	18 Allen Ct	Northborough	c 1866
NBO.900	Allen Street Bridge	Allen St	Northborough	

Inv. No.	Property Name	Street	Town	Year
NBO.142	Allen, Samuel House	16 Allen St	Northborough	c 1830
NBO.339		16 Allen St	Northborough	c 1920
NBO.229	Wood, David F. Woolen Mill Worker Housing	20 Allen St	Northborough	c 1860
NBO.230	Wood, David F. Woolen Mill Worker Housing	21 Allen St	Northborough	c 1860
NBO.231	Wood, David F. Woolen Mill Worker Housing	22 Allen St	Northborough	c 1860
NBO.232	Wood, David F. Woolen Mill Worker Housing	23 Allen St	Northborough	c 1860
NBO.233	Wood, David F. Woolen Mill Worker Housing	24 Allen St	Northborough	c 1860
NBO.234	Wood, David F. Woolen Mill Worker Housing	27 Allen St	Northborough	c 1860
NBO.905	Assabet River Bridge	Assabet River	Northborough	1897
NBO.924	Assabet River Railroad Bridge	Assabet River	Northborough	c 1855
NBO.143	Coolidge, Abigail - Goodnow, Henry House	88 Ball St	Northborough	c 1800
NBO.15	Bartlett, Capt. Joel House	85 Bartlett St	Northborough	c 1820
NBO.17	Bartlett, W. A. House	96 Bartlett St	Northborough	c 1855
NBO.18	Chesbro, George L. House	103 Bartlett St	Northborough	c 1863
NBO.16	Rice, Dea. Matthias House	189 Bartlett St	Northborough	c 1746
NBO.32	Bartlett, Jotham House	7 Belmont St	Northborough	c 1830
NBO.235	Deerfoot Farms Dairy Creamery	10 Blake St	Northborough	c 1900
NBO.236	Munroe Tavern Stables	11 Blake St	Northborough	c 1860
NBO.237	Brigham, Cyrus T. and Company Store	19 Blake St	Northborough	c 1880
NBO.25	Munroe Tavern	20-22 Blake St	Northborough	r 1750
NBO.24	Gallagher, Edwin House	27 Blake St	Northborough	c 1870
NBO.802	Brigham Street Burial Ground	Brigham St	Northborough	c 1727
NBO.145	Howe, B. - Whitcomb, A. House	131 Brigham St	Northborough	1792
NBO.238	Brigham, Jesse House	202 Brigham St	Northborough	c 1735
NBO.52	Northborough Woolen Company Office	7 Chapin Ct	Northborough	1882
NBO.51	Davis, Isaac Cotton Mill Worker Housing	10 Chapin Ct	Northborough	1832
NBO.50	Davis, Isaac Cotton Mill Worker Housing	12 Chapin Ct	Northborough	c 1832
NBO.40	Davis, Isaac Cotton Mill Worker Housing	16 Chapin Ct	Northborough	c 1832
NBO.146	Rice, S. - Valentine, Elmer House	50 Cherry St	Northborough	c 1716
NBO.925	Church Street Stone Bridge over Cold Harbor Brook	Church St	Northborough	c 1860
NBO.61	Rice, John - Fay, Joseph T. House	6 Church St	Northborough	c 1850
NBO.63	Page, Margaret B. - Ellsworth, William F. House	9 Church St	Northborough	c 1880
NBO.62	Stone, John House	10 Church St	Northborough	c 1855
NBO.64	Northborough Fire and Police Station	11-13 Church St	Northborough	1926
NBO.67		25 Church St	Northborough	1929
NBO.68	Northborough Unitarian Church Parsonage	33 Church St	Northborough	1875
NBO.69	Paul, Walter House	39 Church St	Northborough	c 1880

Inv. No.	Property Name	Street	Town	Year
NBO.77	First Church of Northborough - Unitarian Church	40 Church St	Northborough	1950
NBO.138	First Church of Northborough - Unitarian Church Hall	40 Church St	Northborough	1948
NBO.921	Taylor, Earl P. Memorial	40 Church St	Northborough	c 1980
NBO.922	First Church of Northborough - Unitarian Church Bell	40 Church St	Northborough	1809
NBO.923	Northborough World War I Memorial	40 Church St	Northborough	c 1920
NBO.1	Allen, Dr. Joseph House and School	49 Church St	Northborough	1818
NBO.70	Bigelow, Walter J. House	64 Church St	Northborough	c 1900
NBO.71	Bigelow, Ezra Hastings House	70 Church St	Northborough	c 1900
NBO.2	First Evangelical Congregational Church	71 Church St	Northborough	c 1832
NBO.72	Wood, Eliab House	76 Church St	Northborough	c 1877
NBO.241	Atwood, Francis H. House	86 Church St	Northborough	c 1897
NBO.73	Duplisse, Peter House	87 Church St	Northborough	c 1880
NBO.74	Purinton, G. House	91 Church St	Northborough	c 1855
NBO.149	Fay, Lewis House	92 Church St	Northborough	c 1855
NBO.44	West District Schoolhouse	264 Church St	Northborough	c 1846
NBO.43	Holloway, Lt. William House	302 Church St	Northborough	c 1711
NBO.75	Rice, Nathan House	334 Church St	Northborough	c 1855
NBO.37	Orne, Capt. Edward House	335 Church St	Northborough	1826
NBO.33	Warren, Eliphalet House	80 Colburn St	Northborough	r 1720
NBO.45	Fay Steam Saw Mill	3 Colby St	Northborough	c 1847
NBO.926	Cold Harbor Brook Railroad Bridge	Cold Harbor Brook	Northborough	c 1866
NBO.109	Crawford Farm	Crawford St	Northborough	1734
NBO.150	Bruce, Silas House	239 Crawford St	Northborough	c 1800
NBO.151	Howe. C. House	279 Crawford St	Northborough	c 1790
NBO.152	Bartlett House	292 Crawford St	Northborough	r 1750
NBO.153	Johnson, Charles Saw Mill and House	342 Crawford St	Northborough	c 1850
NBO.242	Williams, Stephen House	363 Crawford St	Northborough	1799
NBO.154	Davis, George C. Tannery and House	6 Davis Ave	Northborough	c 1781
NBO.155		284 Davis St	Northborough	c 1900
NBO.243	Young, Richard Hopkins House	307 Davis St	Northborough	c 1890
NBO.47	Davis, George C. House	375 Davis St	Northborough	1851
NBO.136	Davis, George C. Barn Complex	375 Davis St	Northborough	c 1855
NBO.137	Davis, George C. Farm Worker Housing	375 Davis St	Northborough	c 1900
NBO.19	Davis, Gov. John - Davis, W. E. House	385 Davis St	Northborough	c 1830
NBO.46	Davis, Col. Joseph House	386 Davis St	Northborough	c 1779
NBO.48	Davis, Phineas House	405 Davis St	Northborough	c 1730

Inv. No.	Property Name	Street	Town	Year
NBO.915	Goodnow, Mary Memorial	East Main St	Northborough	1889
NBO.244	Bartlett, U. - Merriam, Moses B. House	15 East Main St	Northborough	c 1830
NBO.245	Greene, Frank H. House	19 East Main St	Northborough	c 1890
NBO.27	Warren House	32 East Main St	Northborough	c 1795
NBO.246	Mitchell, Edward A. House	34 East Main St	Northborough	c 1890
NBO.247	Burbank, Peter - Desrosiers, Joseph H. House	76 East Main St	Northborough	c 1883
NBO.248	Cox, John House	90 East Main St	Northborough	c 1890
NBO.249	Lowe, John W. House	117-119 East Main St	Northborough	c 1890
NBO.21	Patterson, A. House	137 East Main St	Northborough	c 1760
NBO.22	Allen, L. - Rice, J. House	142 East Main St	Northborough	c 1795
NBO.908	Milestone, 1767	143 East Main St	Northborough	1767
NBO.20	Goodnow - Bartlett, Gill and E. B. House	181 East Main St	Northborough	c 1745
NBO.130	Goodnow - Bartlett, Gill and E. B. Barn	181 East Main St	Northborough	c 1850
NBO.131	Goodnow - Bartlett, Gill and E. B. Tri-Part Garage	181 East Main St	Northborough	c 1900
NBO.132	Goodnow - Bartlett, Gill and E. B. Kennel - Shed	181 East Main St	Northborough	c 1900
NBO.133	Goodnow - Bartlett, Gill and E. B. A-Frame Shed	181 East Main St	Northborough	c 1970
NBO.134	Goodnow - Bartlett, Gill and E. B. Barn	181 East Main St	Northborough	r 1850
NBO.49	Fay, Asa House	50 Fay Ln	Northborough	c 1794
NBO.36	Fay, Nahum House	66 Green St	Northborough	c 1770
NBO.28	Livermore, Dea. Jonathan House	500 Green St	Northborough	1727
NBO.157	Brigham, John House	518 Green St	Northborough	r 1855
NBO.801	Howard Street Burial Ground, Old	Howard St	Northborough	1749
NBO.250	Murray, Charles C. House	110 Howard St	Northborough	c 1898
NBO.108	Townsend, Joshua - Holbrook, Lowell House	300 Howard St	Northborough	1744
NBO.251	Green, Vera House	333 Howard St	Northborough	1953
NBO.158	Rice, Benjamin House	386 Howard St	Northborough	1790
NBO.29	Keyes, Capt. Prentice House	660 Howard St	Northborough	c 1830
NBO.927	Hudson Street Bridge over Cold Harbor Brook	Hudson St	Northborough	c 1860
NBO.114	Rice, Anson House	9 Hudson St	Northborough	c 1850
NBO.113	Russell, S. House	14 Hudson St	Northborough	c 1842
NBO.252	Parmenter, Albert House	15 Hudson St	Northborough	c 1880
NBO.112	Fay, Herman House	16 Hudson St	Northborough	c 1766
NBO.111	Fairbanks, John - Montague, Richard House	17 Hudson St	Northborough	c 1855
NBO.253	Rice, Eveline M. House	24 Hudson St	Northborough	c 1887
NBO.160	Worcester & Marlborough Street Railway Powerhouse	43 Hudson St	Northborough	1897
NBO.110	Proctor, Harwood and Josiah House	47 Hudson St	Northborough	c 1860

Inv. No.	Property Name	Street	Town	Year
NBO.254	Bush, Warren T. House	55 Hudson St	Northborough	c 1850
NBO.255	Farwell. Walter M. Comb Factory	56 Hudson St	Northborough	c 1900
NBO.256	Lilley, Charles E. House	75 Hudson St	Northborough	c 1900
NBO.257	Rice, Curtis House	87 Hudson St	Northborough	c 1850
NBO.258	Patterson, Henry House	93 Hudson St	Northborough	c 1880
NBO.259	Farwell, Alonzo C. House	110 Hudson St	Northborough	c 1860
NBO.161	Farwell, Walter M. House	114 Hudson St	Northborough	c 1880
NBO.260	Bruso, Isaac House	121 Hudson St	Northborough	c 1860
NBO.261	Chapdelaine, Joseph House	149 Hudson St	Northborough	c 1890
NBO.262	Mosso, Joseph House	153 Hudson St	Northborough	c 1860
NBO.263	Contois, Oliver House	161 Hudson St	Northborough	c 1860
NBO.264	Wood, David F. Woolen Mill Worker Housing	183 Hudson St	Northborough	c 1860
NBO.265	Wood, David F. Woolen Mill Worker Housing	185 Hudson St	Northborough	c 1860
NBO.266	Woodside Mills	200 Hudson St	Northborough	1888
NBO.267	Wood, David F. Woolen Mill Worker Housing	215 Hudson St	Northborough	c 1860
NBO.268	Wood, David F. Woolen Mill Worker Housing	216 Hudson St	Northborough	c 1860
NBO.269	Wood, David F. Woolen Mill Worker Housing	219 Hudson St	Northborough	c 1860
NBO.270	Wood, David F. Woolen Mill Worker Housing	220 Hudson St	Northborough	c 1860
NBO.162	Goodrich Brickyard Model House	238 Hudson St	Northborough	c 1850
NBO.271	Chapin, Ezra Wood Estate Cottage	255 Hudson St	Northborough	c 1880
NBO.272	Illingworth, Robert House	261 Hudson St	Northborough	c 1890
NBO.41	Chapinville Post Office and General Store	317 Hudson St	Northborough	c 1880
NBO.55	Wheeler, Edmund W. House	342 Hudson St	Northborough	1889
NBO.42	Barnard, E. House	343 Hudson St	Northborough	c 1800
NBO.54		374 Hudson St	Northborough	r 1840
NBO.53	Barnard, Luther - Hinds, David House	400 Hudson St	Northborough	c 1850
NBO.35	Holbrook, T. House	6 Lancaster Dr	Northborough	c 1850
NBO.115	Westborough State Hospital Piggery	Lyman St	Northborough	1890
NBO.116	Westborough State Hospital Barn	Lyman St	Northborough	c 1918
NBO.117	Westborough State Hospital Engineer's Home	Lyman St	Northborough	1906
NBO.118	Westborough State Hospital Engineer's Garage	Lyman St	Northborough	c 1900
NBO.120	Westborough State Hospital - Chauncy Hall	Lyman St	Northborough	1930
NBO.121	Westborough State Hospital Pole Barn	Lyman St	Northborough	1967
NBO.122	Westborough State Hospital Hay Barn	Lyman St	Northborough	1965
NBO.123	Westborough State Hospital Power Plant	Lyman St	Northborough	c 1930
NBO.124	Westborough State Hospital Auxiliary Garage	Lyman St	Northborough	1968
NBO.125	Westborough State Hospital Salvage Yard Buildings	Lyman St	Northborough	1929

Inv. No.	Property Name	Street	Town	Year
NBO.126	Westborough State Hospital Shed	Lyman St	Northborough	r 1935
NBO.127	Westborough State Hospital Garage	Lyman St	Northborough	r 1935
NBO.128	Westborough State Hospital Pumping Station	Lyman St	Northborough	r 1945
NBO.129	Westborough State Hospital Pumping Station	Lyman St	Northborough	c 1966
NBO.909	Westborough State Hospital Power Plant	Lyman St	Northborough	1964
NBO.910	Westborough State Hospital Water Tank	Lyman St	Northborough	c 1950
NBO.911	Westborough State Hospital Water Tank	Lyman St	Northborough	c 1950
NBO.912	Westborough State Hospital Sewage Treatment Tank	Lyman St	Northborough	c 1970
NBO.913	Westborough State Hospital Transformer	Lyman St	Northborough	r 1965
NBO.914	Westborough State Hospital Agricultural Land	Lyman St	Northborough	
NBO.14	Newton, S. - Norcross, Stephen W. House	1 Lyman St	Northborough	c 1830
NBO.13	Norcross, Stephen House	41 Lyman St	Northborough	c 1870
NBO.3	Northborough Town Hall	Main St	Northborough	c 1985
NBO.59	Curve Inn	Main St	Northborough	r 1840
NBO.104	Exxon Service Station	Main St	Northborough	1969
NBO.906	Main Street - Assabet River Bridge	Main St	Northborough	c 1860
NBO.907	Assabet River Dam	Main St	Northborough	c 1860
NBO.82	Rice, Anson - Winn-Whittaker Building	10 Main St	Northborough	c 1830
NBO.5	Carruth, C. House	20 Main St	Northborough	c 1855
NBO.103	Northborough Evangelical Congregational Church	23 Main St	Northborough	1847
NBO.9	Gale, Cyrus Jr. House	24 Main St	Northborough	c 1850
NBO.11	Northborough National Bank	28 Main St	Northborough	1854
NBO.10	Ball, Dr. Stephen III House	30 Main St	Northborough	c 1800
NBO.102	Gale, Cyrus House	33 Main St	Northborough	c 1855
NBO.84	Northborough Public Library - Gale Library	34 Main St	Northborough	1895
NBO.8	Gale, Cyrus General Store	37-39 Main St	Northborough	c 1855
NBO.7	Ball, Dr. Stephen Jr. House	38 Main St	Northborough	c 1730
NBO.6	Gale, Capt. Cyrus House	43 Main St	Northborough	c 1766
NBO.85	Leonard, J. T. House	44 Main St	Northborough	c 1868
NBO.101	Stratton, L. F. House	45-47 Main St	Northborough	c 1898
NBO.86	Ball, U. House	48 Main St	Northborough	r 1840
NBO.100	Seaver, Abraham Wood House	51 Main St	Northborough	c 1855
NBO.12	First Baptist Church of Northborough	52 Main St	Northborough	1860
NBO.99	Davis, Isaac - Fay, Rev. Warren Fay House	55 Main St	Northborough	1841
NBO.88	Moore, Lorenzo L. House	56 Main St	Northborough	c 1870
NBO.98	Wood, Samuel Jr. House	59 Main St	Northborough	c 1871

Inv. No.	Property Name	Street	Town	Year
NBO.89	Jewett, Dr. Henry A. House	60 Main St	Northborough	c 1855
NBO.97	Northborough High School	63 Main St	Northborough	1938
NBO.90	Haynes, Silas - Hildreth, Milo House	64 Main St	Northborough	c 1855
NBO.96	Root, Jethro B. House	67 Main St	Northborough	c 1870
NBO.91	Smith, Edward H. House	70 Main St	Northborough	c 1898
NBO.92	Northborough Baptist Church Parsonage	74-76 Main St	Northborough	c 1870
NBO.4	Grout, Seth - Wood, Samuel III House	75 Main St	Northborough	r 1750
NBO.338	Mason, Thaddeus Barn	75 Main St	Northborough	r 1850
NBO.93	Wood, Samuel House	80 Main St	Northborough	c 1855
NBO.94	Yarn Mill Shop	84 Main St	Northborough	
NBO.95	Smith, Edward Herbert Bone and Grist Mill	88 Main St	Northborough	c 1870
NBO.165	Gale, Capt. Cyrus House	96 Main St	Northborough	c 1855
NBO.166	Wood, Capt. Samuel - Seaver, Samuel House	97 Main St	Northborough	c 1750
NBO.275	Ashley, Rev. Samuel S. House	100 Main St	Northborough	c 1860
NBO.167	Seaver, William House	104 Main St	Northborough	c 1855
NBO.276	Hunt, Stephen House	130 Main St	Northborough	c 1840
NBO.277	Hunt, Capt. Jeremiah House	140 Main St	Northborough	1817
NBO.278	Wesson, Daniel B. Estate Groundskeeper Cottage	154 Main St	Northborough	c 1886
NBO.168	Wesson, Daniel B. House	167 Main St	Northborough	c 1886
NBO.169	Chet's Diner	191 Main St	Northborough	c 1931
NBO.58		413 Main St	Northborough	r 1775
NBO.57	Bartlett, Dea. Jonas House	453 Main St	Northborough	c 1753
NBO.279	Wesson, Daniel B. Estate Superintendent House	13 Maple St	Northborough	c 1886
NBO.280	Wesson, Daniel B. Estate Employee Housing	25-27 Maple St	Northborough	c 1886
NBO.170	Carruth, S. House	101 Maple St	Northborough	c 1800
NBO.171	Bourne, Rev. G. W. House	129 Maple St	Northborough	c 1849
NBO.38	Fay, L. - Mentzer, Cyrus House	1 Mentzer Ave	Northborough	c 1760
NBO.172	Pierce Barn	2 Mill St	Northborough	c 1855
NBO.281	Johnson, Charles E. House	5 Mill St	Northborough	c 1890
NBO.173	Stearns, J. House	7 Mill St	Northborough	c 1855
NBO.174	Maynard, L. House	12 Mill St	Northborough	c 1855
NBO.175	Newton, Richard W. House	9 Monroe St	Northborough	c 1870
NBO.282	Bachelder, Alice A. House	14 Monroe St	Northborough	c 1898
NBO.176	Maynard, T. House	216 Newton St	Northborough	r 1750
NBO.177	Fay, Nahum House	359 Newton St	Northborough	c 1720
NBO.283	Fisher, Hannah Alice House	68 Oak Ave	Northborough	c 1880
NBO.83	Chapin, Marvin - Maynard, Caleb House	4 Patty Ln	Northborough	r 1835

Inv. No.	Property Name	Street	Town	Year
NBO.26	Saint Rose Rectory	11 Pierce St	Northborough	
NBO.23	Saint Rose of Lima Church	16 Pierce St	Northborough	1883
NBO.284	Gerrity, Winifred House	23 Pierce St	Northborough	c 1890
NBO.285	Felt, George H. House	25 Pierce St	Northborough	1899
NBO.178	Fay, J. T. House	22 Pleasant St	Northborough	c 1816
NBO.286	Allen, John L. House	31 Pleasant St	Northborough	c 1875
NBO.106	Gale, Cyrus - Ellsworth, W. House	44 Pleasant St	Northborough	c 1855
NBO.287	Gorman, Walter - Norton, Matthew House	50 Pleasant St	Northborough	c 1860
NBO.288	Wadsworth, Ralph House	67 Pleasant St	Northborough	c 1900
NBO.289	Burdett, Curtis Herbert House	87 Pleasant St	Northborough	1905
NBO.290	Sargent, Della M. House	99 Pleasant St	Northborough	1910
NBO.179	Hastings, H. House	156 Pleasant St	Northborough	r 1735
NBO.76	Howe, Monroe - Bucklin, Emerson House	6 Reservoir Rd	Northborough	c 1781
NBO.31	Rice, John Minot House	9 Rice Ave	Northborough	c 1890
NBO.39	Parmenter, Joel - Newton, Dea. Paul House	254 Rice Ave	Northborough	c 1800
NBO.180	Wood, Samuel II - Seaver, Samuel Fulling Mill	6 River St	Northborough	c 1751
NBO.291		10 River St	Northborough	c 1900
NBO.181	Seaver, W. House	13 River St	Northborough	c 1810
NBO.292		15 River St	Northborough	c 1900
NBO.293		19 River St	Northborough	c 1900
NBO.294		23 River St	Northborough	c 1900
NBO.295	Randlett, Nathaniel House	24-26 River St	Northborough	c 1900
NBO.182	Sargent, S. E. House	25 River St	Northborough	c 1898
NBO.296	Randlett, Nathaniel House	28-30 River St	Northborough	c 1885
NBO.297	Randlett, Nathaniel House	32 River St	Northborough	c 1885
NBO.298	Randlett, Nathaniel House	34 River St	Northborough	c 1885
NBO.299	Tyler, Emily O. House	36 River St	Northborough	c 1890
NBO.300		37 River St	Northborough	c 1910
NBO.301	Mosso, J. House	38-40 River St	Northborough	c 1890
NBO.302		42 River St	Northborough	c 1885
NBO.901	Route 9 Bridge over Route 20	Rt 9	Northborough	1930
NBO.87	Northborough Second Center District School	10 School St	Northborough	1837
NBO.303	Sargent, George F. House	16 School St	Northborough	c 1880
NBO.183	Randlett, Nathaniel - Holden, L. C. House	31 School St	Northborough	1854
NBO.331		33 School St	Northborough	c 1900
NBO.304	Gay, Frank V. House	36 School St	Northborough	c 1895
NBO.305	Parmenter, Edwin Solon House	39 School St	Northborough	1886
NBO.306	Mentzer, Cyrus Hartwell House	40 School St	Northborough	1900

Inv. No.	Property Name	Street	Town	Year
NBO.307	Coburn, Alvah - England, Harry J. House	44 School St	Northborough	c 1898
NBO.332		47 School St	Northborough	c 1920
NBO.308	Brigham, Charles Montford House	48 School St	Northborough	c 1898
NBO.309	Blair, Edwin C. - Brennan, James D. House	50 School St	Northborough	1899
NBO.184	Gale, Cyrus Double House	51-53 School St	Northborough	c 1855
NBO.310	Crouse, William J. House	55 School St	Northborough	c 1885
NBO.333		56 School St	Northborough	c 1900
NBO.311	Gale, Cyrus House	71 School St	Northborough	c 1860
NBO.185	Howe, H. House	130 School St	Northborough	c 1830
NBO.186	Sherman, S. House	284 School St	Northborough	c 1830
NBO.187	Howe, Silas House	3 Silas Dr	Northborough	c 1844
NBO.920	Assabet Park	South St	Northborough	c 1916
NBO.312	Bigelow, Walter J. Hardware Store	17 South St	Northborough	1907
NBO.188	Jerauld, S. House	19 South St	Northborough	c 1855
NBO.189	Rice, M. L. House	24 South St	Northborough	c 1855
NBO.190	Johnson, Dr. Joshua J. House	28 South St	Northborough	c 1855
NBO.314	Brigham, Nathaniel House	49 South St	Northborough	c 1853
NBO.191	Streeter, V. House	79 South St	Northborough	c 1855
NBO.315	Barnes, George House	120 South St	Northborough	c 1890
NBO.316	Phelps, Allyn D. House	129 South St	Northborough	c 1900
NBO.192	Mason, Thaddeus - Barnes, George House	130 South St	Northborough	c 1830
NBO.317	Burgoyne, George H. House	157 South St	Northborough	c 1890
NBO.193	Carruth, Horatio T. House	191 South St	Northborough	c 1839
NBO.194	Maynard, W. House	206 South St	Northborough	1755
NBO.195	Wise House	270 South St	Northborough	c 1800
NBO.196	Davis, George C. House	284 South St	Northborough	c 1855
NBO.197	Crosby, Isaac House	312 South St	Northborough	c 1830
NBO.318	Cook, Maria Elizabeth House	5 Summer St	Northborough	c 1890
NBO.319	Cook, Maria Elizabeth House	7-9 Summer St	Northborough	c 1890
NBO.334		10 Summer St	Northborough	c 1900
NBO.335		14 Summer St	Northborough	c 1900
NBO.198	Newton, Richard W. House	15 Summer St	Northborough	c 1855
NBO.199	Gale, Cyrus House	20 Summer St	Northborough	c 1860
NBO.320	Hastings, Elijah S. House	23 Summer St	Northborough	c 1865
NBO.107	Crawford, J. B. House	25 Summer St	Northborough	c 1830
NBO.321	McCool, Samuel L. House	26 Summer St	Northborough	1898
NBO.200	Brewer, J. H. House	29 Summer St	Northborough	c 1855
NBO.336		37 Summer St	Northborough	c 1925

Inv. No.	Property Name	Street	Town	Year
NBO.322	Potter, William J. House	45 Summer St	Northborough	1884
NBO.323	Potter, Cyrus House	53 Summer St	Northborough	c 1860
NBO.337		63 Summer St	Northborough	c 1880
NBO.324	Richardson, Samuel S. House	67 Summer St	Northborough	c 1890
NBO.105	Bemis, Elijah House	33 Talbot Rd	Northborough	c 1830
NBO.201	Lincoln, Jairus House	2 Tricorner Cir	Northborough	c 1870
NBO.904	Wachusett Aqueduct	Wachusett Aqueduct	Northborough	1896
NBO.202	Babcock, William House	119 Washburn St	Northborough	c 1752
NBO.917	Northborough Civil War Memorial	West Main St	Northborough	1869
NBO.203		4 West Main St	Northborough	1985
NBO.204	Old Lowe's Market	25 West Main St	Northborough	1870
NBO.205	Guptil, Dr. Ira C. House	39 West Main St	Northborough	c 1898
NBO.206	Walker's Market	40 West Main St	Northborough	c 1920
NBO.207		44 West Main St	Northborough	c 1916
NBO.60	Bush, Warren T. - Marcou House	51 West Main St	Northborough	r 1865
NBO.208	Fiske, Horace S. House	65 West Main St	Northborough	c 1855
NBO.209		78 West Main St	Northborough	c 1900
NBO.325	Warren, Henry G. House	214 West Main St	Northborough	c 1905
NBO.210	Maynard House	222 West Main St	Northborough	c 1760
NBO.211	Brigham, J. House	422 West Main St	Northborough	c 1760
NBO.212	Eager, Col. W. House	455 West Main St	Northborough	c 1830
NBO.326	Maynard, William U. Barn	536 West Main St	Northborough	c 1870
NBO.902	Whitney Street Bridge over Conrail	Whitney St	Northborough	c 1905
NBO.65	Gibson, Samuel House	2 Whitney St	Northborough	c 1840
NBO.66	Carron House	12 Whitney St	Northborough	c 1887
NBO.78	Bush, W. House	23 Whitney St	Northborough	c 1840
NBO.79	Bush, Wilder Barn	25 Whitney St	Northborough	c 1850
NBO.80	Bush, Wilder House	27-29 Whitney St	Northborough	c 1850
NBO.81	Bush, Wilder M. House	35 Whitney St	Northborough	c 1750
NBO.213	Bush, Warren T. House	61-63 Whitney St	Northborough	c 1855
NBO.30	Whitney, Peter Parsonage	62 Whitney St	Northborough	c 1780
NBO.214	Maynard, J. House	89 Whitney St	Northborough	c 1855
NBO.215	Fairbanks, Joseph House	96 Whitney St	Northborough	c 1831
NBO.216	Gallop, J. B. House	102 Whitney St	Northborough	c 1855
NBO.217	Sever, J. M. House	109 Whitney St	Northborough	c 1816
NBO.218	Sever, J. F. House	113 Whitney St	Northborough	c 1770
NBO.219	Carruth, Horatio T. House	154 Whitney St	Northborough	c 1837
NBO.220	North District #2 Schoolhouse	192 Whitney St	Northborough	1792

Inv. No.	Property Name	Street	Town	Year
NBO.327	Corey, Edwin S. House	220 Whitney St	Northborough	1884
NBO.328	Corey, Theodore F. House	234 Whitney St	Northborough	c 1875
NBO.34	North District #3 Schoolhouse	310 Whitney St	Northborough	c 1841
NBO.329	Goddard, Solomon House - Maplewood Farm	347 Whitney St	Northborough	c 1750
NBO.56	Goddard, William House	450 Whitney St	Northborough	1726
NBO.330	Cook, Elizabeth Maria House	10 Winn St	Northborough	c 1890
NBO.221	Potter, J. House	41 Winter St	Northborough	c 1816
NBO.222	Mahan House	46 Winter St	Northborough	c 1855
NBO.223	Cutter, Silas A. House	55 Winter St	Northborough	c 1760

Appendix E

Reference Documents

Pollutant Impacts on Water Quality	
Sediment	Sediment is a common component of stormwater, and can be a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter.
Nutrients	Nutrients including nitrogen and phosphorous are the major plant nutrients used for fertilizing landscapes, and are often found in stormwater. These nutrients can result in excessive or accelerated growth of vegetation, such as algae, resulting in impaired use of water in lakes and other sources of water supply. For example, nutrients have led to a loss of water clarity in Lake Tahoe. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.
Bacteria and Viruses	Bacteria and viruses are common contaminates of stormwater. For separate storm drain systems, sources of these contaminants include animal excrement and sanitary sewer overflow. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.
Oil and Grease	Oil and grease includes a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.
Metals	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach. Over half the trace metal load carried in stormwater is associated with sediments. Metals are of concern because they are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies.
Organics	Organics may be found in stormwater at low concentrations. Often synthetic organic compounds (adhesives, cleaners, sealants, solvents, etc.) are widely applied and may be improperly stored and disposed. In addition, deliberate dumping of these chemicals into storm drains and inlets causes environmental harm to waterways.
Pesticides	Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have been repeatedly detected in stormwater at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about the adverse effects of pesticides on the environment and human health. Accumulation of these compounds in simple aquatic organisms, such as plankton, provides an avenue for biomagnification through the food web, potentially resulting in elevated levels of toxins in organisms that feed on them, such as fish and birds.
Gross Pollutants	Gross Pollutants (trash, debris and floatables) may include heavy metals, pesticides, and bacteria in stormwater. Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables may create an aesthetic “eye sore” in waterways. Gross pollutants also include plant debris (such as leaves and lawn-clippings from landscape maintenance), animal excrement, street litter, and other organic matter. Such substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes and estuaries sometimes causing fish kills.
Vector Production	Vector production (e.g., mosquitoes, flies, and rodents) is frequently associated with sheltered habitats and standing water. Unless designed and maintained properly, standing water may occur in treatment control BMP’s for 72 hours or more, thus providing a source for vector habitat and reproduction (Metzger, 2002).

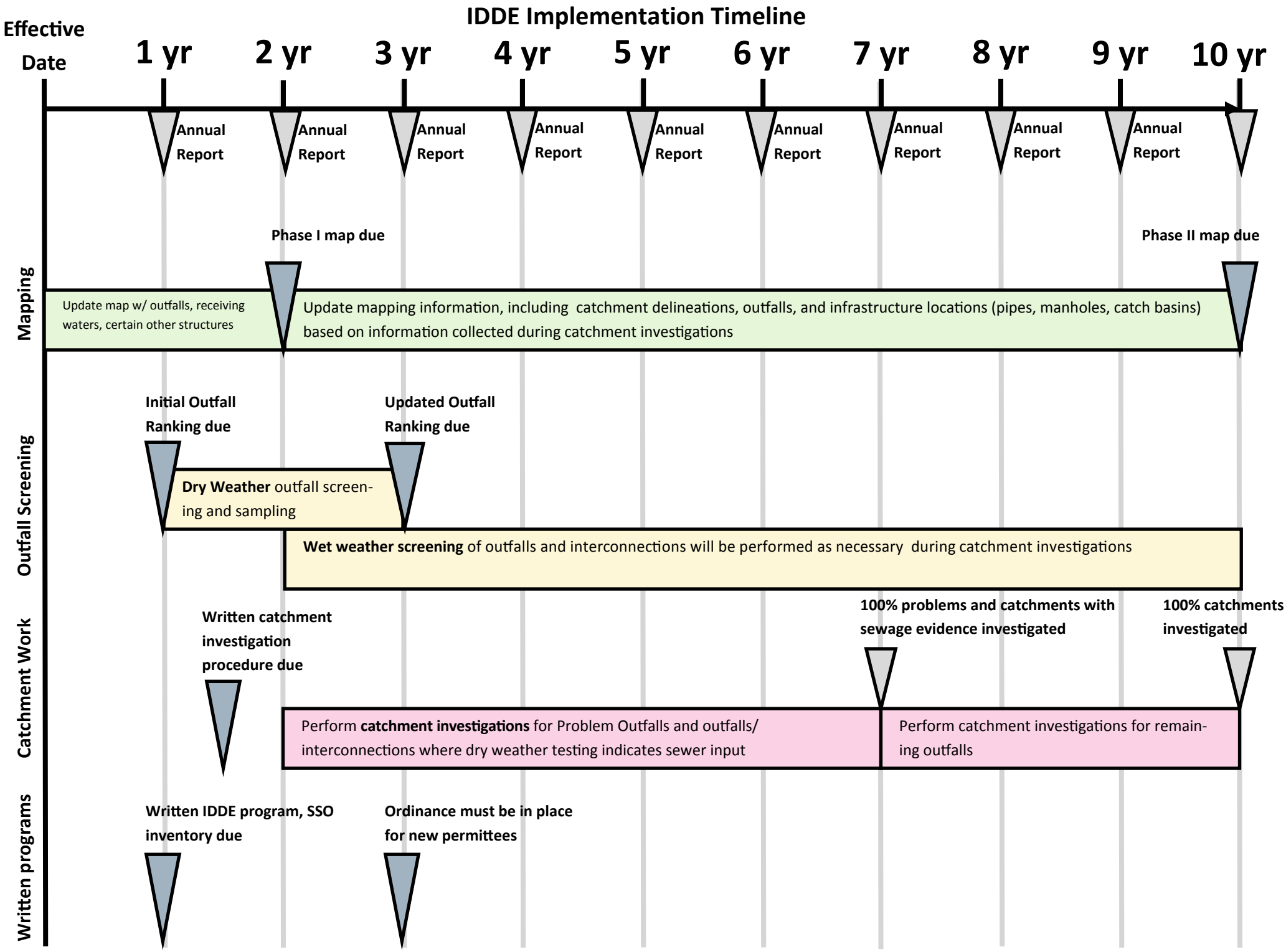
Source: California Stormwater Quality Association, Stormwater BMP Handbook, 2003.

Potential pollutants likely associated with specific *municipal facilities*

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X
Source: California Stormwater BMP Handbook (http://www.cabmphandbooks.com/)(slightly modified)									

Potential pollutants likely associated with *municipal activities*

Municipal Program	Activities	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Roads, Streets, and Highways Operation and Maintenance	Sweeping and Cleaning	X		X	X		X			X
	Street Repair, Maintenance, and Striping/Painting	X		X	X		X	X		
	Bridge and Structure Maintenance	X		X	X		X	X		
Plaza, Sidewalk, and Parking Lot Maintenance and Cleaning	Surface Cleaning	X	X			X	X			X
	Graffiti Cleaning	X	X		X			X		
	Sidewalk Repair	X		X						
	Controlling Litter	X		X		X	X			X
Fountains, Pools, Lakes, and Lagoons Maintenance	Fountain and Pool Draining		X					X		
	Lake and Lagoon Maintenance	X	X	X		X			X	X
Landscape Maintenance	Mowing/Trimming/Planting	X	X	X		X			X	X
	Fertilizer & Pesticide Management	X	X						X	
	Managing Landscape Wastes			X					X	X
	Erosion Control	X	X							
Drainage System Operation and Maintenance	Inspection and Cleaning of Stormwater Conveyance Structures	X	X	X		X		X		X
	Controlling Illicit Connections and Discharges	X	X	X	X	X	X	X	X	X
	Controlling Illegal Dumping	X	X	X	X	X	X	X	X	X
	Maintenance of Inlet and Outlet Structures	X		X	X		X			X
Waste Handling and Disposal	Solid Waste Collection		X	X	X	X	X	X		X
	Waste Reduction and Recycling			X	X					X
	Household Hazardous Waste Collection			X	X		X	X	X	
	Controlling Litter			X	X	X		X		X
	Controlling Illegal Dumping	X		X		X	X		X	X
Water and Sewer Utility Operation and Maintenance	Water Line Maintenance	X				X	X			
	Sanitary Sewer Maintenance	X				X	X			X
	Spill/Leak/Overflow Control, Response, and Containment	X	X			X		X		X
Source: California Stormwater BMP Handbook (http://www.cabmphandbooks.com/)										


IDDE Implementation Timeline
Effective Date
1 yr
2 yr
3 yr
4 yr
5 yr
6 yr
7 yr
8 yr
9 yr
10 yr
Annual Report
Mapping
Phase I map due
Phase II map due
Update map w/ outfalls, receiving waters, certain other structures
Update mapping information, including catchment delineations, outfalls, and infrastructure locations (pipes, manholes, catch basins) based on information collected during catchment investigations
Outfall Screening
Initial Outfall Ranking due
Updated Outfall Ranking due
Dry Weather outfall screening and sampling
Wet weather screening of outfalls and interconnections will be performed as necessary during catchment investigations
Catchment Work
Written catchment investigation procedure due
100% problems and catchments with sewage evidence investigated
100% catchments investigated
Perform catchment investigations for Problem Outfalls and outfalls/ interconnections where dry weather testing indicates sewer input
Perform catchment investigations for remaining outfalls
Written programs
Written IDDE program, SSO inventory due
Ordinance must be in place for new permittees

Tips for Organizing and Conducting Volunteer Clean-up Events

By: Jen Drociak –Acting Coordinator / Volunteer, Manchester Urban Ponds Restoration Program (UPRP)

Step 1: Plan Your Clean-Up Event

A. Land and / or Shore? Determine the Location(s): Determine where, in proximity to the waterbody, your group wishes to concentrate its efforts on during a clean-up event. To find heavily-littered areas, and / or areas that are prone to illegal dumping, walk along the shore, in advance, to identify location(s) for the clean-up event. Identify accessible paths along the shoreline and / or on public trails that are easy for people to walk. The location(s) may be largely determined by public (or lake / homeowner association) access points such as a public beach, boat-launch, or park. If the location is large, consider identifying smaller locations within the larger location which can be managed by individual group leaders and groups. Determining the location(s) will provide you with an idea of the footwear that may be needed for the task based upon the terrain. If the clean-up event will be located at a beach or a dry area, sandals or sneakers may be adequate. If it will be located in a wetland or mucky area, knee-boots may be appropriate. If it will be located in water, hip-boots may be most appropriate. Determining the location(s) will also provide you with a sense of how many volunteers your group is seeking for the clean-up event.

The UPRP typically focuses clean-up efforts in the parks adjacent to the ponds by skirting around the ponds themselves. This involves differing terrain, and thus footwear. There have been occasions, however, where one or more volunteers have also used a small fishing boat to retrieve trash from the water that is too deep to obtain via hip-waders.

B. Obtain Landowner Permission: Whether the location(s) of your clean-up event is / are municipally-owned or privately-owned, determine who owns the property in advance in order to obtain permission. If you do not know who the property owner is, visit your municipality's on-line assessor's website to review the tax map(s) and property card(s) associated with the area. It is typically easy to obtain permission to organize a clean-up on municipally-owned / public land. If the location(s) are on privately-owned land, talk to the land owner(s) and explain why you are organizing a clean-up in that area, along with the benefits of doing so. Obtain permission from them in writing, if you can, by considering they sign a form. Verbal permission may be adequate, however.

The UPRP organizes clean-up events on land owned by Public Works and Parks, Recreation, and Cemetery Departments. We have not had to seek private landowner permission. We simply notify the Manchester Public Works Department and Parks, Recreation, and Cemetery Department of the dates of the clean-up events.

C. Determine the Task(s) at Hand: Determine what you will request of your volunteers. Will it be the removal of trash only? If so, will it be the removal of large items only or all items including the minutia? Will it be the removal of yard waste only? Graffiti removal or other vandalism? All of the above? Determining the task(s) at hand will provide you with an idea of the supplies (and hours) you will need to perform the task(s).

The UPRP typically removes trash only. We typically do not pick up the minutia (cigarette butts, bottle caps, etc.) due to the large volume of trash we collect and the limited amount of time and volunteers we have at each clean-up event.

D. Determine the Check-In Location: Based upon the chosen location(s) of the clean-up event, consider and determine the most appropriate location for volunteers to initially gather to check in and obtain supplies, as well as to reconvene at the end of the clean-up event. This may be a kiosk, boat-launch, or specific location on a beach or in a park. Try to stay away from busy roads or areas that are difficult to access.

The UPRP typically requests that volunteers meet in one central / well-known location such as a kiosk in a parking lot or boat-launch. We have kept the initial meeting location at each clean-up event consistent over the years.

E. Determine the Most Appropriate Age(s) of Your Volunteers: Based upon the task(s) at hand, determine the most appropriate age(s) of your volunteers. Are you seeking adults only? Children? Both? Do you have tasks that all can partake in, or are the tasks age-specific?

The UPRP generally seeks volunteers of all ages for clean-up events and encourage everyone, despite their age or ability, to participate in a manner of how they most feel comfortable.

F. Determine the Desired Number of Volunteers: Based upon the number and location(s) that are chosen for the clean-up event, determine the desired number of volunteers to partake in the event.

The UPRP typically splits the area adjacent to the ponds into several areas, or groups of volunteers.

G. Create Map(s) of the Location(s) <u>OR</u> Plan on Designating a "Group Leader" for Each Location: If the location(s) is / are large enough to break into more than one group during the clean-up event, consider making aerial photographic "maps" (or using topographic maps) of each group's area, indicating on the map the original meeting location, and the group's start and end point.

The UPRP has created aerial maps to use in the past. However, what we consider to be more helpful is having a "group leader" (returning volunteer or someone familiar with the area) lead a small group of other volunteers in each designated area.

Step 2: Schedule Your Clean-Up Event

A. Choose a Date: Choose a date for the clean-up event at a time of year that makes the most sense to your group. Keep in mind that while lakes and ponds have year-round residents, the majority of residents are likely seasonal and may not arrive for the season, or on or around Memorial Day weekend. Thus, a late-spring or late-fall cleanup may not be the most appropriate time as it may not garner the most volunteers. An early or mid-summer cleanup may be the most appropriate. Consider, perhaps, scheduling the event in conjunction with an annual lake association meeting or holiday barbeque. Also consider scheduling the date of the clean-up event at least a month in advance to allow time to prepare (gather supplies and recruit volunteers). Lastly, consider a rain date.

The UPRP typically schedules annual pond and park cleanups on Saturday mornings during the last two weeks in April and the first one or two weeks in May. This is because a) this time of year is typically after the snow has melted and b) this time of year is typically before "leaf-in" (and in the case of some of these areas, this is important, as the areas are overtaken with thick stands of invasive species). We do not offer rain dates.

B. Choose a Time: Determine the amount of time it may take to clean up the area(s) of your choosing. Will it take one hour? Two hours? More? This is also a factor of the number of volunteers that attend (typically the more volunteers that attend the least amount of time the clean-up will take). If you believe the area(s) may take more than two hours, it may be best to schedule a two-part clean-up event. Also consider the time of day most appropriate to your group, especially if it is scheduled in conjunction with (or before or after) another event such as an annual meeting or holiday barbeque.

The UPRP has realized that 1 ½ - 2 hours is a sufficient amount of time to allot to clean-up events. We also realize that volunteers typically do not have the time or patience to commit to any more time in one day than that. We have also typically scheduled the clean-up events from 9:00AM to 11:00AM, with a meeting time of no later than 8:50AM. Early-morning clean-up events afford volunteers to have the remainder of the day for other things.

Step 3: Determine and Obtain Necessary Supplies

A. Determine the Necessary Supplies: Determining the task(s) at hand will determine your necessary supplies. If your clean-up event is strictly a trash removal cleanup, you may only need to obtain latex gloves and trash bags. If your clean-up event also includes yard-waste removal, you may need to obtain paper yard-waste bags, rakes and / or other tools.

Since the UPRP clean-up events are strictly focused on trash-removal, the only supplies we must procure are latex gloves (medium sized) and trash bags. We also have a few hand-held trash-grabbers since some volunteers find them helpful in reaching difficult areas and / or to prevent excessive bending.

B. Obtain the Necessary Supplies: Determine how you will obtain the necessary supplies. Does your group have a budget? Will your group be purchasing your supplies? Will your group fundraise to purchase supplies? Will your group borrow supplies, from perhaps the town or city?

The UPRP typically obtains supplies from the Manchester Parks, Recreation, and Cemetery Department. These supplies typically only include latex gloves and trash bags, but have included, in the past, rakes, other tools and yard waste bags. We also typically have a large container of hand-sanitizer available.

C. Obtain a First-Aid Kit: Consider obtaining one or more First Aid kits (for one or more groups of volunteers) in case it is needed. It is better to be proactively safe!

The UPRP has one First-Aid kit for use.

D. Consider Providing Water and Snacks: If your group has the financial means, consider providing water and snacks to your volunteers for afterwards. If your group does not have the financial means, consider soliciting donations from local establishments or having your group bake some treats, and bring a large cooler of ice water (or iced-tea) and some paper (or reusable plastic) cups.

The UPRP does not regularly provide water and snacks to volunteers since we do not have a budget to do so. On occasion, we have been able to obtain donations for yogurt snacks from Stonyfield Farm. On occasion we have also brought or made a baked good.

Step 4: Determine Your Waste Disposal Options

A. Determine Your Waste Disposal Options: At the end of your clean-up event, determine how and where you will dispose of the trash that was collected. Is there a dumpster on site that your group has permission to use? Are there already trash and / or recycling carts on site that your group has permission to use? If not, consider contacting your municipality's Highway Department, Parks & Recreation Department, or Road Agent, at least a month in advance, who may be able to coordinate trash and / or recycling pickup from your municipality's vendor (i.e. Waste Management, Pinard, etc.). Determine when the trash and / or recycling will be picked up and what the requirements for pickup are (especially with items such as vehicular tires and batteries, etc.). In addition, consider recruiting volunteers with pick-up trucks, especially if your group is cleaning multiple areas, and trash must be stockpiled in one area at the end of the event. Similarly, if you cannot obtain trash pick-up services, volunteers with pick-up trucks, and a municipal sticker (or permission) may be able to haul the trash and / or recycling to your local landfill or transfer station for free.

The UPRP typically sends notification of the clean-up schedule to the Manchester Public Works Director as soon as the dates are calendared. The Public Works Director, or staff, has coordinated with Manchester's solid waste collection staff to collect the trash on the Monday following the cleanup event (which have been held on Saturdays). While there have been a few times the Public Works Department has made one or more 95-gallon recycling carts available for the clean-up events, they are generally not available, and therefore, recycling is not typically sorted from other debris. All (tied / secure) bags of trash have been neatly placed in the same locations over the years; typically underneath or adjacent to the informational kiosks. Trash collected that does not fit into bags is also neatly placed adjacent to the bagged trash. We also recruit volunteers with pick-up trucks so that trash from different areas of the cleanup can be taken to one designated location at the end of the event. In addition, one of our volunteers separates steel and other scrap metal and takes it to a scrap metal recycling facility.

Step 5: Advertise Your Clean-Up Event / Recruit Volunteers

A. Determine Any Project Partners: In addition to volunteers who live around the waterbody, and any other residents of the town, determining any existing local groups or clubs that may be able to assist with the clean-up event is always helpful. Is there a local middle school, high school, or even college (if nearby) environmental club? A local chapter of the Student Conservation Association (SCA)? Any other organization, volunteer group, or club? A lot of these groups and / or clubs seek new community service projects and can help you garner additional / new volunteers.

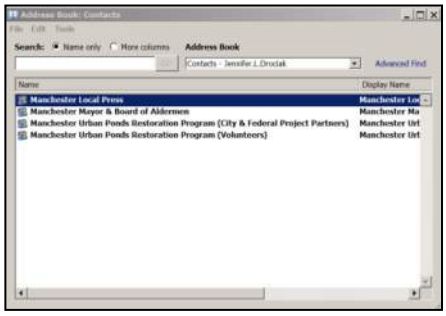
The UPRP has partnered with the Student Conservation Association, local high school ecology clubs, local boy-scout troops, trout-fishing clubs, geo-cashing groups, and others in the past. This has helped garner additional / new volunteers.

B. Determine the Best Way(s) to Advertise Your Clean-Up Event: Determine the target audience of volunteers and consider the best way(s) to advertise your clean-up event. Is it by e-mail? Website? Post-card? Posting of a flyer on a community bulletin board and / or kiosk? An annual lake association newsletter? An advertisement in a local newspaper? TV? Radio? facebook / social media? All of the above? Remember, printed materials and postage cost money, as typically do newspaper and radio advertisements. If your group has available funds for this, that is one thing. If not, instead of

simply placing a paid advertisement in a newspaper, try reaching out to a local news reporter to see if s/he will write a story about your cleanup (or write and submit an op-ed piece). This is usually good, free, advertisement. Also determine the most appropriate time to advertise for the clean-up event. Will you be advertising only once, or multiple times before the event?

The UPRP has typically advertised clean-up events in the following manners: 1) The UPRP webpage, 2) The City of Manchester website "Calendar of Events", 3) the UPRP facebook page, and 4) E-newsletter / e-mail. Local newspapers are also always gracious to cover the event(s) in a story beforehand. The UPRP typically sends posts the clean-up events on the website, and sends out an e-mail approximately three weeks in advance of the cleanup. The UPRP will then send weekly e-mails.

C. Create an E-Mail Distribution List: If you don't already have an e-mail distribution list, consider creating one. This may include names and e-mail addresses of lake association members, conservation commissioners, selectmen, municipal employees / department heads and others you know who may be interested. You can add to this with each clean-up event your group coordinates. If you have access to Constant Contact, Mailer, Mail Chimp, or other similar e-mail platform, this may be easier and more appropriate to use. If not, e-mail is a good starting place.



The UPRP has an e-mail distribution list which consists of approximately 200 individuals consisting of city aldermen, city department heads, conservation commissioners, media contacts, active school groups and other environmental organizations, and former volunteers. With every e-mail sent, an option is sent to opt-out of receiving e-mails by having a name and e-mail address removed from the list. This list is updated at least twice a year.

D. Before You Mail, Post, (or Hit the Send Button): Before you mail or post your flyer, or hit the send button to your e-mail distribution list, be sure to include the Who, What, Where, When, Why, and How to ensure all information is readily available. Why are you seeking volunteers? Who are you seeking as volunteers? What tasks are you seeking of volunteers? Where (general location and specific meeting location) are you seeking volunteers? When (date / time) are you seeking volunteers? Is there a rain date? How will the tasks be conducted? What should the volunteers wear or bring? What will be provided? Are you requesting an RSVP? For more information, who should they contact? Prepare your volunteers by letting them know what time to arrive, what to wear (clothes that can get dirty or wet, long pants, work gloves, boots or sturdy shoes, etc.), what to bring (sunscreen, insect repellant, water) and what to do in case of bad weather (rain date or cancellation information / phone number).

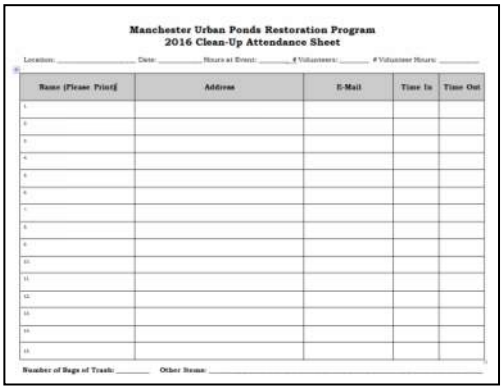
For Example: Seeking volunteers of all ages to assist in an annual trash clean-up at Black Brook and Blodget Park in Manchester on Saturday, April 23, 2016 from 9:00AM – 11:00AM. Volunteers will partner to clean the park and skirt the edges of the brook and wetland complex to remove accumulated trash. Please dress appropriately for weather as no rain date is scheduled. Latex gloves and trash bags will be provided, but please wear knee-boots, or hip-waders if you have them. No RSVP necessary. For more information, please visit www.manchesternh.gov/urbanponds or contact Jen Drociak at email@gmail.com or (603) ### - ####. We look forward to seeing you there!

Step 6: Conduct Your Clean-Up Event

A. Arrive Early: Consider arriving 15 minutes to one hour earlier than your volunteers so that you can set up at your check in location. Consider setting up the following: "Clean-Up Attendance Sheet", water and / or refreshments, first aid and safety, trash bags and clean-up supplies, organizational information (flyers, fact sheets, reports, etc.). Consider also walking around the location(s) to identify any new trash and / or safely concerns that may have accrued / arisen since your last visit.

The UPRP coordinator(s) typically meet on-site approximately 15-30 minutes in advance of volunteers to set up trash bags, latex gloves, and the "Clean-Up Attendance Sheet". We also survey the site to identify any new trash or safety hazards to relay to volunteers.

B. Welcome Your Volunteers and Ask Them to Sign-In: Welcome each volunteer upon arrival and ask that they sign a "Clean-Up Attendance Sheet" so that your group may account for number of volunteers and volunteer hours contributed to the clean-up event. Consider leaving the "Clean-Up Attendance Sheet" at the check-in location for those volunteers who may have to leave (and sign out) earlier than the full allotted time.



Manchester Urban Ponds Restoration Program
2016 Clean-Up Attendance Sheet

Location: _____ Date: _____ Hours at Event: _____ # Volunteers: _____ # Volunteer Hours: _____

Name (Please Print)	Address	E-Mail	Time In	Time Out
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Number of Bags of Trash: _____ Other Items: _____

The UPRP "Clean-Up Attendance Sheet" typically notes the location and date of the event, and has room to tally the number of volunteers, number of volunteer hours, number of bags of trash and other debris. It also has fields for volunteers to print their name, address, and e-mail, and note the time they checked in, and the time they checked out.

C. Ask Volunteers to Sign a Liability Waiver and Photo-Release Form: Trash found in a waterbody will likely be dirty, rusty, slimy, and sharp. In addition, your group may find broken glass, hypodermic needles and hazardous wastes. Heavy items should not be lifted alone. Caution is needed when handling all trash in order to avoid cuts and other injuries. Consider asking volunteers to sign a liability waiver and photo-release form. These can be two documents, or combined into one. The form should explain any dangers associated with the clean-up event and reminds volunteers to act responsibly for their own safety. The form helps protect you and your organization from potential liability if a volunteer is injured. In addition, with their permission, it allows you to use photographs taken that day. Examples of these forms can be found on-line.

D. Introduce Yourself and Provide Opening Remarks: Introduce yourself, thank special guests, sponsors / project partners (who have helped by providing goods or services), and volunteers. If the media is there, they may want to interview you or for you to provide a brief quote. Consider preparing remarks ahead-of-time, and allowing any special guests to also provide opening remarks to the group.

The UPRP coordinators typically introduce themselves, and thank any special guests (city aldermen, city employees, etc.), sponsors (municipal and local), and volunteers themselves.

E. Provide Volunteers with a Brief Background / History of the Area(s): To acquaint new volunteers to your group / program and to the area, consider providing a brief background / history about the waterbody / area, distinguishing features, and its importance to the community. Consider showing volunteers a map of the waterbody and / or watershed. Also consider providing information such as points of interest, recent (or upcoming) restoration projects in the area, and / or information relative to water quality / monitoring, exotic species, other volunteer opportunities, etc.

Many of the UPRP volunteers are returning volunteers. However, with any new volunteers, we typically offer basic information on the program itself, as well as the watershed, inlet / outlet, history fun-facts, and any recent / upcoming restoration projects. We have fact sheets on each of our ponds on our website, which we can also direct them to for more information.

Manchester Urban Ponds Restoration Program

Nutts Pond Facts

Manchester Urban Ponds Restoration Program

The History of Nutts Pond

Manchester Urban Ponds Restoration Program

F. Provide Necessary Supplies to Your Volunteers: Ensure your volunteers have ample supplies for the duration of the clean-up event. If they did not bring their own work gloves, request that they take two pairs of Latex gloves (in case one pair rips), and more than one trash bag, depending on the designated location(s). If your group is also removing yard waste, provide your volunteers with rakes and lawn-waste bags. Request that they return any unused pair of gloves, trash bags, and any supplies to you at the end of the clean-up event. Consider also leaving supplies out in a designated location along with the "Clean-Up Attendance Sheet" for volunteers who may show up late.

Many of the UPRP bring their own work gloves. We then issue two pairs of Latex gloves to each volunteer as well as multiple trash bags, depending on the specific area they will be cleaning up. We request that all unused supplies be returned at the end of the clean-up.

G. Provide Your Volunteers with Instructions for the Clean-Up Event: Provide your volunteers with instructions for the clean-up event such as what they will be retrieving (large trash only, all trash, etc.) what not to pick up (hypodermic needles, cigarette butts, etc.), if they are to separate trash from recycling or not (in which case they may carry two bags at once – different colors may be helpful - one for trash and one for recycling), what is considered recyclable if they are separating recycling from trash (this differs in each community and some vendors may not accept unclean / dirty recyclables from clean-up events), etc. Also provide your volunteers with safety tips and a general schedule of the clean-up event including the location to reconvene at the end and where to place trash. Ensure everyone knows there to focus their efforts and then to stop.

The UPRP typically only picks up large items, and does not typically separate trash from recycling, due to limited means. However, we have done so in the past and have provided volunteers with two trash bags – one for recycling, and one for trash.

H. Make It Fun! Play One or More Games While You're at It! Why not make things fun while you're out there picking up trash? Consider playing one or more games (especially if some of the volunteers are children) such as a scavenger hunt, who can find the most interesting or unusual piece of trash, who can find the largest piece of trash, who collects the most trash, etc. Consider offering a prize and / or certificate to the winner(s) of one or more of the games you play.

The UPRP has, for many years, asked volunteers to find the "Most Interesting or Unusual Piece of Trash" at each clean-up event. At the end of the clean-up, volunteers will place their found items in one location for "judging" by the coordinator(s) of the clean-up event. Certificates and / or prizes have been awarded to the winner(s), and photos have been taken. We have found some really interesting an unusual pieces of trash over the years, and have kept a list!

I. Relinquish Groups of Volunteers / Group Leader(s) to Designated Area(s): If you are separating volunteers into more than one group for your clean-up event, relinquish the groups to their designated location(s). If you don't have a group leader for each group, relinquish them with their maps in hand. If you have a group leader be sure to introduce the volunteers in each group to their group leader before relinquishing them to their designated location(s). Remember to consider that not all locations may need the same number of volunteers.

The UPRP typically asks one or more returning volunteers if they would agree to be group leaders. Not all locations require the same amount of volunteers, however. This is decided based upon the area of the designated location(s), as well as the amount of trash to be removed in the designated location(s). For example, one small area along the shoreline may only require two volunteers, but a larger area in another location with a lot of trash may require 4-6 or more volunteers.

J. Reconvene at Initial Check-In Area at Designated Time: After the allotted period of time has elapsed for the clean-up event, reconvene at your initial check-in area. Account for all volunteers that did not sign out early.

The UPRP always meets at our initial check-in area. We then account for each group leader and group of volunteers (who did not sign out early) to ensure all have safely returned.

K. Count Full Bags of Trash (or Weigh All Trash): Count all full bags of trash that were collected and returned. If one or more bags are returned and are not considered full, consider consolidating them to make full bags of trash. That way, your measurements of "full bags" collected for this, and any other clean-up events, are consistently measured / counted. If your group has access to a scale, you consider weighing your bags of trash, and any other trash, to account for pounds of trash collected. Another option is to ask if the vendor who is charged with collecting the trash after the event can inform your group of the weight of the collection when the truck enters the scale at the weigh-station before drop-off at the refuse facility.

Since trash collected at UPRP clean-up events has not been weighed by a scale, and trash has been weighed by vendor truck only occasionally, to be consistent, we always count full bags at the site, and consolidate bags of trash that are returned not full in order to make full bags.

L. Account for and Count Other Items: Account for and count the quantity of other items of trash collected that cannot fit into bags.

The UPRP always accounts for and counts any trash that is collected that cannot be bagged. This typically includes vehicular tires, shopping carts, wood debris, construction debris, or any other items that have been illegally dumped.

***M.* Share the Data with Volunteers:** Once you have tallied the final numbers of bags of trash and other items collected during the clean-up event, announce them to your volunteers so they know just how much trash and other debris they removed from the area, know how important their contribution of time and efforts were, and have immediate results of their work!

N. Tally Final Numbers on Clean-Up Attendance Sheet: Once you have tallied everything collected, write these numbers on your "Clean-Up Attendance Sheet".

O. Take Photographs: To commemorate the success of your clean-up event, take a photo of the trash collected, and of the group of volunteers who helped collect it!

The UPRP always photographs the trash collected (in and out of bags), as well as takes a group photograph in front of or aside the trash collected.

P. Award a Prize, or Two, or Three: If you played one or more games during the clean-up event, consider awarding a certificate or prize to your winner(s) and photographing them with their winning piece of trash!

The UPRP has, for many years, asked volunteers to find the "Most Interesting or Unusual Piece of Trash" at each clean-up event. At the end of the clean-up, volunteers will place their found items in one location for "judging" by the coordinator(s) of the clean-up. Certificates and / or prizes have been awarded to the winner(s), and photos have been taken.

Q. Thank the Volunteers: Before parting ways, be sure to thank your volunteers for their assistance! Encourage them to volunteer again. Be sure to individually thank any special guests (aldermen / selectmen, city employees, media, etc.).

At the end of each clean-up event, the UPRP notes upcoming clean-up events in order to encourage volunteers to return for the next event.

Above Left: Volunteers at the 100th Cleanup of the Manchester Urban Ponds Restoration Program.

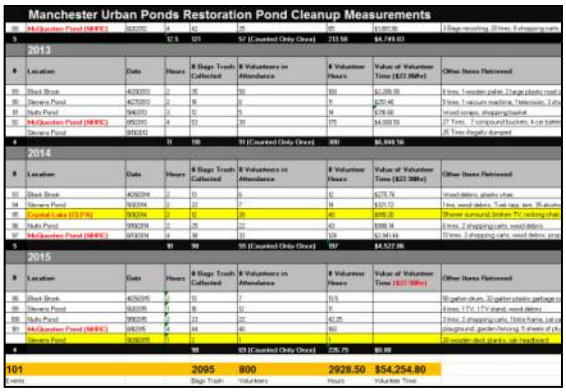
Above Right: Cake served to volunteers at the 100th official cleanup of the Manchester Urban Ponds Restoration Program .

R. Consider Having a Picnic / Cookout / or Lunch: If you have the financial means, consider having a picnic / cookout / lunch afterwards to celebrate your accomplishment. Or, consider soliciting local vendors for food donations in exchange for sponsor / partnership recognition at your clean-up event. If you're not able to make or supply lunch, consider encouraging volunteers to bring a brown-bag lunch for afterwards.

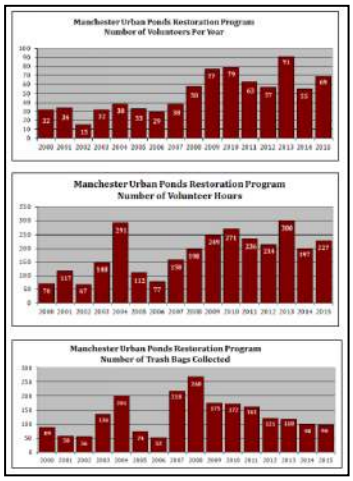
Step 7: Follow Up After the Clean-Up Event

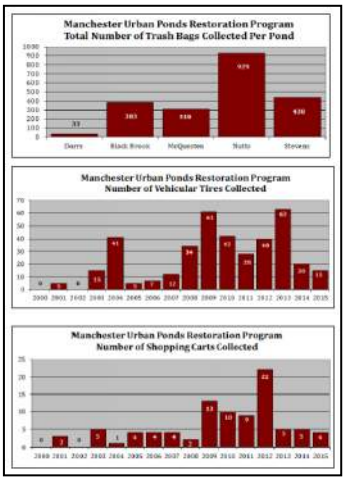
A. Update Your Electronic Records: Now is the time to transpose the information collected on the "Clean-Up Attendance Sheet" into an electronic record-retention system if you have access to one. Perhaps you have access to a database. If not, consider using a Microsoft Excel workbook / spreadsheet system to track measurements from your clean-up events. Now is also the time to update your existing e-mail distribution list with the names and e-mail addresses of those volunteers who participated in your clean-up event.

The UPRP has consistently used Microsoft Excel to track clean-up measurements. In the first worksheet of the workbook, we account for the number of our clean-up event, the location, date, hours spent at the event, numbers of bags of trash collected at the event, number of volunteers at the event, number of volunteer hours at the event, total value of volunteer time for the event, and other items retrieved at the event. For each year tracked, we created a "total" line with auto-calculations to account for the total of each year. To account for the value of volunteer time, we use figures taken from www.independentsector.org. In the second worksheet of the workbook, we account for pond cleanup attendees, where, for each clean-up event, we list the location, date, names (in alphabetical order), address, and hours at event. Similarly, for each year tracked, we created a "total" line. In the third worksheet of the workbook, we have created graphs based upon each year's total metrics. We then transpose these graphs to a Microsoft Word document, then an Adobe PDF document, and post on our website, and at the kiosks.


Manchester Urban Ponds Restoration Pond Cleanup Measurements

#	Location	Date	Hours	# Bags Trash Collected	# Volunteers in Attendance	# Volunteer Hours	Value of Volunteer Time ($22.36/hr)	Other Items Retrieved
	2013							
	2014							
	2015							
101				2095	800	2928.50	$54,254.80	





B. Follow Up With an E-mail or Thank-You Note: It is always nice to follow up with your new (and / or returning) volunteers by sending them a formal personalized thank-you via e-mail or US Postal Service. Besides, who doesn't like receiving a letter in the letter box, especially in this electronic day-in-age?

The UPRP, has, on occasion, sent personalized thank-you cards in the mail. Typically, however, we send a group thank-you via e-mail and attach photographs taken at the event(s), as well as re-cap tallies from the clean-up event(s).

C. Consider Writing an Article for Your Newsletter or the Newspaper: Consider writing an article for your newsletter, if you have one, or a local newsletter or newspaper, summarizing the event with photographs and tallies from the event. Volunteers who helped out at your clean-up event will feel proud of their accomplishment and the results. This is a good way to garner publicity about your group and its event as well as garner additional volunteers in the future.

The UPRP has often written newspaper articles and / or shared summary information about the clean-up events (at the end of the season) listing sponsors / project partners and volunteers, and including photographs of volunteers at the event, via an electronic newsletter.

From 2000 - 2005 **The Manchester Urban Ponds Restoration Program** (UPRP) was part of the Supplemental Environmental Projects Plan (SEPP) which was part of an agreement between the City of Manchester, NH Department of Environmental Services, and the US Environmental Protection Agency to address combined sewers in the City. Seven (7) waterbodies in Manchester have been evaluated and monitored for restoration potential. Specific restoration projects to meet the program's goals have also been identified, funded, and completed through this project. Since 2000, the Manchester Urban Ponds Restoration Program has organized 101 clean-up events. Over the past 15 years, 800 volunteers have spent 2,298.50 hours collecting 2,093 bags of trash! This does not include the items illegally "dumped" such as shopping carts (91), tires (388), car batteries, other car parts, construction debris, and other items. In addition, the value of volunteer time spent at these clean-ups has amounted to over $54,000 over the past 15 years! The Manchester Urban Ponds Restoration Program was awarded an EPA "Environmental Merit Award" in 2011. More information on the Manchester Urban Ponds Restoration Program can be found by visiting www.manchesternh.gov/urbanponds.

Jen Drociak lives in Manchester, NH and holds a Bachelor of Science degree in Environmental Conservation from the University of New Hampshire. She is employed with the New Hampshire Department of Environmental Services where she has worked as a program specialist for the Pollution Prevention Program, a restoration specialist for the NH Coastal Program where she established a monitoring program for pre- and post-restoration projects in NH's salt marshes, and as the Volunteer River Assessment Program Coordinator where she provided technical assistance to approximately 200 volunteers who collected water quality samples for surface water quality assessments on NH's rivers and streams. Jen has also worked for the Wastewater Engineering Bureau as a grants management specialist and is currently working for the Land Resources Management Bureau as a compliance specialist. Since 2000, Jen has also been involved with the Manchester Urban Ponds Restoration Program, and has served as acting coordinator since 2006 where she largely coordinates annual clean-up events and water quality monitoring.

Appendix F

Record Keeping

Tighe&Bond

MS4 Record Keeping Update
Northborough, MA
October 2020

The Town's Stormwater Management Program has been appended through the Permit term, including development of the following standalone reports. These reports are available from the Northborough Engineering Department.

The **IDDE Program** has been updated to include:

- Illicit Discharge Detection and Elimination Program, June 2019
- Sanitary Sewer Overflow (SSO) inventory, updated annually
- Northborough Outfall Inventory and Dry Weather Screening Field Effort Summary – Spring 2020, in final review
- Northborough MS4 Catchment Investigation Procedures, December 2019
- Phase I MS4 System Map, September 2020

The **Construction and Post-Construction Programs** have been updated to include:

- Northborough Wetland Regulations require as-built drawings and an O&M Plan to be submitted with requests for certificates of compliance. The Wetlands Regulations are available online here: https://www.town.northborough.ma.us/sites/g/files/vyhlif3571/f/uploads/wetlands_bylaw_and_regs_voted2019.06.10.pdf
- The Land Clearing and Grading bylaw in the Zoning Bylaw also requires as-builts to be submitted to prove regulations are being met. The bylaw is available online here: https://www.codepublishing.com/MA/Northborough/html/Northborough07/Northborough0709.html#7-09-010

The **Municipal Good Housekeeping Program** has been updated to include:

- Department of Public Works Facility Stormwater Pollution Prevention Plan, February 2018
- Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance, June 2020

Reporting includes:

- Year 1 Annual Report and attachments:
  - Sanitary Sewer Overflow Inventory
  - Permit Year 1 Outfall Inventory
- Year 2 Annual Report and attachments:
  - Summary of Northborough's TMDLs and Impaired Waters
  - Permit Year 2 Outfall Investigation Summary *(available electronically)*
  - Outfall Sampling Results Summary

Permit Year 1 Annual Report

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: Town of Northborough

EPA NPDES Permit Number: MAR041143

Primary MS4 Program Manager Contact Information

Name: Fred Litchfield Title: Town Engineer

Street Address Line 1: Town Hall

Street Address Line 2: 63 Main Street

City: Northborough State: MA Zip Code: 01532

Email: flitchfield@town.northborough.ma.us Phone Number: (508) 393-5015

Fax Number: (508) 393-6996

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.northborough.ma.us/engineering-department/pages/stormwater-drainage

Date SWMP was Last Updated: September 2018

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:
- ☒ 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:
- ☒ 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)

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:

Year 1 Requirements, Develop written procedures for site inspections and enforcement of sediment and erosion control and site plan review: The Town implements and enforces its local bylaws and regulations in regards to sediment and erosion control in accordance with General Permit requirements. Written procedures to document current practices were drafted in Permit Year 1 and will be finalized in Permit Year 2.

Year 1 Requirements, Inspect all stormwater treatment structures: Mapping of structural BMPs and

stormwater treatment structures is not due until Permit Year 2. Therefore, BMPs were not inspected during Permit Year 1. This will begin after Town-owned structural BMPs and treatment structures have been identified and mapped as part of Phase I mapping efforts and SOPs for inspection and maintenance have been written in the Town-wide Good Housekeeping Program in Permit Year 2.

Phosphorus Good Housekeeping: All streets are swept at least once annually, and priority areas are swept twice annually. The Town will estimate the budget needed for increased street sweeping as the entire Town is within the Assabet River watershed; the increased budget will need to be presented as part of the FY21 operating budget request and is subject to Selectmen and Town Meeting approval.

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: 4

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: 1A-1D: Education and Outreach to All Audiences (Multi-Media Methods)

Message Description and Distribution Method:

Northborough is a member of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). The Think Blue Massachusetts campaign was created in October 2018 to educate businesses and residents on the effects of stormwater pollution on waterways and to encourage residents to reduce pollution from stormwater runoff. Think Blue Massachusetts created a baseline survey to gauge community knowledge on stormwater, released a "Fowl Water" advertising campaign that targeted CMRSWC member communities, and carried out a follow-up survey to measure the impact of the advertising campaign.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

In 2018, the follow-up survey indicated that there was a 14% increase in understanding of how stormwater starts and a 12% increase in where stormwater goes. The educational efforts of the 2018 campaign reached over 195,000 individuals in central Massachusetts. The campaign also printed ads in regional newspapers in central Massachusetts.

In 2019, the follow-up survey indicated that more than 15% of respondents recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2019 campaign received 4,782 impressions across Facebook, Instagram, and YouTube for Northborough.

Message Date(s): May-June 2018 and June-July 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: 1A-1D: Education and Outreach to All Audiences (Multi-Media Methods)

Message Description and Distribution Method:

The Northborough Engineering Department posts several educational resources on its webpage, including the EPA brochure "After the Storm." "After the Storm" provides information about stormwater runoff, the effects

of pollution, fertilizer use, septic system maintenance, proper pet waste disposal, and ideas for green landscaping. The webpage includes additional links to EPA websites about nonpoint source pollution, green infrastructure, low impact development, and other stormwater management resources.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

Educational materials are available to all visitors of Town website.

Message Date(s): Ongoing

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: 1B: Education and Outreach to Businesses (Multi-Media Methods)

Message Description and Distribution Method:

The Town's Conservation Agent staffed a booth at the first annual environmental fair held at the Northborough Campus of the Sanofi Corporation on Forbes Road. Information on Town resources, conservation, and stormwater was distributed. A Think Blue video was also incorporated into the display, as well as information on non-point source pollution and stormwater runoff.

Targeted Audience: Businesses, institutions and commercial facilities; Residents

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

Approximately 200 attendees were present at the Environmental Fair.

Message Date(s): April 22, 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: 1B: Education and Outreach to Residents and Institutions (Multi-Media Methods)

Message Description and Distribution Method:

The Town's Conservation Agent participated in the Northborough Junior Woman's Club STEM event, and presented four workshops to middle school girls about water quality, stormwater runoff, and non-point source pollution. Attendees also conducted water quality tests and learned about water quality standards.

The Town's Conservation Agent presented a workshop at the WPI Women in Science Day Camp. Topics included water quality and its relation to food waste, and attendees learned about water quality standards, stormwater runoff, and non-point source pollution.

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

Approximately 60 middle school girls attended the Northborough Junior Woman's Club Stem Event. Approximately 25 fifth grade girls and 4 staff members attended the WPI Women in Science Day Camp.

Message Date(s): March 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:1A: Education and Outreach to Residents (Multi-Media Methods)

Message Description and Distribution Method:

Pet Waste Education: The Dog License form from the Town Clerk includes a summary of regulations, including the "Pooper Scooper Bylaw" (Town Bylaw 2-24-090). In Permit Year 2, Town Clerk will also begin sending the MassDEP / DCR brochure in the mail with license renewals, "Dog Waste and Surface Water Quality."

Targeted Audience: Residents

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

There were 1,813 licenses issued this year.

Message Date(s): Ongoing

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:

The Stormwater Management Plan (SWMP) was posted for public review and made publicly available on the Town's website. The SWMP was also presented at a public Conservation Commission meeting on September 10, 2018 where public comments and feedback were solicited.

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:

The Town holds multiple cleanup and collection events throughout the Permit Year that help decrease pollution and litter. A household hazardous waste collection day was held on November 10, 2018. The Annual Town Cleanup was held on April 27, 2019. Brush collection days were held on May 31, 2019 and June 1, 2019 where residents were encouraged to bring yard waste, including grass and leaves, to the Highway Garage for proper disposal. The collection days were advertised on the Town's webpage and in news articles.

The Town's Conservation Agent regularly presents workshops to students, residents, and businesses around Northborough. See MCM 1 for additional information about the presentations completed in Permit Year 1.

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: 0

Number of SSOs removed: N/A

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: 0

Total number of SSOs removed: N/A

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period (phase I map due in year 2):

Phase I mapping elements are largely complete. Additional mapping is needed for Town-owned stormwater treatment structures. Many Phase II mapping elements are complete, including manholes, catch basins, and most connectivity. The Town will continue to improve the map as modifications are made and the IDDE Program is implemented.

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:

N/A

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

Number of outfalls screened: 0

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

Percent of total outfalls screened: 0

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:

N/A

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:

No catchment investigations were completed in Permit Year 1 as investigations of problem catchments are not required to begin until Permit Year 2. Additionally, the Town has not identified any problem catchments.

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:

N/A

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: N/A

Estimated volume of sewage removed: N/A [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: N/A

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:

An interdepartmental meeting was conducted on June 10, 2019, which reviewed the overall purpose and scope of the IDDE Plan and IDDE Program responsibilities. The Town's catch basin cleaning contractors were provided with a "Pocket Guide to Illicit Discharges" in May 2019, which helps identify different types of illicit discharges and provides contact information for reporting.

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: 6

Number of inspections completed: 80

Number of enforcement actions taken: 0

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:

The Town will review existing bylaws and regulations and determine whether updates or additions are needed to meet the requirements of the General Permit in Permit Year 2.

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:

Northborough Wetland Regulations require as-built drawings and an O&M Plan to be submitted with requests for certificates of compliance. The Groundwater Zoning bylaw also requires as-builts to be submitted to prove regulations are being met. The Town will review existing bylaws and regulations and determine whether updates or additions are needed to meet the requirements of the General Permit in Permit Year 2.

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:

Preparation for the Street Design and Parking Lots Report has not yet begun as this requirement is due in Permit Year 4.

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:

Preparation for the Green Infrastructure Report has not yet begun as this requirement is due in Permit Year 4.

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:

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4.

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

The plan will be formalized during development of a written operation and maintenance plan in Permit Year 2.

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:

N/A

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

Number of catch basins inspected: 1,607

Number of catch basins cleaned: 1,607

Total volume or mass of material removed from all catch basins: 483 tons

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

Total number of catch basins: 1,672

If applicable:

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

Street Sweeping

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

All streets are swept at least once annually, and priority areas are swept twice annually. Written procedures for street sweeping will be formalized during development of a written operation and maintenance plan in Permit Year 2. The Town will estimate the budget needed for increased street sweeping as the entire Town is within the Assabet River watershed; the increased budget will need to be presented as part of the FY21 operating

budget request and is subject to Selectmen and Town Meeting approval.

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

○ Number of miles cleaned:		
○ Volume of material removed:	179	CY (2019)
◉ Weight of material removed:	457.59	tons (2018)

If applicable:

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

Winter Road Maintenance

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

Deicing materials are stored in a covered shed. Written procedures for winter road maintenance will be formalized during development of a written operation and maintenance plan in Permit Year 2.

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:

The Town possesses institutional knowledge of Town-owned properties to be included in the inventory. The Town will develop a written inventory during Permit Year 2.

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:

Operation and maintenance procedures associated with the properties included in the inventory will be formalized during development of a written operation and maintenance plan in Permit Year 2.

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:

The Town implements a SWPPP (dated February 2018) for the DPW facility. The Town did complete some inspections in Permit Year 1 and the inspection frequency will be increased in accordance with SWPPP inspection schedules in Permit Year 2. The Town will identify if additional properties or facilities are in need of a SWPPP and will prepare these in accordance with the General Permit by the end of Permit Year 2.

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

Number of site inspections completed: 1

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

None

O&M Procedures for Stormwater Treatment Structures

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

Written procedures for operation and maintenance of stormwater treatment structures will be formalized during development of a written operation and maintenance plan in Permit Year 2.

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:

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:

The Town acknowledges the General Permit Year 2 requirements and intends to complete as many activities as possible based on funding and staff availability.

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:	Frederic E. Litchfield	Title:	Town Engineer
Signature:	Frederic E Litchfield	Date:	9/27/19

[Signatory may be a duly authorized representative]

Town of Northborough

Sanitary Sewer Overflow Inventory

No sanitary sewer overflows have occurred from 2013 through June 30, 2019.

Northborough Outfall Inventory
Permit Year 1

Outfall ID	Tighe & Bond Outfall ID	Receiving Waterbody	Priority Rank	Latitude	Longitude
ARN-OF-0001	OF_1	Outside Receiving	Low Priority	42.3307	-71.6403
ARN-OF-0002	OF_2	Outside Receiving	Low Priority	42.3302	-71.6458
HBS-OF-0001	OF_3	Outside Receiving	Low Priority	42.3285	-71.6479
HBS-OF-0002	OF_4	Howard Brook	High Priority	42.3272	-71.6485
HBS-OF-0003	OF_5	Howard Brook	High Priority	42.3269	-71.6483
HBS-OF-0004	OF_6	Howard Brook	High Priority	42.3267	-71.648
ARN-OF-0003	OF_7	Outside Receiving	Low Priority	42.3256	-71.6403
ARN-OF-0004	OF_8	Assabet River MA82B-03	High Priority	42.3234	-71.6379
ARN-OF-0005	OF_9	Assabet River MA82B-03	High Priority	42.3233	-71.6379
ARN-OF-0006	OF_10	Unnamed Pond to Unnamed Trib to Assabet River MA82B-03	Low Priority	42.323	-71.6395
CHS-OF-0001	OF_11	Outside Receiving	Low Priority	42.3226	-71.6477
CHS-OF-0002	OF_12	Outside Receiving	Low Priority	42.3224	-71.6475
CHS-OF-0003	OF_13	Outside Receiving	Low Priority	42.3223	-71.6428
CHS-OF-0004	OF_14	Outside Receiving	Low Priority	42.3217	-71.6484
CHS-OF-0005	OF_15	Cold Harbor Brook	Low Priority	42.321	-71.6446
CHS-OF-0006	OF_16	Outside Receiving	Low Priority	42.321	-71.6449
ARS-OF-0001	OF_17	Outside Receiving	Low Priority	42.3181	-71.6419
ARS-OF-0002	OF_18	Outside Receiving	Low Priority	42.3174	-71.6414
CHS-OF-0007	OF_19	Outside Receiving	Low Priority	42.3172	-71.6583
ARS-OF-0003	OF_20	Outside Receiving	Low Priority	42.3164	-71.639
ARS-OF-0004	OF_21	Outside Receiving	Low Priority	42.3151	-71.6399
ARS-OF-0005	OF_22	Outside Receiving	Low Priority	42.3133	-71.6488
ARS-OF-0006	OF_23	Outside Receiving	Low Priority	42.3129	-71.6488
ARS-OF-0007	OF_24	Wetland to Unnamed Trib to Assabet River MA82B-02	Low Priority	42.3129	-71.6419
ARS-OF-0008	OF_25	Outside Receiving	High Priority	42.2995	-71.6475
HBS-OF-0005	OF_26	Outside Receiving	High Priority	42.3214	-71.6539
HBS-OF-0006	OF_27	Outside Receiving	Low Priority	42.321	-71.655
CHS-OF-0008	OF_29	Outside Receiving	High Priority	42.3193	-71.6753
ARS-OF-0009	OF_30	Outside Receiving	Low Priority	42.3182	-71.6319
CHS-OF-0009	OF_31	Outside Receiving	Low Priority	42.318	-71.679
CHS-OF-0010	OF_32	Outside Receiving	High Priority	42.3177	-71.6733
STB-OF-0001	OF_33	Outside Receiving	Low Priority	42.3171	-71.6225
CHS-OF-0011	OF_34	Outside Receiving	High Priority	42.3169	-71.6729
CHS-OF-0012	OF_35	Outside Receiving	High Priority	42.3159	-71.6723
CHS-OF-0013	OF_36	Outside Receiving	Low Priority	42.3149	-71.678
ARS-OF-0010	OF_37	Outside Receiving	Low Priority	42.315	-71.6363
CHS-OF-0014	OF_38	Cold Harbor Brook	Low Priority	42.3147	-71.6578
CHS-OF-0015	OF_39	Cold Harbor Brook	Low Priority	42.3148	-71.658
CHS-OF-0016	OF_40	Wetland to Cold Harbor Brook	Low Priority	42.3148	-71.6627
CHS-OF-0017	OF_41	Cold Harbor Brook	Low Priority	42.3147	-71.6578
ARS-OF-0011	OF_42	Wetland to Unnamed Trib to Assabet River MA82B-02	Low Priority	42.3143	-71.6381
CHS-OF-0018	OF_43	Outside Receiving	Low Priority	42.3144	-71.6636
ARS-OF-0012	OF_44	Wetland to Unnamed Trib to Assabet River MA82B-02	Low Priority	42.3139	-71.6472
ARS-OF-0013	OF_45	Outside Receiving	Low Priority	42.314	-71.6298
ARS-OF-0014	OF_46	Outside Receiving	Low Priority	42.3139	-71.6428
ARS-OF-0015	OF_47	Outside Receiving	Low Priority	42.3139	-71.6461
ARS-OF-0016	OF_48	Outside Receiving	Low Priority	42.3137	-71.6438
CHS-OF-0019	OF_49	Outside Receiving	Low Priority	42.3138	-71.659
CHS-OF-0020	OF_50	Outside Receiving	Low Priority	42.314	-71.6582
CHS-OF-0021	OF_51	Cold Harbor Brook	Low Priority	42.313	-71.6612
CHS-OF-0022	OF_52	Wetland to Cold Harbor Brook	Low Priority	42.3132	-71.6548
ARS-OF-0017	OF_53	Outside Receiving	Low Priority	42.3129	-71.6274
ARS-OF-0018	OF_54	Outside Receiving	Low Priority	42.3119	-71.6375
ARS-OF-0019	OF_55	Wetland to Unnamed Trib to Assabet River MA82B-02	Low Priority	42.3113	-71.6474
ARS-OF-0020	OF_56	Outside Receiving	Low Priority	42.3109	-71.6447
CHS-OF-0023	OF_57	Cold Harbor Brook	Low Priority	42.3106	-71.6611
ARS-OF-0022	OF_59	Outside Receiving	Low Priority	42.31	-71.6481
ARS-OF-0023	OF_60	Wetland to Unnamed Trib to Assabet River MA82B-02	High Priority	42.3082	-71.6515
ARS-OF-0024	OF_61	Wetland to Assabet River MA82B-02	High Priority	42.3071	-71.6343
ARS-OF-0025	OF_63	Assabet River MA82B-02	High Priority	42.3054	-71.6299
ARS-OF-0026	OF_64	Unnamed Trib to Assabet River MA82B-02	High Priority	42.3045	-71.6464
ARS-OF-0027	OF_65	Unnamed Trib to Assabet River MA82B-02	High Priority	42.3043	-71.6473
ARS-OF-0028	OF_66	Unnamed Trib to Assabet River MA82B-02	High Priority	42.304	-71.6482
ARS-OF-0029	OF_67	Outside Receiving	High Priority	42.3041	-71.652

Northborough Outfall Inventory
Permit Year 1

Outfall ID	Tighe & Bond Outfall ID	Receiving Waterbody	Priority Rank	Latitude	Longitude
ARS-OF-0030	OF_68	Assabet River MA82B-02	High Priority	42.3041	-71.6281
ARS-OF-0031	OF_69	Wetland to Unnamed Trib to Assabet River MA82B-02	High Priority	42.3036	-71.6437
ARS-OF-0032	OF_70	Outside Receiving	High Priority	42.3032	-71.6448
ARS-OF-0033	OF_71	Outside Receiving	High Priority	42.3028	-71.6393
HPN-OF-0001	OF_72	Outside Receiving	Low Priority	42.3029	-71.6649
ARS-OF-0034	OF_73	Outside Receiving	High Priority	42.303	-71.6444
ARS-OF-0035	OF_74	Outside Receiving	High Priority	42.3015	-71.6439
ARS-OF-0036	OF_75	Assabet River MA82B-02	High Priority	42.3012	-71.6339
ARS-OF-0037	OF_76	Wetland to Unnamed Trib to Assabet River MA82B-02	High Priority	42.3001	-71.6412
HPS-OF-0001	OF_77	Wetland to Unnamed Trib to Smith Pond	Low Priority	42.2992	-71.6516
ARS-OF-0038	OF_78	Unnamed Trib to Assabet River MA82B-02	High Priority	42.2991	-71.6411
ARS-OF-0039	OF_79	Unnamed Trib to Assabet River MA82B-02	High Priority	42.2989	-71.6411
ARS-OF-0040	OF_80	Outside Receiving	High Priority	42.2985	-71.6471
HPS-OF-0002	OF_81	Outside Receiving	Low Priority	42.2977	-71.6525
HPS-OF-0003	OF_82	Outside Receiving	Low Priority	42.2977	-71.6542
ARS-OF-0041	OF_83	Outside Receiving	High Priority	42.2967	-71.6397
ARS-OF-0042	OF_84	Outside Receiving	High Priority	42.2963	-71.6466
HPS-OF-0004	OF_85	Outside Receiving	Low Priority	42.2957	-71.6554
HPS-OF-0005	OF_86	Outside Receiving	Low Priority	42.2929	-71.655
HPS-OF-0006	OF_87	Outside Receiving	Low Priority	42.2935	-71.6568
HPS-OF-0007	OF_88	Outside Receiving	High Priority	42.2922	-71.6488
ARS-OF-0043	OF_89	Outside Receiving	High Priority	42.2919	-71.6459
HPS-OF-0008	OF_90	Outside Receiving	High Priority	42.2913	-71.649
HPS-OF-0009	OF_91	Outside Receiving	High Priority	42.2901	-71.6454
HPS-OF-0010	OF_92	Outside Receiving	Low Priority	42.291	-71.6559
HPS-OF-0011	OF_93	Wetland to Hop Brook	High Priority	42.2903	-71.6535
HPS-OF-0012	OF_94	Outside Receiving	High Priority	42.2893	-71.6479
HPS-OF-0013	OF_95	Outside Receiving	High Priority	42.2892	-71.6465
HPS-OF-0014	OF_96	Outside Receiving	High Priority	42.2893	-71.6484
HPS-OF-0015	OF_97	Hop Brook	High Priority	42.2888	-71.6515
ARS-OF-0044	OF_98	Outside Receiving	High Priority	42.2953	-71.6486
ARS-OF-0045	OF_99	Outside Receiving	High Priority	42.2961	-71.6432
ARS-OF-0046	OF_100	Outside Receiving	Low Priority	42.3032	-71.6555
HPN-OF-0002	OF_101	Outside Receiving	Low Priority	42.3032	-71.6656
ARS-OF-0047	OF_103	Outside Receiving	High Priority	42.3099	-71.6538
ARS-OF-0048	OF_104	Wetland to Unnamed Trib to Assabet River MA82B-02	High Priority	42.3092	-71.6532
ARS-OF-0049	OF_105	Outside Receiving	High Priority	42.309	-71.6518
ARS-OF-0050	OF_106	Outside Receiving	High Priority	42.3058	-71.6519
ARS-OF-0051	OF_107	Outside Receiving	Low Priority	42.3141	-71.6499
ARS-OF-0052	OF_108	Outside Receiving	Low Priority	42.3129	-71.6385
ARS-OF-0053	OF_109	Wetland to Unnamed Trib to Assabet River MA82B-02	Low Priority	42.3113	-71.6398
ARS-OF-0054	OF_110	Outside Receiving	High Priority	42.3106	-71.6383
ARS-OF-0055	OF_111	Outside Receiving	Low Priority	42.3159	-71.6443
ARS-OF-0056	OF_112	Outside Receiving	Low Priority	42.3139	-71.6484
CHS-OF-0025	OF_113	Outside Receiving	Low Priority	42.319	-71.652
CHS-OF-0026	OF_114	Outside Receiving	Low Priority	42.3181	-71.6489
HPS-OF-0016	OF_115	Wetland to Trib to Smith Pond	Low Priority	42.2993	-71.6545
HPS-OF-0017	OF_116	Outside Receiving	Low Priority	42.299	-71.6554
HPS-OF-0018	OF_117	Wetland to Trib to Smith Pond	Low Priority	42.2985	-71.6559
CHS-OF-0027	OF_118	Outside Receiving	Low Priority	42.3044	-71.6638
ARS-OF-0057	OF_119	Outside Receiving	High Priority	42.3058	-71.632
STB-OF-0002	OF_123	Outside Receiving	High Priority	42.3118	-71.6165
ARS-OF-0058	OF_124	Outside Receiving	Low Priority	42.312	-71.6372
HBS-OF-0007	OF_125	Outside Receiving	Low Priority	42.3258	-71.6633
HBS-OF-0008	OF_126	Outside Receiving	High Priority	42.3244	-71.6613
HBS-OF-0009	OF_127	Outside Receiving	Low Priority	42.3264	-71.6622
HBS-OF-0010	OF_128	Howard Brook	High Priority	42.3263	-71.6576
HBS-OF-0011	OF_129	Outside Receiving	High Priority	42.3265	-71.6558
HBS-OF-0012	OF_130	Howard Brook	High Priority	42.3246	-71.6544
HBS-OF-0013	OF_131	Howard Brook	High Priority	42.3253	-71.6573
ARN-OF-0008	OF_132	Assabet River MA82B-03	High Priority	42.3271	-71.6336
ARN-OF-0009	OF_133	Outside Receiving	Low Priority	42.3265	-71.628
STB-OF-0003	OF_134	Outside Receiving	Low Priority	42.3249	-71.6182
STB-OF-0004	OF_135	Outside Receiving	Low Priority	42.3247	-71.6187

Northborough Outfall Inventory
Permit Year 1

Outfall ID	Tighe & Bond Outfall ID	Receiving Waterbody	Priority Rank	Latitude	Longitude
STB-OF-0005	OF_136	Outside Receiving	Low Priority	42.3238	-71.6244
STB-OF-0006	OF_137	Wetland to Unnamed Trib to Bartlett Pond	Low Priority	42.3225	-71.6241
STB-OF-0007	OF_138	Unnamed Trib to Bartlett Pond	Low Priority	42.3237	-71.6198
STB-OF-0008	OF_139	Outside Receiving	Low Priority	42.3338	-71.6146
STB-OF-0009	OF_140	Outside Receiving	Low Priority	42.3335	-71.6151
STB-OF-0010	OF_141	Outside Receiving	Low Priority	42.3316	-71.6163
STB-OF-0011	OF_142	Outside Receiving	Low Priority	42.3274	-71.6156
ARN-OF-0010	OF_143	Outside Receiving	Low Priority	42.3315	-71.6235
STB-OF-0012	OF_144	Outside Receiving	Low Priority	42.3318	-71.6204
STB-OF-0013	OF_145	Outside Receiving	Low Priority	42.3302	-71.6177
ARN-OF-0011	OF_146	Assabet River MA82B-03	High Priority	42.3319	-71.6287
ARN-OF-0012	OF_147	Outside Receiving	Low Priority	42.331	-71.6299
ARN-OF-0013	OF_148	Outside Receiving	Low Priority	42.3296	-71.6304
ARN-OF-0014	OF_149	Assabet River MA82B-03	High Priority	42.3294	-71.6305
ARN-OF-0015	OF_150	Assabet River MA82B-03	High Priority	42.3294	-71.6299
ARN-OF-0016	OF_151	Assabet River MA82B-03	High Priority	42.3288	-71.6308
ARN-OF-0017	OF_152	Assabet River MA82B-03	High Priority	42.3282	-71.6319
ARN-OF-0018	OF_153	Outside Receiving	Low Priority	42.3279	-71.6305
ARN-OF-0019	OF_154	Assabet River MA82B-03	High Priority	42.3276	-71.6328
ARN-OF-0020	OF_155	Outside Receiving	Low Priority	42.3291	-71.6335
ARN-OF-0021	OF_156	Outside Receiving	High Priority	42.3294	-71.6373
ARN-OF-0022	OF_157	Outside Receiving	High Priority	42.3307	-71.6347
ARN-OF-0023	OF_158	Outside Receiving	Low Priority	42.3303	-71.6404
ARN-OF-0024	OF_159	Outside Receiving	High Priority	42.3294	-71.6389
HBS-OF-0014	OF_160	Outside Receiving	High Priority	42.3292	-71.6538
HBS-OF-0015	OF_161	Outside Receiving	Low Priority	42.3318	-71.654
HBS-OF-0016	OF_162	Isolated Wetland	High Priority	42.3292	-71.65
HBS-OF-0017	OF_163	Wetland to Howard Brook	High Priority	42.3277	-71.6495
HBS-OF-0018	OF_164	Outside Receiving	Low Priority	42.3278	-71.6658
HBS-OF-0019	OF_165	Outside Receiving	Low Priority	42.3278	-71.6658
HBS-OF-0020	OF_166	Outside Receiving	Low Priority	42.3273	-71.6655
CHN-OF-0001	OF_167	Wetland to Cold Harbor Brook	High Priority	42.3289	-71.6711
CHN-OF-0002	OF_168	Outside Receiving	Low Priority	42.3316	-71.6812
CHN-OF-0003	OF_169	Outside Receiving	Low Priority	42.3312	-71.6805
CHN-OF-0004	OF_170	Cold Harbor Brook	High Priority	42.3284	-71.6734
CHN-OF-0005	OF_171	Outside Receiving	High Priority	42.3277	-71.6743
CHN-OF-0006	OF_172	Outside Receiving	Low Priority	42.3299	-71.6858
CHN-OF-0007	OF_173	Outside Receiving	Low Priority	42.33	-71.6857
CHN-OF-0008	OF_174	Outside Receiving	Low Priority	42.3344	-71.683
CHN-OF-0010	OF_176	Cold Harbor Brook	Low Priority	42.3341	-71.6823
CHN-OF-0011	OF_177	Outside Receiving	Low Priority	42.3337	-71.6824
HBS-OF-0021	OF_181	Outside Receiving	Low Priority	42.3327	-71.6655
HBS-OF-0022	OF_182	Howard Brook	Low Priority	42.3356	-71.6602
HBS-OF-0023	OF_183	Howard Brook	Low Priority	42.3348	-71.661
HBS-OF-0024	OF_184	Howard Brook	Low Priority	42.3344	-71.6627
HBS-OF-0025	OF_185	Outside Receiving	Low Priority	42.3341	-71.6632
HBS-OF-0026	OF_186	Outside Receiving	Low Priority	42.334	-71.6634
HBN-OF-0001	OF_187	Howard Brook	Low Priority	42.3377	-71.6613
HBS-OF-0027	OF_188	Outside Receiving	Low Priority	42.3374	-71.6564
BFB-OF-0001	OF_189	Barefoot Brook	Low Priority	42.3389	-71.6473
BFB-OF-0002	OF_190	Outside Receiving	Low Priority	42.3371	-71.6495
BFB-OF-0003	OF_191	Outside Receiving	Low Priority	42.3352	-71.647
BFB-OF-0004	OF_192	Barefoot Brook	High Priority	42.3375	-71.6441
ARN-OF-0025	OF_193	Outside Receiving	Low Priority	42.3363	-71.628
ARN-OF-0026	OF_194	Outside Receiving	Low Priority	42.3358	-71.6285
ARN-OF-0027	OF_195	Unnamed Trib to Assabet River MA82B-03	Low Priority	42.3359	-71.6259
BFB-OF-0005	OF_198	Outside Receiving	Low Priority	42.3425	-71.6316
BFB-OF-0006	OF_199	Outside Receiving	Low Priority	42.341	-71.6369
BFB-OF-0007	OF_200	Outside Receiving	Low Priority	42.3394	-71.6339
BFB-OF-0008	OF_201	Outside Receiving	Low Priority	42.3417	-71.6421
BFB-OF-0009	OF_202	Outside Receiving	Low Priority	42.3417	-71.642
BFB-OF-0010	OF_203	Outside Receiving	Low Priority	42.3426	-71.642
BFB-OF-0011	OF_204	Outside Receiving	Low Priority	42.3386	-71.6529
CLB-OF-0001	OF_205	Outside Receiving	Low Priority	42.3434	-71.6546

Northborough Outfall Inventory
Permit Year 1

Outfall ID	Tighe & Bond Outfall ID	Receiving Waterbody	Priority Rank	Latitude	Longitude
CLB-OF-0002	OF_207	Outside Receiving	Low Priority	42.347	-71.6417
CLB-OF-0003	OF_208	Outside Receiving	Low Priority	42.3485	-71.6396
CLB-OF-0004	OF_209	Outside Receiving	Low Priority	42.3463	-71.6423
CLB-OF-0005	OF_210	Outside Receiving	Low Priority	42.3485	-71.6455
BFB-OF-0012	OF_211	Outside Receiving	Low Priority	42.3481	-71.6289
CLB-OF-0006	OF_212	Outside Receiving	Low Priority	42.3519	-71.6329
CLB-OF-0007	OF_213	Outside Receiving	Low Priority	42.3489	-71.6383
CLB-OF-0008	OF_214	Outside Receiving	Low Priority	42.3492	-71.6377
CLB-OF-0009	OF_215	Outside Receiving	Low Priority	42.3531	-71.6412
ARS-OF-0059	OF_227	Outside Receiving	High Priority	42.3025	-71.6364
ARS-OF-0060	OF_228	Outside Receiving	High Priority	42.305	-71.6444
ARS-OF-0061	OF_229	Outside Receiving	High Priority	42.3049	-71.6444
ARS-OF-0062	OF_230	Outside Receiving	High Priority	42.3047	-71.6477
STB-OF-0015	OF_231	Outside Receiving	Low Priority	42.3191	-71.6221
STB-OF-0016	OF_232	Outside Receiving	Low Priority	42.318	-71.6246
ARS-OF-0064	OF_234	Outside Receiving	Low Priority	42.3193	-71.6347
CHS-OF-0030	OF_235	Cold Harbor Brook	Low Priority	42.3209	-71.6445
HBS-OF-0028	OF_236	Outside Receiving	Low Priority	42.3254	-71.6646
ARN-OF-0028	OF_237	Assabet River MA82B-03	High Priority	42.327	-71.6338
ARN-OF-0029	OF_238	Outside Receiving	Low Priority	42.3244	-71.6354
ARN-OF-0030	OF_239	Outside Receiving	Low Priority	42.3257	-71.6334
ARN-OF-0031	OF_240	Outside Receiving	Low Priority	42.3257	-71.6334
ARN-OF-0032	OF_241	Assabet River MA82B-03	High Priority	42.3267	-71.6335
STB-OF-0017	OF_242	Outside Receiving	Low Priority	42.3251	-71.6191
STB-OF-0018	OF_243	Outside Receiving	Low Priority	42.3224	-71.6126
STB-OF-0019	OF_244	Outside Receiving	Low Priority	42.3301	-71.6131
STB-OF-0020	OF_245	Outside Receiving	Low Priority	42.3295	-71.612
STB-OF-0021	OF_246	Outside Receiving	Low Priority	42.3267	-71.6177
ARN-OF-0033	OF_247	Assabet River MA82B-03	High Priority	42.3284	-71.6315
ARS-OF-0065	OF_248	Outside Receiving	High Priority	42.2968	-71.6446
ARS-OF-0066	OF_249	Outside Receiving	High Priority	42.3051	-71.6457
CLB-OF-0014	OF_250	Wetland to Cooledge Brook	Low Priority	42.3463	-71.6485
CLB-OF-0015	OF_251	Outside Receiving	Low Priority	42.3458	-71.6486
CLB-OF-0016	OF_252	Outside Receiving	Low Priority	42.3455	-71.6492
BFB-OF-0013	OF_253	Outside Receiving	Low Priority	42.3435	-71.6494
BFB-OF-0014	OF_254	Outside Receiving	Low Priority	42.3425	-71.6478
ARS-OF-0067	OF_255	Outside Receiving	Low Priority	42.3136	-71.627
STB-OF-0022	OF_256	Outside Receiving	Low Priority	42.3308	-71.6126
STB-OF-0023	OF_257	Outside Receiving	Low Priority	42.3289	-71.6132
CHS-OF-0031	OF_258	Outside Receiving	Low Priority	42.3195	-71.6866
ARS-OF-0068	OF_261	Outside Receiving	High Priority	42.3106	-71.6383
ARS-OF-0069	OF_262	Outside Receiving	High Priority	42.3106	-71.6383
ARN-OF-0034	OF_263	Outside Receiving	Low Priority	42.3307	-71.6404
STB-OF-0024	OF_264	Outside Receiving	Low Priority	42.3323	-71.6159
STB-OF-0025	OF_265	Outside Receiving	Low Priority	42.3323	-71.6159
ARS-OF-0070	OF_267	Wetland to Unnamed Trib to Assabet River MA82B-02	High Priority	42.3026	-71.6423
ARS-OF-0071	OF_268	Outside Receiving	High Priority	42.3031	-71.6429
ARS-OF-0072	OF_269	Outside Receiving	Low Priority	42.3097	-71.6421
HBS-OF-0029	OF_270	Howard Brook	Low Priority	42.3243	-71.6434
BFB-OF-0015	OF_271	Outside Receiving	Low Priority	42.341	-71.6369
BFB-OF-0016	OF_272	Outside Receiving	Low Priority	42.3407	-71.6338
BFB-OF-0017	OF_291	Outside Receiving	Low Priority	42.3427	-71.6314
CHS-OF-0033	OF_292	Outside Receiving	Low Priority	42.3209	-71.6517

Permit Year 2 Annual Report

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: Town of Northborough

EPA NPDES Permit Number: MAR041143

Primary MS4 Program Manager Contact Information

Name: Fred Litchfield Title: Town Engineer

Street Address Line 1: Town Hall

Street Address Line 2: 63 Main Street

City: Northborough State: MA Zip Code: 01532

Email: flitchfield@town.northborough.ma.us Phone Number: (508) 393-5015

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.northborough.ma.us/engineering-department/pages/stormwater-drainage

Date SWMP was Last Updated: September 2019

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 I mapping: The Town's MS4 mapping includes all Phase I components except interconnections. The Town has identified possible interconnections with MassDOT. These interconnections will be verified and added to the system mapping in Permit Year 3.

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:

A virtual training was completed by Town employees on August 18, 2020, which reviewed the overall MS4 program, illicit discharges to the drain, IDDE Program responsibilities, and reporting. An in-person training was intended to be held during Permit Year 2 but was reformatted to be remote and was delayed due to COVID-19.

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

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- ☒ Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

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

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

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

Annual Requirements

*Public Education and Outreach**

- ☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers
- ☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

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

Phosphorus Good Housekeeping: All streets are swept at least once annually, and the Town is working to increase street sweeping to comply with permit requirements. During Permit Year 2, fifty percent of municipal streets were swept in fall 2019 in addition to the annual spring sweeping.

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:

Northborough's NOI listed water quality impairments and TMDLs for the Town's receiving waters based on the 2014 303(d) List. The Town has evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) List and enclosed the analysis herein. The enclosed document will be included in the Town's SWMP.

As a result of outfall investigations completed in Permit Year 2, 4 outfalls have been added to the outfall inventory and 5 outfalls will be removed because they are private or another drainage asset type (e.g., BMP inlet or culvert).

The changes described herein do not change the receiving waters listed in the NOI.

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**: 5

*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:1A: Education and Outreach to Residents (Multi-Media Methods)

Message Description and Distribution Method:

Northborough is a member of the Central Massachusetts Regional Stormwater Coalition (CMRSWC), which participated in the Think Blue Massachusetts educational advertisement campaign in Permit Year 2. Think Blue Massachusetts shared a "Fowl Water" video across Facebook, Instagram, and YouTube to educate the public in member communities on stormwater runoff. The video includes references to proper management of pet waste. A post-campaign survey was distributed to measure the impact of the advertising campaign.

Targeted Audience: Residents

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

In 2019, the follow-up survey indicated that 17% of respondents recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2019 campaign received 9,060 impressions across Facebook, Instagram, and YouTube for Northborough.

In 2020, the follow-up survey indicated that more than 15% of respondents recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2020 campaign received 16,660 impressions across Facebook, Instagram, and YouTube for Northborough.

Message Date(s): June-July 2019 and May-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:1A-1D: Education and Outreach to All Audiences (Multi-Media Methods)

Message Description and Distribution Method:

The Northborough Engineering Department posts several educational resources on its Public Education webpage, including materials on the effects of stormwater pollution, proper fertilizer use, septic system maintenance, pet waste management, and proper disposal of grass clippings.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

Educational materials are available to all visitors of the Town website.

Message Date(s): Ongoing

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:1A: Education and Outreach to Residents (Multi-Media Methods)

Message Description and Distribution Method:

Pet Waste Education: The Dog License form from the Town Clerk includes a summary of regulations, including a reference to the "Pooper Scooper Bylaw" (Town Bylaw 2-24-090). The Town Clerk sends the MassDEP/DCR "Dog Waste and Surface Water Quality" brochure in the mail with license renewals. The Town also includes a link to the Pooper Scooper Bylaw on the Dog Licensing webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW - Engineering

Measurable Goal(s):

There were 1,547 dog licenses issued this year.

Message Date(s): Ongoing

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:Education and Outreach to All Audiences (Multi-Media Methods)

Message Description and Distribution Method:

On behalf of Northborough and other members of the Central Massachusetts Regional Stormwater Coalition, the coalition shared a messages on Twitter encouraging the proper use and disposal of grass clippings and use of slow-release fertilizers, proper disposal of leaf litter, management of pet waste, and septic system

maintenance.

Targeted Audience: All Audiences

Responsible Department/Parties: CMRSWC

Measurable Goal(s):

The CMRSWC twitter account has approximately 240 followers and averages between 100-200 impressions per tweet.

Message Date(s): Grass Clippings and Fertilizers: July 30, 2019; Proper Disposal of Leaf Litter: October 18, 2019; Management of Pet Waste: August 9, 2019; October 2, 2019; October 14, 2019; June 23, 2020; Septic System Maintenance: September 12, 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:

CMRSWC provided outreach on behalf of DPW - Engineering

BMP:Education and Outreach to Residents and Institutions (Multi-Media Methods)

Message Description and Distribution Method:

The Town's Conservation Agent was invited to present on stormwater and water quality at the Northborough Junior Woman's Club STEM Event for middle school girls and the WPI Women in Science Day Camp, but both events were canceled due to COVID-19. In addition, the Town usually staffs a booth at the annual Sanofi Corporation Environmental Fair, but the event was not held this year due to COVID-19. It is anticipated that the Town will attend these events again when possible, and continue to provide educational information to attendees.

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: Conservation

Measurable Goal(s):

Events could not be held due to COVID-19.

Message Date(s): Events could not be held due to COVID-19.

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

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Stormwater Management Plan (SWMP) and Year 1 Annual Report were publicly available on the Town's website for review and comment.

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

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

The Town held the Louise Houle Annual Town Cleanup event on June 25 and June 27, 2020 where volunteers collected debris and the Department of Public Works disposed of the trash. A household hazardous waste collection day was held on October 26, 2019.

Brush collection days were held on three days in Fall 2019 where residents were encouraged to bring yard waste to the Highway Garage for proper disposal. The three brush collection days planned for spring 2020 were canceled due to COVID-19. The collection days were advertised on the Town's Public Works webpage. In future permit years, the Town anticipates accepting brush on an ongoing basis. Residents can dispose of their leaves and grass clippings Monday-Friday at the Highway Garage and this service is advertised on the Highway Division's webpage. Almost 4,000 yards of lawn waste, leaves, and brush were collected. More than 1,700 yards of wood chips and logs were also properly disposed of.

The Town's Conservation Agent regularly presents workshops to students, residents, and businesses around Northborough. However, the scheduled events for Permit Year 1 were canceled due to COVID-19 safety precautions.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

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:

The Town has identified possible interconnections with MassDOT. These interconnections will be verified and added to the system mapping in Permit Year 3.

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: 151

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:

N/A

*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:

No catchment investigations were completed in Permit Year 2. The Town has not identified any problem catchments.

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:

N/A

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: 1

Number of illicit discharges removed: 1

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: 1

Total number of illicit discharges removed: 1

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

In Permit Year 2, there was one report of illegal dumping at Carney Park (386 West Main St). The items were removed and properly disposed of.

Employee Training

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

A virtual training was completed by Town employees on August 18, 2020, which reviewed the overall MS4 program, illicit discharges to the drain, IDDE Program responsibilities, and reporting. The training was intended to be held during Permit Year 2 but was reformatted to be completed remotely due to COVID-19 safety precautions.

The Town Engineer attended a training workshop sponsored by CMRSWC in May 2020 remotely via GoTo Meeting. The workshops were originally intended to be in-person but were adapted to virtual workshops due to COVID-19. The workshops trained participants on important aspects of the IDDE program, including how to recognize illicit discharges and SSOs. A summary of the training, copies of the slides, an attendee roster, and a recording of the training is available at: https://www.centralmastormwater.org/toolbox/pages/2020-idde-workshop-ms4-assistance-grant

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: 10

Number of inspections completed: 114

Number of enforcement actions taken: 7

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

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:

Northborough Wetland Regulations require as-built drawings and an O&M Plan to be submitted with requests for certificates of compliance. The Groundwater Zoning bylaw also requires as-builts to be submitted to prove regulations are being met.

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:

Preparation for the Street Design and Parking Lots Report has not yet begun as this requirement is due in Permit Year 4.

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:

Preparation for the Green Infrastructure Report has not yet begun as this requirement is due in Permit Year 4.

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:

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 1,656

Number of catch basins cleaned: 1,656

Total volume or mass of material removed from all catch basins: 230.28 tons

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

Total number of catch basins: 1,672

If applicable:

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

Street Sweeping

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

- ○ Number of miles cleaned:
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 790.8 tons

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: 3

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

During a spring 2020 inspection, sediment build-up was found in catch basins on site. These catch basins were cleaned later in the spring.

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:

The Town's General Bylaws fulfill part of the MCM 4 and MCM 5 Construction and Post-Construction Stormwater Management requirements. Due to the delay of the MassDEP Stormwater Handbook update and in accordance with the revised schedule in the proposed General Permit modifications, the Town's regulatory mechanism will be reviewed and updated as needed for consistency with the revised General Permit requirements in Permit Year 3.

Northborough completed dry weather screening of outfalls during Permit Year 2. The data included in the annual report from this permit year should be considered draft as it is being finalized by the Town's stormwater consultant. The Town continues to implement its IDDE Program and complete dry weather outfall screening in accordance with the General Permit schedule.

Our municipality is a member of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). CMRSWC was awarded an Environmental Merit Award from EPA Region 1 in September 2019. Each participating community, including Northborough, was recognized as part of the award.

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:

Discussed throughout.

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:

The Town acknowledges the General Permit Year 3 requirements and intends to complete as many activities as possible based on funding and staff availability.

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:	Frederic E. Litchfield	Title:	Town Engineer
Signature:	Frederic E Litchfield	Date:	9/28/2020

[Signatory may be a duly authorized representative]

Summary of Northborough's TMDLs and Impaired Waters [1, 2, 3]

Receiving Waterbody	2014 Category	2014 Water Quality Impairments [4]	2016 Category	2016 Water Quality Impairments [4]	Applicable General Permit Section	Change to Permit Requirements
Assabet River (MA82B-02)	5	Fecal Coliform Aquatic Macroinvertebrates Bioassessments	5	Aquatic Plants (Macrophytes) Benthic Macroinvertebrates E. Coli Fecal Coliform	Appendix H, Section III - Pathogens	None
Assabet River (MA82B-03)	5	Fecal Coliform Debris/Floatables/Trash Non-Native Aquatic Plants Taste and Odor	5	Debris Non-Native Aquatic Plants Trash E. Coli Fecal Coliform Odor	Appendix H, Section III - Pathogens	None
Cold Harbor Brook (MA82B-18)	2		2			None
Hop Brook (MA82B-20)	2		2			None
Bartlett Pond[5] (MA82007)	4c	Eurasian Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants	4c	Eurasian Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants		None
Smith Pond[5] (MA82099)	3		3			None
Assabet River TMDL for Total Phosphorus					Appendix F, Section A.V - Assabet River Phosphorus TMDL	None

[1]TMDLs associated with major rivers may apply to additional waterbodies within the watershed.

[2]Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.

[3]Impairments in blue were added in the 2016 Integrated List of Waters.

[4]Impairments applicable to Northborough that have been renamed between 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates; Debris/Floatables/Trash -> Debris & -> Trash; Taste and Odor -> Odor

[5]Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.

Permit Year 2 Outfall Investigation Summary

The Permit Year 2 Outfall Investigation Summary is available electronically in the Northborough Engineering Department's record keeping files.

Outfall Sampling Results Summary - Northborough, MA

DRAFT

Location				Laboratory Analysis [1]					Water Quality Meter/Test Kit [1]				
Date	Outfall ID	Street	Sample Location	Ammonia	Surfactants	E. coli	Fecal Coliform	Total Phosphorus	Temperature	Salinity	Conductivity	Chlorine	Ammonia
				mg/L	mg/L	CFU/100mL	CFU/100mL	mg/L	°F	ppt	µS/cm [2]	mg/L	mg/L
3/5/2020	OFNEWA	Madison Road	Outfall	0.112	ND	8	-	0.017	46.4	0.22	300	0	0.25
3/5/2020	OF_90	Agawam Lane	Upstream Manhole	0.115	ND	ND	-	ND	49.2	0.36	511	0.13	0.25
3/9/2020	OF_79	Longfellow Road	Outfall	0.119	ND	ND	-	0.011	46.6	0.26	356	0.02	0.25
3/9/2020	OF_76	Alcott Dr	Upstream Manhole	0.168	ND	ND	-	0.025	44.3	0.20	276	0.09	0.50
3/9/2020	OF_74	Eliot Road	Upstream Manhole	0.447	ND	ND	-	0.011	48.4	0.32	456	0.02	0.50
3/10/2020	OF_68	Juniper Brook Road	Outfall	ND	ND	2	ND	0.012	47.1	0.18	250	0.11	0.00
3/10/2020	OF_29	Franklin Circle	Outfall	0.084	ND	ND	-	ND	44.4	0.35	468	0.03	0.25
3/10/2020	OF_170	Fisher Street	Upstream Catch Basin	0.082	ND	ND	-	0.013	47.5	0.35	490	0.00	0
3/11/2020	OF_112	Cedar Hill Road	Outfall	ND	ND	200	-	0.024	47.1	0.25	346	0.13	0.25
3/11/2020	OF_44	Cedar Hill Road	Upstream Catch Basin	ND	ND	ND	-	0.014	48.3	0.20	289	0.07	0
3/16/2020	OF_33	Collins Road	Upstream Catch Basin-A	ND	0.05	ND	-	ND	40.9	0.17	222	0.10	0.25
3/18/2020	OF_7	Spruce Hill Road	Outfall	ND	ND	ND	-	0.029	40.4	0.08	99	0.01	0
3/18/2020	OF_145	Little Pond Road	Outfall	0.425	ND	ND	-	0.034	36.7	0.25	299	0.02	0
3/18/2020	OF_6	Howard Road	Outfall	ND	ND	ND	-	0.024	45.6	0.62	831	0.05	0
3/23/2020	OF_181	Brewer Street	Outfall	ND	ND	ND	-	0.039	41.5	0.14	177	0.00	0.25
3/23/2020	OF_208	Stone Drive	Upstream Catch Basin-A	ND	ND	ND	-	ND	46.6	0.19	260	0.06	0.25
3/23/2020	OF_208	Stone Drive	Upstream Catch Basin-B	ND	ND	ND	-	0.034	46.1	0.30	412	0.10	0.25
3/23/2020	OF_200	Edmunds Way	Upstream Catch Basin	ND	ND	ND	-	ND	45.7	0.18	248	0.00	0
3/23/2020	OF_213	Stone Drive	Upstream Catch Basin	0.175	ND	10	-	0.036	43.0	0.19	253	0.00	0.25
3/23/2020	OF_42	Greenland Circle	Upstream Manhole	ND	ND	ND	-	0.018	44.2	0.66	861	0.13	0.25

REPORTING LIMITS
Ammonia = 0.1 mg/L
Surfactants = 0.025 mg/L
E. coli = 2 CFU/100mL
Fecal Coliform = 2 CFU/100mL
BOD_5 = 2 mg/L
Total Phosphorus = 0.01 mg/L
"ND" = none detected

COLOR KEY (benchmarks are bold)										
	Ammonia	Surfactants	E. coli	Fecal Coliform	Total Phosphorus	Temperature	Salinity	Conductivity	Chlorine	Ammonia
	mg/L	mg/L	CFU/100 mL	CFU/100 mL	mg/L	°F	ppt	µS/cm	mg/L	mg/L
	≥ 6.0	≥ 1.0	≥ 10,000.0	≥ 10,000	≥ 0.908	≥ 83.0	≥ 1.0	**≥ 2,000.0**	≥ 1.0	≥ 6.0
	≥ 1.0	≥ 0.5	≥ 1,260.0	≥ 1,000	≥ 0.466	≥ 83.0	≥ 0.75	≥ 1,500.0	≥ 0.3	≥ 1.0
	≥ 0.5	**≥ 0.25**	**≥ 235.0**	**≥ 200**	**≥ 0.024**	**≥ 83.0**	**≥ 0.5**	≥ 1,000.0	**≥ 0.02**	**≥ 0.5**
	< 0.5	< 0.25	< 235	< 200	< 0.024	< 83	< 0.5	< 1,000	< 0.02	< 0.5

Notes for Results Summary:
(1) "-" means no analysis was completed
(2) µS/cm is equivalent to µmhos/cm

Benchmark Sources:
Ammonia, Surfactants, and Chlorine - *EPA General Permit for Stormwater Discharges from Small MS4 in Massachusetts*
E. coli, Temperature, and Dissolved Oxygen - *314 CMR 4.00: Massachusetts Surface Water Quality Standards*
pH - *314 CMR 4.00: Massachusetts Surface Water Quality Standards* and *Center for Watershed Protection Illicit discharge Detection and Elimination Guidance Manual*
Total Phosphorus - *EPA Ambient Water Quality Criteria Recommendations for Rivers and Streams in Nutrient Ecoregion XIV*
Fecal coliform - *MWRA Water Quality Standards for Class B and Class SB Waters*
Salinity - *EPA Volunteer Estuary Monitoring: A Methods Manual*
Conductivity - *Center for Watershed Protection Illicit discharge Detection and Elimination Guidance Manual*

Phase I MS4 System Map

PHASE I MAPPING

Summary of Northborough's TMDLs and Impaired Waters [1, 2, 3]

Tighe&Bond

Receiving Waterbody	2014 Category	2014 Water Quality Impairments [4]	2016 Category	2016 Water Quality Impairments [4]	Applicable General Permit Section	Change to Permit Requirements
Assabet River (MA82B-02)	5	Fecal Coliform Aquatic Macroinvertebrates Bioassessments	5	Aquatic Plants (Macrophytes) Benthic Macroinvertebrates E. Coli Fecal Coliform Debris	Appendix H, Section III - Pathogens	None
Assabet River (MA82B-03)	5	Fecal Coliform Debris/Floatables/Trash Non-Native Aquatic Plants Taste and Odor	5	Non-Native Aquatic Plants Trash E. Coli Fecal Coliform Odor	Appendix H, Section III - Pathogens	None
Cold Harbor Brook (MA82B-18)	2		2			None
Hop Brook (MA82B-20)	2		2			None
Bartlett Pond[5] (MA82007)	4c	Eurasian Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants	4c	Eurasian Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants		None
Smith Pond[5] (MA82099)	3		3			None
Assabet River TMDL for Total Phosphorus					Appendix F, Section A.V - Assabet River Phosphorus TMDL	None

[1]TMDLs associated with major rivers may apply to additional waterbodies within the watershed.
[2]Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.
[3]Impairments in blue were added in the 2016 Integrated List of Waters.
[4]Impairments applicable to Northborough that have been renamed between 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates; Debris/Floatables/Trash -> Debris & -> Trash; Taste and Odor -> Odor
[5]Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.

LEGEND

- Outfall
- Manhole
- Catchbasin
- BMP Point
- Culverts
- Open Channels
- Drain Lines
- BMP Polygon
- Outfall Catchments
- MassDEP Open Water
- MassDEP Inland Wetlands
- Stream/Intermittent Stream
- Public Surface Water Supply (PSWS)
- Water Bodies
- Town Boundary
- Urbanized Area 2010
- Urbanized Area 2000
- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road

LOCUS MAP

N

1:18,000

0 750 1,500 3,000
Feet

NOTES

1. Data source: Bureau of Geographic Information (MassGIS) Commonwealth of Massachusetts, Executive Office of Technology
2. Stormwater: The Town of Northborough

Permit Year 2 Annual Report
Northborough, Massachusetts

September 2020

Tighe&Bond

Appendix G

Plan Amendment Log

AMENDMENT LOG

Tighe&Bond

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by (Name/Signature)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Section 6
SWMP 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 gathered and evaluated 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.

Name: _____ Title: _____

Signature: _____ Date: _____

A letter that authorizes the Town of Northborough Department of Public Works Director or Town Engineer to sign and certify certain documents prepared under the Small MS4 General Permit is included in Appendix H.

Appendix H

Delegation of Authority Documentation

TOWN OF NORTHBOROUGH TOWN OFFICES
63 Main Street • Northborough, MA 01532 • www.town.northborough.ma.us

August 20, 2018

Ms. Thelma Murphy
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912

Re: NPDES MA Small MS4 General Permit
Delegating an "Authorized Representative"

Dear Ms. Murphy:

This letter serves to designate the Town of Northborough **Director of the Department of Public Works** and **Town Engineer** as authorized persons for signing stormwater pollution prevention plans (SWPPPs), inspection reports, annual reports, monitoring reports, reports on training and other information required under the General Permit. This authorization cannot be used for signing an NPDES permit application (e.g., Notice of Intent (NOI)) in accordance with 40 CFR 122.22.

By signing this authorization, I confirm that the Board of Selectmen meets the following requirements to make such a designation as set forth in Appendix B, Subparagraph 11 of the Small MS4 General Permit:

> *For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).*

"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 gathered and evaluated 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."

Sincerely,

Dawn Rand

Dawn Rand, Chair
Town of Northborough Board of Selectmen