Stormwater Management Program (SWMP)

Town of Leicester, MA

59 Peter Salem Road

Leicester, MA 01524

EPA NPDES Permit Number: MAR041202

Issued: June 28, 2019

Updated: June 30, 2023

TABLE OF CONTENTS

Section - Description **Page**

TABLE OF CONTENTS CONT.

Section - Description	Page

Certification

Authorized Representative (Optional): All reports, including SWPPPs, inspection reports, annual reports, monitoring reports, reports on training and other information required by this permit must be signed by a person described in Appendix B, Subsection 11.A or by a duly authorized representative of that person in accordance with Appendix B, Subsection 11.B. If there is an authorized representative to sign MS4 reports, there must be a signed and dated written authorization.
The authorization letter is:

☐ Attached to this document (document name listed below)

☐ Publicly available at the website below

"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."

Printed Name David Genereux, Town Administrator

Signature

Date 6/21/23

Click Here for Revisions

Background

Stormwater Regulation

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring additional operators of MS4s in urbanized areas and operators of small construction sites, through the use of NPDES permits, to implement programs and practices to control polluted stormwater runoff. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule all MS4s with stormwater discharges from Census designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

Permit Program Background

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) consistent with the Phase II rule. The 2003 small MS4 permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2016 MS4 general permit, which became effective on July 1, 2018.

Stormwater Management Program (SWMP)

The SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit. The SWMP accurately describes the permittees plans and activities. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions during the permit term. The main elements of the stormwater management program are (1) a public education program in order to affect public behavior causing stormwater pollution, (2) an opportunity for the public to participate and provide comments on the stormwater program (3) a program to effectively find and eliminate illicit discharges within the MS4 (4) a program to effectively control construction site stormwater discharges to the MS4 (5) a program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and (6) a good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized.

Town Specific MS4 Background (optional)

Small MS4 Authorization

The NOI was submitted on September 28, 2018

The NOI can be found at the following (document name or web address):

Included as Attachment A in the Leicester Stormwater Management Program (SWMP) located at the following web address: https://www.leicesterma.org/public-works/pages/stormwater-information

---

Authorization to Discharge was granted on April 5, 2019

The Authorization Letter can be found (document name or web address):

Included as Attachment B in the Leicester SWMP located at the following web address: https://www.leicesterma.org/public-works/pages/stormwater-information

Stormwater Management Program Team

SWMP Team Coordinator

Name	Kris Lauzon	Title	DPW Director
Department	Department of Public Works		
Phone Number	(508) 892-7021	Email	Lauzonk@leicesterma.org
Responsibilities	-Supervise personnel -Oversee enforcement of ordinances/by-laws and standard operating procedures		

SWMP Team

Name	Brian Knott	Title	Mechanic
Department	Department of Public Works - Highway Division		
Phone Number	(508) 892-7021	Email	
Responsibilities	-Record keeping -Oversee enforcement of standard operating procedures		

Name	Derek Fenner	Title	Light Equipment Operator
Department	Department of Public Works - Highway Division		
Phone Number	(508) 892-7021	Email	
Responsibilities	- Record keeping		

Add SWMP Member

Receiving Waters

The following table lists all receiving waters, impairments and number of outfalls discharging to each waterbody segment.

OR

The information can be found in the following document or at the following web address:

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
Southwick Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	Aquatic Plants (Macrophytes), Nutrient/Eutrophication Biological Indicators
Lynde Brook Reservoir	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Waite Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	Mercury in Fish Tissue
Smiths Pond	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Sargent Pond	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	Non-Native Aquatic Plants
Henshaw Pond	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Greenville Pond	2	☐	☐	☐	☐	☐	☐	☒	☐	☐	
Rochdale Pond	13	☐	☐	☐	☐	☐	☐	☐	☐	☐	Nutrient/Eutrophication Biological Indicators
Cedar Meadow Pond	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	Non-Native Aquatic Plants
Grindstone Brook	13	☐	☐	☐	☐	☐	☐	☐	☒	☐	

Kettle Brook	7	☐	☐	☐	☐	☐	☐	☐	☒	☐	Dewatering, Fanwort, Benthic Macroinvertebrates, Fecal Coliform, Nutrient/ Eutrophication Biological Indicators
City Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Lynde Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Town Meadow Brook	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Dutton Pond	2	☐	☐	☐	☐	☐	☒	☐	☐	☐	Nutrient/Eutrophication Biological Indicators
Unnamed Tributary/Water Body	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	

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**
Burncoat Brook	3	☐	☐	☐	☐	☐	☐	☐	☒	☐	Benthic Macroinvertebrates
French River	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	Mercury in Fish Tissue
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

Click here to lengthen table

Eligibility: Endangered Species and Historic Properties

*Reminder: The proper consultations and updates to the SWMP must be conducted for construction projects related to your permit compliance where Construction General Permit (CGP) coverage, which requires its own endangered species and history preservation determination, is NOT being obtained.

Attachments:

- ☒ The results of Appendix C U.S. Fish and Wildlife Service endangered species screening determination
- ☐ The results of the Appendix D historic property screening investigations
- ☐ If applicable, any documents from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other Tribal representative to mitigate effects

These attachments are required within one year of the permit effective date and are:

- ☒ Attached to this document (document names listed below)

  Attachment A: Notice of Intent - Attachment B

- ☒ Publicly available at the website listed below

  https://www.leicesterma.org/public-works/pages/stormwater-information

---

Under what criterion did permittee determine eligibility for ESA?

☐ Criterion A ☐ Criterion B ☒ Criterion C

Under what criterion did permittee determine eligibility for Historic Properties?

☒ Criterion A ☐ Criterion B ☐ Criterion C ☐ Criterion D (NH only)

Below add any additional measures for structural controls that you're required to do through consultation with U.S. Fish and Wildlife Service (if applicable):

N/A

Below add any additional measures taken 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 applicable):

N/A

MCM 1
Public Education and Outreach
Permit Part 2.3.2

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 the pollutants in stormwater are reduced.

Examples and Templates:
EPA's Stormwater Education Toolbox
MassDEP's Stormwater Outreach Materials

Other templates relevant to MCM 1 can be found here: https://www.epa.gov/npdes-permits/stormwater-tools-new-england#peo

BMP: Web Page

BMP Number (Optional) **1-1**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Leicester will continue to utilize its Stormwater webpage link to provide the general public with stormwater educational materials and information on activities including the Town's current SWMP, stormwater SOPs, announcements, etc.

Targeted Audience: Residents/General Public

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Annual updates to the official town website to post stormwater events, milestones, documents, educational materials, etc.

Message Date(s): 2019

BMP: Flyers

BMP Number (Optional) **1-2**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Flyer that is geared towards industrial owners by providing tips to properly store and handle materials like pesticides, fertilizers, and oils.

Targeted Audience: Industrial facilities

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Develop informational flyers for distribution at Town offices, display at Town website, and post on Town social media forums (Facebook and Twitter). The number of Facebook and Twitter followers at the time of the social media posts is tracked. Distribute a minimum of 50 flyers.

Message Date(s): 2022

BMP: Flyers

BMP Number (Optional) **1-3**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Flyer that is geared towards developers by providing tips to reduce stormwater runoff during construction.

Targeted Audience: Developers (construction)

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Develop informational flyers for distribution at Town offices, display at Town website, and post on Town social media forums (Facebook and Twitter). The number of Facebook and Twitter followers at the time of the social media posts is tracked. Distribute a minimum of 50 flyers.

Message Date(s): 2022

BMP: Web Page

BMP Number (Optional) **1-4**

Document Name and/or Web Address: TBD

Description:

Continue to utilize the Central Massachusetts Regional Stormwater Coalition (Coalition) website as a means of educating the public on stormwater issues and initiatives.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Create a link at the Town's Stormwater web page for businesses, institutions, and commercial facilities linking them to Coalition stormwater educational materials.
This is in progress with the Town and will be initiated in the coming months.

Message Date(s): 2023

BMP: Local Public Service Announcements

BMP Number (Optional) **1-5**

Document Name and/or Web Address: N/A

Description:

Continue to stream "Liquid Assets" documentary.

Targeted Audience: Residents/Industrial facilities

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Broadcast video annually on local public access television.

Message Date(s): 2019

BMP: Brochures/Pamphlets/Web Page

BMP Number (Optional) **1-6**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Annual message for residential and commercial audiences 1) proper use/disposal of grass clippings and proper use of slow-release and phosphorous-free fertilizers (spring), 2) proper management of pet waste (summer), 3) proper disposal of leaves (fall), 4) proper septic system care and maintenance to address nitrogen, bacteria, and phosphorous TMDL enhanced BMP requirements.

Targeted Audience: Residential and commercial (nitrogen TMDL)

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Web links to informational flyers on each topic at the intervals noted in the BMP description. Distribute at Town offices, events, display at Town website, and post on Town social media forums (Facebook and Twitter). The number of Facebook and Twitter followers at the time of the social media posts is tracked. Distribute a minimum of 250 brochures/pamphlets.

Message Date(s): 2019

BMP: Flyers

BMP Number (Optional) **1-7**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Flyer that highlights proper stormwater management practices and is geared towards local business owners.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Develop informational flyers for distribution at Town offices, display at Town website, and post on Town social media forums (Facebook and Twitter). The number of Facebook and Twitter followers at the time of the social media posts is tracked. Distribute a minimum of 50 flyers.

Message Date(s): 2022

BMP: Special Events/Festivals/Fairs

BMP Number (Optional) **1-8**

Document Name and/or Web Address: N/A

Description:

Continue to host an annual public safety day (open house) for the Department of Public Works, and the Police and Fire Departments to showcase equipment and operational procedures. One of the focuses at the event is stormwater education.

Targeted Audience: General Public

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Continue to host a public safety event annually. The event is typically held in June.

Message Date(s): 2018

BMP: Social Media Posts

BMP Number (Optional) **1-9**

Document Name and/or Web Address: N/A

Description:

Social media posts that highlight proper stormwater management practices and is geared towards local business owners, developers, and industrial facilities.

Targeted Audience: Businesses, Developers and Industrial Facilities

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Develop social media posts on Town social media forums (Facebook and Twitter). The number of Facebook and Twitter followers at the time of the social media posts is tracked.

Message Date(s): 2023

Add BMP

MCM 2
Public Involvement and Participation
Permit Part 2.3.3

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

BMP: Public Review of Stormwater Management Program

BMP Number (Optional) **2-1**

Location of Plan and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Allow annual review of stormwater management program updates and posting of stormwater management program on Town website.

BMP: Public Participation in Stormwater Management Program Development

BMP Number (Optional) **2-2**

Description:

SWMP Review.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Allow public to comment on stormwater management program annually.

BMP: Public Participation

BMP Number (Optional) **2-3**

Document Name and/or Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Leicester Stormwater Committee

Responsible Department/Parties: Department of Public Works/Stormwater Committee

Measurable Goal(s):

Allow public to attend and participate in Stormwater Committee meetings. Scheduled meetings are posted by

the Town.

BMP: Public Participation

BMP Number (Optional) **2-4**

Document Name and/or Web Address: TBD

Description:

Storm Drain Stenciling

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Leicester will work with local Scout groups to develop a storm drain stenciling program.

BMP: Public Participation

BMP Number (Optional) **2-5**

Document Name and/or Web Address: N/A

Description:

Household hazardous waste/used oil collection.

Responsible Department/Parties: Department of Public Works/Board of Health

Measurable Goal(s):

Continue to promote and evaluate Household Waste Recycling programs. Conduct a household hazardous waste collection event in Town every two years. The most recent event was held June 10, 2023 and run by Tradebe.

Add BMP

MCM 3
Illicit Discharge Detection and Elimination (IDDE) Program

Permit Part 2.3.4

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

Examples and Templates:
IDDE Program Template and SOPs

Other templates relevant to IDDE can be found here: https://www.epa.gov/npdes-permits/stormwater-tools-new-england#idde

BMP: IDDE Legal Authority

BMP Number (Optional) **3-1** **Completed** (by May 1, 2008) ☒

Ordinances Link or Reference: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Department Responsible for Enforcement: Department of Public Works

---

BMP: Sanitary Sewer Overflow (SSO) Inventory

BMP Number (Optional) **3-2** **Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Develop SSO inventory in accordance with permit conditions. There are five sewer districts within the Town of Leicester that are not associated with Town operations.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Annually track and report the following SSO information: the location; a clear statement of whether the discharge entered a surface water directly or entered the MS4; date(s) and time(s) of each known SSO occurrence; estimated volume(s) of the occurrence; description of the occurrence indicating known or suspected cause(s); mitigation and corrective measures completed with dates implemented; and mitigation and corrective measures planned with implementation schedules. Update inventory as needed. Complete within 1 year of effective date of permit.

SSO Reporting:

In the event of an overflow or bypass, a notification must be reported within 24 hours by phone to MassDEP, EPA, and other relevant parties. Follow up the verbal notification with a written report following MassDEP's Sanitary Sewer Overflow (SSO)/Bypass notification form within 5 calendar days of the time you become aware of the overflow, bypass, or backup.

The MassDEP contacts are:	The EPA contacts are:
Northeast Region (978) 694-3215 205B Lowell Street Wilmington, MA 01887 Central Region (508) 792-7650 8 New Bond Street Worcester, MA 01606 Southeast Region (508) 946-2750 20 Riverside Drive Lakeville, MA 02347 Western Region (413) 784-1100 436 Dwight Street Springfield, MA 01103 24-hour Emergency Line 1-888-304-1133	EPA New England (617) 918-1510 5 Post Office Square Boston, MA 02109

BMP: Map of Storm Sewer System

BMP Number (Optional) **3-3**

Phase I Completed (by year 2) ☒ **Phase II Completed** (by year 10) ☐

Document Location and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Update storm sewer system mapping with Phase I and Phase II requirements.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Map 100% of outfalls and receiving waters, open channel conveyances, interconnections with other MS4s and other storm sewer systems, municipally-owned stormwater treatment structures, waterbodies identified by name and indication of all use impairments, and initial catchment delineations within 2 years of the permit's effective date. Map 100% of outfall spatial locations, pipes, manholes, catch basins, refined catchment delineations, municipal sanitary sewer system (if available), and municipal combined sewer system (if applicable) within 10 years of the permit's effective date.

BMP: IDDE Program

BMP Number (Optional) **3-4**

Written Document Completed (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Create written IDDE plan incorporating all requirements in the permit. Implement catchment investigations according to program and permit conditions.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Conduct 100% of outfall screening on High and Low Priority Outfalls within 3 years of the permit's effective date. Complete catchment investigations for 100% of the Problem Outfalls within 7 years of the permit's effective date. Complete 100% of all catchment investigations within 10 years of the permit's effective date.

The outfall/interconnection inventory and initial ranking and the dry weather outfall and interconnection screening and sampling results can be found:

An updated outfall ranking, in accordance with Year 3 Permit requirements, is provided in the written IDDE Plan, which is attached to the SWMP.
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information
Dry weather outfall and interconnection screening and sampling results was included in the Year 3 Annual Report. A hard copy and electronic copy of the results are also on file at the Department of Public Works - Highway Division Office.

BMP: Employee Training

BMP Number (Optional) **3-5**

Description:

Train employees on IDDE identification, removal of non-stormwater sources, and IDDE program implementation.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

IDDE training began in 2019 and continues to occur at a minimum on an annual basis.

BMP: Conduct Dry Weather Screening

BMP Number (Optional) **3-6** **Completed** ☒

Document Name and/or Web Address: Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Conduct dry weather outfall screening in accordance with the procedures and conditions outlined in the permit.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Completed in 2021. Information was included in the Year 3 Annual Report.

BMP: Conduct Wet Weather Screening

BMP Number (Optional) **3-7** **Completed** ☐

Document Name and/or Web Address: TBD

Description:

Conduct in accordance with outfall screening procedure.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete 10 years after effective date of permit.

BMP: Ongoing Screening

BMP Number (Optional) **3-8** **Completed** ☐

Document Name and/or Web Address: TBD

Description:

Conduct dry weather and wet weather screening (as necessary).

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete ongoing outfall screening upon completion of IDDE program.

BMP: IDDE Ordinance/Bylaw

BMP Number (Optional) **3-9** **Completed** ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Enforce requirements in the Town's existing IDDE Bylaw.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Bylaw is in effect and enforced.

BMP: Illicit Discharge Identification

BMP Number (Optional) **3-10** **Completed** ☒

Document Name and/or Web Address: N/A

Description:

Request that contractors report observed illicit discharges during construction. Town employees to identify and report illicit discharges during catch basin cleaning.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Report during construction projects, if observed. Complete during annual catch basin cleaning by Town.

BMP: Watershed Assessment and Studies

BMP Number (Optional) **3-11** **Completed** ☒

Document Name and/or Web Address: N/A

Description:

The Town will encourage cooperation with the Public Drinking Water Supply Districts to apply for funding assistance from DEP's Source Water Protection Program for grant assistance to develop wellhead protection plans and stormwater management plans within Leicester's Zone II and Henshaw Reservoir.

Responsible Department/Parties: Department of Public Works/Water Districts

Measurable Goal(s):

Continue to implement and evaluate the current policy at Stormwater Committee meetings.

Add BMP

MCM 4

Construction Site Stormwater Runoff Control

Permit Part 2.3.5

Objective: The objective of an effective construction stormwater runoff control program is 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.

Examples and Templates:
Examples and templates relevant to MCM 4, including model ordinances and site inspection templates, can be found here: https://www.epa.gov/npdes-permits/stormwater-tools-new-england#csrc

BMP: Sediment and Erosion Control Ordinance

BMP Number (Optional) **4-1** **Completed** (by May 1, 2008) ☒

Ordinances Link or Reference: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Department Responsible for Enforcement: Department of Public Works

---

BMP: Site Plan Review Procedures

BMP Number (Optional) **4-2** **Written procedures completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Provide Town's written site plan review procedures.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Conduct site plan review of 100% of projects according to the procedures outlined above. Complete within 1 year of the effective date of permit.

BMP: Site Inspections and Enforcement of Sediment and Erosion Control Measures Procedures

BMP Number (Optional) **4-3** **Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Update Town's existing erosion and sediment control written documentation to include additional requirements outlined in the permit.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Inspect 100% of construction sites as outlined in the above document and take enforcement actions as needed.

Complete within 1 year of the effective date of permit.

BMP: Erosion and Sediment Control

BMP Number (Optional) **4-4** **Completed** ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Update Town's existing erosion and sediment control written documentation to include additional requirements outlined in the permit.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete within 1 year of the effective date of permit.

BMP: Waste Control

BMP Number (Optional) **4-5** **Completed** ☒

Document Name and/or Web Address: TBD

Description:

Develop and implement written requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

The written requirements were approved by the Town for implementation at Annual Town Meeting on May 2, 2023.

Add BMP

MCM 5

Post Construction Stormwater Management in New Development and Redevelopment

Permit Part 2.3.6

Objective: The objective of an effective post construction stormwater management program is to reduce the discharge of pollutants found in stormwater to the MS4 through the retention or treatment of stormwater after construction on new or redeveloped sites and to ensure proper maintenance of installed stormwater controls.

Examples and Templates:
Examples and templates relevant to MCM 5, including model ordinances and bylaw review templates and guidance can be found here: https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm

BMP: Post-Construction Ordinance

BMP Number (Optional) **5-1** **Completed** (by year 2) ☒

Town Ordinances Link or Reference: The updated language was approved by the Town for implementation at Annual Town Meeting on May 2, 2023.

Department Responsible for Enforcement: Department of Public Works, Planning Board

---

BMP: Street Design and Parking Lot Guidelines Report

BMP Number (Optional) **5-2** **Completed** (by year 4) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

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.

Responsible Department/Parties: Department of Public Works, Planning Board

Measurable Goal(s):

Complete 4 years after effective date of permit. Recommendations are in place and progress will be reported annually.

BMP: Green Infrastructure Report

BMP Number (Optional) **5-3** **Completed** (by year 4) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.

Responsible Department/Parties: Department of Public Works, Planning Board, Conservation Commission

Measurable Goal(s):

Complete 4 years after effective date of permit. Recommendations are in place and progress will be reported annually.

BMP: List of Municipal Retrofit Opportunities

BMP Number (Optional) **5-4** **Completed** (by year 4) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually. Consider BMPs ro reduce nitrogen discharges.

Responsible Department/Parties: Department of Public Works, Planning Board

Measurable Goal(s):

Complete 4 years after effective date of the permit and report annually on retrofitted properties. The list was completed by July 1, 2022 and is updated as needed.

BMP: As-Built Plans for On-Site Stormwater Control

BMP Number (Optional) **5-5** **Completed** ☒

Document Name and/or Web Address: TBD

Description:

The Town currently has procedures in place requiring the submittal of as-built plans for new construction. Further development of these procedures in accordance with the MS4 General Permit to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP.

Responsible Department/Parties: Department of Public Works, Planning Board

Measurable Goal(s):

The updated language was approved by the Town for implementation at Annual Town Meeting on May 2, 2023.

BMP: Post-Construction Design Standards

BMP Number (Optional) **5-6** **Completed** ☒

Document Name and/or Web Address: TBD

Description:

Update Town stormwater design standards to further promote infiltration of post-construction stormwater

runoff, i.e. grassed swales, infiltration basins and trenches, porous pavement, etc. This will also include requirements that BMPs be optimized for nitrogen removal.

Responsible Department/Parties: Department of Public Works, Planning Board, Conservation Commission

Measurable Goal(s):

The updated language was approved by the Town for implementation at Annual Town Meeting on May 2, 2023.

Add BMP

MCM 6
Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Permit Part 2.3.7

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.

Examples and Templates:
Examples and templates relevant to MCM 6, including SOP templates for catch basin cleaning, street sweeping, vehicle maintenance, parks and open space management, winter deicing, and Stormwater Pollution Prevention Plans can be found here: https://www.epa.gov/npdes-permits/stormwater-tools-new-england#gh

PERMITTEE OWNED FACILITIES

BMP: Parks and Open Spaces Operations and Maintenance Procedures

BMP Number (Optional) **6-1** **Written Document Completed** (by year 2) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Implement the SOP listed above on 100% of the parks and open spaces in Town. Complete and implement 2 years after effective date of permit.

Properties List (Optional)**:**

N/A

BMP: Buildings and Facilities Operations and Maintenance Procedures

BMP Number (Optional) **6-2** **Written Document Completed** (by year 2) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Create written O&M procedures including all requirements contained in 2.3.7.a.ii for buildings and facilities.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Implement the SOP listed above on 100% of buildings and facilities in Town. Complete and implement 2 years after effective date of permit.

Properties List (Optional)**:**

N/A

BMP: Vehicles and Equipment Operations and Maintenance Procedures

BMP Number (Optional) **6-3** **Written Document Completed** (by year 2) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Create written O&M procedures including all requirements contained in 2.3.7.a.ii for vehicles and equipment.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Implement the SOP listed above for 100% of vehicles and equipment according to the above document. Complete and implement 2 years after effective date of permit.

Properties List (Optional)**:**

N/A

INFRASTRUCTURE

BMP: Infrastructure Operations and Maintenance Procedures

BMP Number (Optional) **6-4** **Written Procedure Completed** (by year 2) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Establish and implement program for repair and rehabilitation of MS4 infrastructure.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

100% of infrastructure is maintained to ensure proper function in accordance with the procedures above. Complete 2 years after effective date of permit.

BMP: Catch Basin Cleaning Program

BMP Number (Optional) **6-5** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins as dictated by the schedule.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

All catch basins are cleaned in accordance to the document above such that no catch basin is more than 50% full at any given time. Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually. Catch basin cleaning occurs 2-3 days per week. The Town's goal is to clean all catch basins twice annually.

BMP: Street Sweeping Program

BMP Number (Optional) **6-6** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Sweep all municipal owned streets and parking lots in accordance with permit conditions.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Sweep all municipal owned streets and parking lots twice per year, once in the spring and once in the fall to meet the nitrogen TMDL enhanced BMP requirements.

BMP: Winter Road Maintenance Program

BMP Number (Optional) **6-7** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Develop and implement winter road maintenance procedures including the use and storage of salt and sand, minimizing the use of road salt, and forbidding disposal of snow into waters.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete and implement 1 year after effective date of permit.

BMP: Stormwater Treatment Structures Inspection and Maintenance Procedures

BMP Number (Optional) **6-8** **Completed** (by year 1) ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Establish and implement inspection and maintenance procedures and frequencies.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Inspect and maintain treatment structures at least annually. Complete and implement 1 year after effective date of permit.

BMP: SWPPP

BMP Number (Optional) **6-9** **Completed** (by year 2) ☒

Document Name and/or Web Address: Document Name: SWPPP Highway Department Facility
A hard copy of the SWPPP is available at the Leicester Highway Department Office.

Description:

Create SWPPPs for municipal facilities as required by the permit. The Town created a SWPPP for the Highway Dept. Garage in 2012 and updated the plan in June 2021.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Develop and implement SWPPPs for 100% of facilities. Complete and implement 2 years after effective date of the permit.

BMP: Inventory

BMP Number (Optional) **6-10** **Completed** ☒

Document name: Leicester Stormwater Management Program

Document Name and/or Web Address: Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Create inventory of all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete 2 years after effective date of permit and implement annually.

BMP: O&M Program (Grounds Care/Integrate Pest Management)

BMP Number (Optional) **6-11**

Completed ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Establish requirements for use of slow release fertilizers on permittee owned property, reduce and manage fertilizer use, and establish procedures to properly manage grass clippings, and leaf litter on permittee owned property.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete and implement 3 years after effective date of permit.

BMP: Employee Training - General Stormwater Topics

BMP Number (Optional) **6-12**

Completed ☒

Document Name and/or Web Address: N/A

Description:

Conduct an annual in-house training session reviewing general pollution abatement practices associated with municipal facilities.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Implement 2 years after effective date of permit.

BMP: Source Control

BMP Number (Optional) **6-13**

Completed ☒

Document Name and/or Web Address: TBD

Description:

Complete Nitrogen Source Identification Report to meet nitrogen TMDL enhanced BMP requirements.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete and submit as an attachment to the Year 4 Annual Report.

BMP: Evaluate BMP Retrofits for Water Quality

BMP Number (Optional) **6-14**

Completed ☒

Document Name and/or Web Address: Document name: Leicester Stormwater Management Program
Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Description:

Evaluate properties identified as presenting retrofit opportunities or areas for structural BMP installation to meet the nitrogen TMDL enhanced BMP requirements.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete and implement 5 years after effective date of permit.

BMP: Installation of BMP Retrofits for Water Quality

BMP Number (Optional) **6-15**

Completed ☐

Document Name and/or Web Address: TBD

Description:

Install a minimum of one structural BMP as a demonstration project to meet nitrogen TMDL enhanced BMP requirements.

Responsible Department/Parties: Department of Public Works

Measurable Goal(s):

Complete and implement 6 years after effective date of permit.

Add BMP

Annual Evaluation

Year 1 Annual Report

Document Name and/or Web Address:

Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Year 2 Annual Report

Document Name and/or Web Address:

Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Year 3 Annual Report

Document Name and/or Web Address:

Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Year 4 Annual Report

Document Name and/or Web Address:

Web Address: https://www.leicesterma.org/public-works/pages/stormwater-information

Year 5 Annual Report

Document Name and/or Web Address:

Year X Annual Report

Document Name and/or Web Address:

Add a Year

TMDLs and Water Quality Limited Waters

Select the applicable Impairment(s) and/or TMDL(s).

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 and Pathogen ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Bacteria/Pathogens

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	**TMDL Name** (if applicable)	**Add/Delete Row**
Grindstone Brook		+ -
Kettle Brook		+ -
Burncoat Brook		+ -

Annual Requirements Beginning Year 1

Rank outfalls to these receiving waters as high priority for IDDE implementation in the initial outfall ranking

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

3-3, 3-4

Public Education and Outreach

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

Annual message encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

Permittee or its agents disseminate educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-6

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-6

Nitrogen

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)	Add/Delete Row
Long Island Sound	Long Island Sound TMDL	+ -

Annual Requirements Beginning Year 1

Rank outfalls to these receiving waters as high priority for IDDE implementation in the initial outfall ranking

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

3-3, 3-4

Public Education and Outreach

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

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 fertilizers

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

---

Establish requirements for the use of slow release fertilizers on permittee owned property currently using fertilizer, in addition to reducing and managing fertilizer use as provided in part 2.3.7.1

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

SOP - Managing Grass Clippings and Leaf Litter and Use of Slow-Release Fertilizers on Permittee Property.
See Attachment P.

Establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

SOP - Managing Grass Clippings and Leaf Litter and Use of Slow-Release Fertilizers on Permittee Property.
See Attachment P.

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)

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

6-6

Nitrogen Reduction Tracking BMP

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

The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP is found in the following document or website and is updated yearly at a minimum:

Leicester has noted structural BMPs in its Phase 1 Map. The Town is currently evaluating these BMPs and assessing means to track nitrogen removal.

Requirements Due by Year 2

Stormwater Management in New Development and Redevelopment

The requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for nitrogen removal

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-1, 5-5, 5-6

Requirements Due by Year 4

Complete a Nitrogen Source Identification Report

The document name (if attached) and/or web address is/are:

The Nitrogen Source Identification Report was attached to the Year 4 Annual Report.

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs to reduce nitrogen discharges

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Requirements Due by Year 5

Potential Structural BMPs

Evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under Permit part 2.3.6.d.ii or identified in the Nitrogen Source Identification Report that are within the drainage area of the impaired water or its tributaries

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Complete a listing of planned structural BMPs and a plan and schedule for implementation

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Solids, Oil and Grease (Hydrocarbons), or Metals

Combination of Impaired Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	**TMDL Name** (if applicable)	**Add/Delete Row**
Greenville Pond		+ -

Annual Requirements Beginning Year 1

Rank outfalls to these receiving waters as high priority for IDDE implementation in the initial outfall ranking

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

3-3, 3-4

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

---

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

6-6

Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

6-4, 6-5

Requirements Due by Year 2

Stormwater Management in New Development and Redevelopment

Stormwater management systems designed on commercial and industrial land use area draining to the water quality limited water body shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Phosphorus

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)	Add/Delete Row
Dutton Pond		+ -

Annual Requirements Beginning Year 1

Rank outfalls to these receiving waters as high priority for IDDE implementation in the initial outfall ranking

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

3-3, 3-4

Public Education and Outreach

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

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

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

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

1-1, 1-6

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)

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

6-6

Establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

SOP - Managing Grass Clippings and Leaf Litter and Use of Slow-Release Fertilizers on Permittee Property.
See Attachment P.

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs to reduce nitrogen discharges

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Nitrogen Reduction Tracking BMP

Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix H.

The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in pass per year by the BMP is found in the following document or website and is updated yearly at a minimum:

Leicester has noted structural BMPs in its Phase 1 Map. The Town is currently evaluating these BMPs and assessing means to track phosphorous removal.

Requirements Due by Year 2

Stormwater Management in New Development and Redevelopment

The requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-1

Requirements Due by Year 4

Complete a Phosphorus Source Identification Report

The document name (if attached) and/or web address is/are:

The Phosphorus Source Identification Report was attached to the Year 4 Annual Report.

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs that infiltrate stormwater where feasible

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Requirements Due by Year 5

Potential Structural BMPs

Evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under Permit part 2.3.6.d.ii or identified in the Phosphorus Source Identification Report that are within the drainage area of the impaired water or its tributaries

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Complete a listing of planned structural BMPs and a plan and schedule for implementation

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

5-4

Lake and Pond Phosphorus TMDL

Begin Phase 1 of the Lake Phosphorus Control Plan during year 1 and complete by year 5.

Applicable Receiving Waterbody(ies)	PCP Complete	Document Location	Add/Delete Row
French Basin Lakes	☒	https://www.leicesterma.org/public-works/pages/stormwater-information	+ -

ATTACHMENT A

NOTICE OF INTENT

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

Part I: General Conditions

General Information

Name of Municipality or Organization: Town of Leicester State: MA

EPA NPDES Permit Number (if applicable): MAR041202

Primary MS4 Program Manager Contact Information

Name: Dennis Griffin Title: Highway Superintendent

Street Address Line 1: 59 Peter Salem Road

Street Address Line 2:

City: Leicester State: MA Zip Code: 01524

Email: Griffind@leicesterma.org Phone Number: (508) 892-7021

Fax Number: (508) 892-7058

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed): SWMP to be completed within the required time frame stated in the permit. When complete, the SWMP with be stored at the Highway Department Office and available on the Town's website.

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)

A PDF of the Town's current outfall map is attached to this NOI.

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): 05/06/14

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): 09/06/11

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): 09/06/11

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
Southwick Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Lynde Brook Reservoir	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Waite Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Smiths Pond	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Sargent Pond	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Henshaw Pond	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Greenville Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Rochdale Pond	12	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Cedar Meadow Pond	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Burncoat Brook	3	☐	☐	☐	☐	☐	☐	☐	☒	☐	Aquatic Macroinvertebrate Bioassessments
French River	5	☐	☐	☐	☐	☐	☒	☒	☐	☐	Aquatic Plants (Macrophytes), Mercury in Fish Tissue
Grindstone Brook	13	☐	☐	☐	☐	☐	☐	☐	☒	☐	
Kettle Brook	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
City Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Lynde Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Town Meadow Brook	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Dutton Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed Tributary/Water Body	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	

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 an 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 requires a target audience). **Use the drop-down menus in each table or enter your own text to override the drop down menu.**

MCM 1: Public Education and Outreach

BMP Media/Category (enter your own text to override the drop down menu)	**BMP Description**	**Targeted Audience**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal**	**Beginning Year of BMP Imple-mentation**
Web Page	Leicester will continue to utilize its Stormwater webpage link to provide the general public with stormwater educational materials and information on activities including the Town's current SWMP, stormwater SOPs, announcements, etc.	Residents/General Public	Highway Department	Annual updates to the official town website to post stormwater events, milestones, documents, educational materials, etc.	2019
Videos	Research and purchase a video regarding proper stormwater management practices for industrial facilities.	Industrial Facilities	Highway Department	Broadcast video annually on local public access television.	2022

Web Page	Announcements directed toward developers and contractors noting Town by-laws and ordinances relative to construction site runoff control, site inspection and enforcement.	Developers (construction)	Highway Department	Annual announcements on Town web site	2021
Web Page	Continue to utilize the Central Massachusetts Regional Stormwater Coalition (Coalition) website as a means of educating the public on stormwater issues and initiatives.	Businesses, Institutions and Commercial Facilities	Highway Department	Create a link at the Town's Stormwater web page for businesses, institutions, and commercial facilities linking them to Coalition stormwater educational materials	2021
Local Public Service Announcements	Continue to stream "Liquid Assets" documentary	Residents/Industrial Facilities	Highway Department	Broadcast video annually on local public access television.	2019
Brochures/Pamphlets/Web Page	Annual message residential and commercial audiences 1) proper use/disposal of grass clippings and proper use of slow-release and phosphorous-free fertilizers (spring), 2) proper management of pet waste (summer), 3) proper disposal of leaves (fall) to address nitrogen TMDL enhanced BMP requirements.	Residential and commercial (nitrogen TMDL)	Highway Department	Web links to informational flyers on each topic at the intervals noted in the BMP description.	2020

Local Public Service Announcements	Research and purchase a video(s) regarding proper stormwater management practices and standard operating procedures	Businesses, Institutions and Commercial Facilities	Highway Department	Broadcast video annually on local public access television.	2020
Special Events/Festivals/Fairs	Continue to host an annual public safety day (open house) for the Highway, Police, and Fire Departments to showcase equipment and operational procedures. One of the focuses at the event is stormwater education.	General Public	Highway Department	Continue to host a public safety event annually	2018
Newspaper Articles/Press Releases	Draft a press release directed toward developers and contractors focusing on construction site runoff control, Town by-laws and ordinances, and general stormwater management practices	Developers (construction)	Highway Department	Circulate one press release in a local newspaper targeting developers and contractors during the permit period	2023

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

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Categorization	Brief BMP Description (enter your own text to override the drop down menu)	Responsible Department/Parties (enter your own text to override the drop down menu)	Additional Description/ Measurable Goal	Beginning Year of BMP Imple-mentation
Public Review	SWMP Review	Highway Department	Allow annual review of stormwater management plan updates and posting of stormwater management plan on Town website	2019
Public Participation	Leicester Stormwater Committee	Highway Department/Stormwater Committee	Allow public to attend and participate in quarterly Stormwater Committee meetings. Scheduled meetings are posted by the Town.	2019
Public Participation	Storm Drain Stenciling	Highway Department	Leicester will work with local Scout groups to develop stenciling program.	2020
Public Participation	Household haz. waste/used oil collection	Highway Department /Board of Health	Continue to promote and evaluate Household Waste Recycling programs. Conduct a household hazardous waste collection event in Town every two years.	2018
Public Participation	SWMP Review	Highway Department	Allow public to comment on stormwater management plan annually	2019

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

Part III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP Categorization (enter your own text to override the drop down menu)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
SSO inventory	Develop SSO inventory in accordance with permit conditions	Highway Department	Complete within 1 year of effective date of permit	2019
Storm sewer system map	Update storm sewer system mapping with Phase I requirements	Highway Department	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2020
Written IDDE program	Create written IDDE plan incorporating all requirements in the permit	Highway Department	Complete within 1 year of the effective date of permit and update as required	2019
Implement IDDE program	Implement catchment investigations according to program and permit conditions	Highway Department	Complete 10 years after effective date of permit	2028
Employee training	Train employees on IDDE identification, removal of non-stormwater sources, and IDDE program implementation	Highway Department	Train annually	2020
Conduct dry weather screening	Conduct dry weather outfall screening in accordance with the procedures and conditions outlined in the permit	Highway Department	Complete 3 years after effective date of permit	2021
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Highway Department	Complete 10 years after effective date of permit	2028
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Highway Department	Complete ongoing outfall screening upon completion of IDDE program	2029

IDDE Ordinance/Bylaw	Enforce requirements in the Town's existing IDDE Bylaw	Highway Department	Bylaw is in effect and enforced	2018
Illicit Discharge Identification	Request that contractors report observed illicit discharges during construction. Town employees to identify and report illicit discharges during catch basin cleaning.	Highway Department	During construction projects. Complete during annual catch basin cleaning by Town.	2019
Watershed assessment and studies	The Town will encourage cooperation with the Public Drinking Water Supply Districts to apply for funding assistance from DEP's Source Water Protection Program for grant assistance to develop wellhead protection plans and stromwater management plans within Leicester's Zone II and Henshaw Reservoir.	Highway Department/Water Districts	Continue to implement and evaluate the current policy with the Stormwater Committee at quarterly meetings.	2019

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

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
Site inspection and enforcement of Erosion and Sediment Control (ESC) measures	Update Town's written procedures for site inspections and enforcement procedures to include additional requirements outlined in the permit	Highway Department	Complete within 1 year of the effective date of permit	2019
Site plan review	Update Town's existing site plan review written documentation to include additional requirements outlined in the permit	Highway Department	Complete within 1 year of the effective date of permit	2019
Erosion and Sediment Control	Update Town's existing erosion and sediment control written documentation to include additional requirements outlined in the permit	Highway Department	Complete within 1 year of the effective date of permit	2019
Waste Control	Develop and implement written requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Highway Department	Complete within 1 year of the effective date of permit	2019

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

Part III: Stormwater Management Program Summary (continued)

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

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
As-built plans for on-site stormwater control	Procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Highway Department, Planning Board	Require submission of as-built plans for completed projects within 2 years after completion of construction	2019
Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually. Consider BMPs ro reduce nitrogen discharges.	Highway Department, Planning Board	Complete 4 years after effective date of permit and report annually on retrofitted properties	2022
Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Highway Department, Planning Board, Conservation Commission	Complete 4 years after effective date of permit and implement recommendations of report	2022
Street design 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.	Highway Department, Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	2022

Enforce stormwater controls or management practices for new development and redevelopment that meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Update/amend existing Town bylaws to address post-construction site runoff in new development and redevelopment that meet permit requirements	Highway Department, Planning Board, Conservation Commission	Complete 2 years after effective date of permit	2020
Post-Construction Design Standards	Update Town stormwater design standards to further promote infiltration of post-construction stormwater runoff, i.e. grassed swales, infiltration basins and trenches, porous pavement, etc. This will also include requirements that BMPs be optimized for nitrogen removal.	Highway Department, Planning Board, Conservation Commission	Complete 3 years after effective date of permit	2021

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

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	Highway Department	Complete and implement 2 years after effective date of permit	2020
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	Highway Department	Complete 2 years after effective date of permit and implement annually	2020
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Highway Department	Complete 2 years after effective date of permit	2020
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for municipal facilities as required by the permit. The Town completed a SWPPP for the Highway Dept. Garage in 2012.	Highway Department	Complete and implement 2 years after effective date of permit	2020
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins as dictated by the schedule	Highway Department	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2019

Street sweeping program	Sweep all municipal owned streets and parking lots in accordance with permit conditions	Highway Department	Sweep all municipal owned streets and parking lots twice per year, once in the spring and once in the fall to meet the nitrogen TMDL enhanced BMP requirements	2020
Road salt use optimization program/winter road maintenance	Develop and implement winter road maintenance procedures including the use and storage of salt and sand, minimizing the use of road salt, and forbidding disposal of snow into waters	Highway Department	Complete and implement 1 year after effective date of permit. Implement salt use optimization during deicing season	2019
Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies	Highway Department	Inspect and maintain treatment structures at least annually	2019
O&M Program (Grounds Care/Integrate Pest Management)	Establish requirements for use of slow release fertilizers on permittee owned property, reduce and manage fertilizer use, and establish procedures to properly manage grass clippings, and leaf litter on permittee owned property.	Highway Department	Complete and implement 3 years after effective date of permit	2021
Employee Training - General Stormwater Topics	Conduct an annual in-house training session reviewing general pollution abatement practices associated with municipal facilities	Highway Department	Implement 2 years after effective date of permit	2020
Source Control	Complete Nitrogen Source Identification Report to meet nitrogen TMDL enhanced BMP requirements.	Highway Department	Complete and implement 4 years after effective date of permit	2022

Evaluate BMP Retrofits for Water Quality	Evaluate properties identified as presenting retrofit opportunities or areas for structural BMP installation to meet the nitrogen TMDL enhanced BMP requirements.	Highway Department	Complete and implement 5 years after effective date of permit	2023
Installation of BMP Retrofits for Water Quality	Install a minimum of one structural BMP as demonstration project to meet nitrogen TMDL enhanced BMP requirements.	Highway Department	Complete and implement 6 years after effective date of permit	2024

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)
French Basin Lakes (Phosphorus)	Adhere to requirements in part A.II of Appendix F	Highway Department
Long Island Sound TMDL (Nitrogen)	Adhere to requirements in part B.I of Appendix F	Highway Department

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)
Phosphorus, turbidity	French River Segment MA42-03 Greenville Pond through Rochdale Pond	Adhere to requirements in part II of Appendix H	Highway Department
E. Coli	Grindstone Brook Segment ID MA 42-18 Henshaw Pond to Rochdale Pond	Adhere to requirements in part III of Appendix H	Highway Department
E. Coli	Burncoat Brook Segment ID MA42-07 Bouchard Pond Town Meadow Brook	Adhere to requirements in part III of Appendix H	Highway Department

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.

Endangered Species Act (ESA) Determination Statement: Discharge and discharge related activities will have no affect or impact on listed species or critical habitat. The Town of Leicester intends to comply with the Massachusetts MS4 General Permit and Appendix C.

National Historic Preservation Act (NHPA) Determination Statement: The Town of Leicester has completed a determination and certifies its eligibility for this permit using Criterion A. At this time the Town does not have any planned projects involving subsurface land disturbance of less than one acre on NHPA sites. Any planned work will be outside of historic property areas. The Town met this requirement in the 2003 MS4 General Permit.

Attached are the following documents:

Attachment A - GIS Outfall Map dated December 2014.

Attachment B - US Department of the Interior Fish and Wildlife Service threatened and endangered species listing, dated August 29, 2018.

Operations and Maintenance activities completed by the Town's Highway Department continue to reduce potential for pollution from stormwater. The Town cleans all catch basins (approximately 1,500) on 131 streets in Town at least once annually. All 198 Town streets are swept annually. The Town uses catch basin cleaning activities as an opportunity to identify potential illicit discharges. The Highway Department sweeps approximately 14 miles of sidewalks in Town annually. Leicester continues to add drainage infrastructure to high impact areas of town.

Overview of the Central Massachusetts Regional Stormwater Coalition
The Town of Leicester continues to be an active member of the Central Massachusetts Regional Stormwater Coalition (Coalition). The Coalition was originally established in 2012 by a group of 13 communities working together to address municipal stormwater management. The initial group included the communities of Auburn, Charlton, Dudley, Holden, Leicester, Millbury, Oxford, Paxton, Shrewsbury, Spencer, Sturbridge, Webster, and West Boylston. The following year, the group added 17 new communities including Boylston, Grafton, Hardwick, Hopkinton, Monson, Northbridge, Northborough, North Brookfield, Palmer, Rutland, Southbridge, Sterling, Upton, Uxbridge, Ware, Westborough, and Wilbraham. The FY 2017 Coalition was comprised of 31 total communities. Coalition members work together to protect stormwater systems and surface waters, share ideas, equipment, and resources, and develop tools to expand stormwater best management practices collectively in an effort to meet the requirements of the Massachusetts Small MS4 General Permit.

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

Part V: Certification

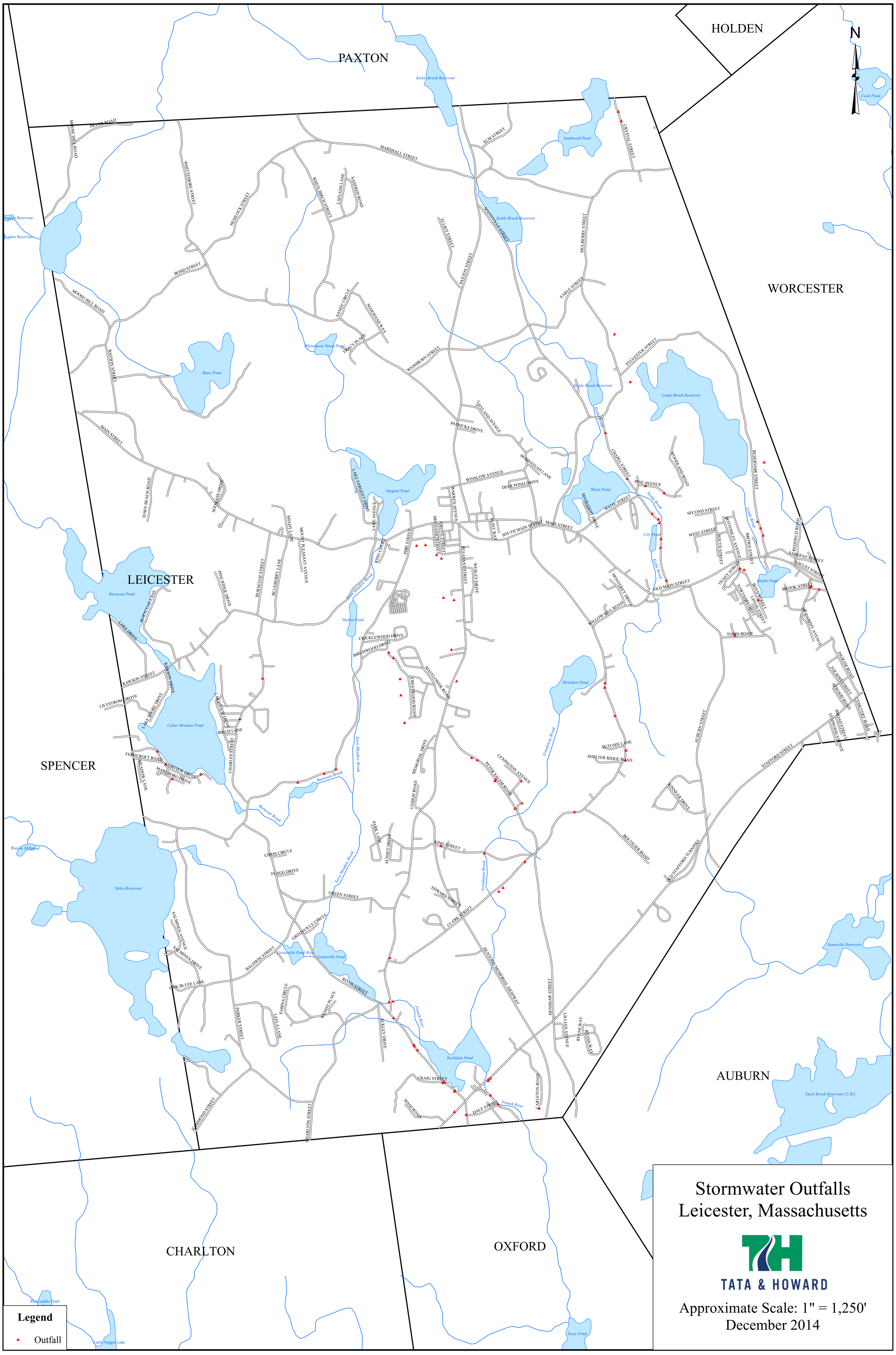
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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:	David A. Genereux	Title:	Town Administrator
Signature:	David Genereux	Date:	09/28/18

[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

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

ATTACHMENT A


Stormwater Outfalls
Leicester, Massachusetts
TATA & HOWARD
Approximate Scale: 1" = 1,250'
December 2014
Legend
Outfall
N
PAXTON
HOLDEN
WORCESTER
LEICESTER
SPENCER
AUBURN
CHARLTON
OXFORD
Kettle Brook Reservoir
Cook Pond
Southwick Pond
Shaw Pond
Whittemore Street Pond
Lynde Brook Reservoir
Waite Pond
Sargent Pond
City Pond
Smiths Pond
Burncoat Pond
Dutton Pond
Cedar Meadow Pond
Henshaw Pond
Stiles Reservoir
Stoneville Reservoir
Rochdale Pond
Dark Brook Reservoir [U.B.]
Watson Millpond
Greenville Pond
Greenville Pond West
Texas Pond
Little Nugget Lake
Wee Laddie Pond
Kettle Brook
Lynde Brook
Town Meadow Brook
Burncoat Brook
Grindstone Brook
French River
Town Meadow Brook
PRYOR ROAD
MOOSE HILL ROAD
WHITTEMORE STREET
HEMLOCK STREET
MARSHALL STREET
ELM STREET
CRYSTAL STREET
WHITE BIRCH STREET
LAFLASH LANE
SANFORD ROAD
ELLIOT STREET
PAXTON STREET
MANNY HILL STREET
MULBERRY STREET
BOND STREET
EARLE STREET
SANDY CIRCLE
MAGHANS WAY
TRACY PLACE
WASHBURN STREET
SYLVESTER STREET
WATSON STREET
MAIN STREET
ZIYLAND AVENUE
PATRICKS DRIVE
HOMESTEAD LANE
CLAPEL STREET
WOODLAND ROAD
RESERVOIR STREET
WINSLOW AVENUE
DEER POND DRIVE
PINE AVENUE
TOWN BEACH ROAD
SOOHANS DRIVE
LAKE SARGENT DRIVE
LAKE AVENUE
WARREN AVENUE
MASSASOIT DRIVE
WAITE STREET
SECOND STREET
WEST STREET
SHADY LANE
MOUNT PLEASANT AVENUE
MECHANIC STREET
GROVE STREET
FLINT WAY
SOUTH MAIN STREET
SOUTH STREET
BOTTOMLEY AVENUE
BROWN STREET
REDFIELD ROAD
SARGENT STREET
LOCUST STREET
KING COURT
PINE STREET
PLEASANT STREET
WESLEY DRIVE
MONTERLEY DRIVE
OLD MAIN STREET
OLNEY STREET
BOYD STREET
UPTON STREET
TOWTAUPS STREET
BROOK STREET
MCCARTHY AVENUE
PINE RIDGE DRIVE
BURNCOAT STREET
BLUEBERRY LANE
BURNCOAT LANE
LAKE DRIVE
WILLOW HILL ROAD
TOBIN ROAD
CRICKLEWOOD DRIVE
BIRCHWOOD DRIVE
MAYFLOWER ROAD
CRESTWOOD ROAD
INGRAM ROAD
FOLSOM STREET
ALWOOD ROAD
CEMETERY ROAD
BROAD STREET
ELMWOOD AVENUE
RAWSON STREET
RAWSON DRIVE
LILYSTROM GROVE
LAKE SHORE DRIVE
LAKEVIEW DRIVE
BIRCH LANE
CHARLES STREET
FERNCROFT ROAD
FAIRVIEW DRIVE
MARLBORO DRIVE
MEADOW LANE
MEMORIAL DRIVE
LEXINGTON AVENUE
PETER SALEM ROAD
AUTUMN LANE
SHELTER RIDGE ROAD
AUBURN STREET
STAFFORD STREET
KINNEAR DRIVE
LEHIGH ROAD
PARK LANE
SUNSET DRIVE
KING STREET
BOUTILIER ROAD
OLD STAFFORD TURNPIKE
CHRIS CIRCLE
FLAGG DRIVE
GREEN STREET
EDWARD STREET
CLARK STREET
GREENVILLE CIRCLE
SALMINEN AVENUE
SALMINEN DRIVE
BALDWIN STREET
OAK BLUFF LANE
RIVER STREET
HUNTOON MEMORIAL HIGHWAY
HENSHAW STREET
LILLIAN AVENUE
RYANS WAY
BRANS WAY
SABINA CIRCLE
WENDY PLACE
LEELA LANE
PARKER STREET
ACKLEY DRIVE
CRAIG STREET
SIANI ROAD
DALE STREET
CARLETON ROAD
HAMMOND STREET
CHARLTON STREET

ATTACHMENT B

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: August 29, 2018
Consultation Code: 05E1NE00-2017-SLI-1388
Event Code: 05E1NE00-2018-E-06871
Project Name: Leicester, Massachusetts Small MS4 General Permit Notice of Intent

Subject: Updated 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(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-1388

Event Code: 05E1NE00-2018-E-06871

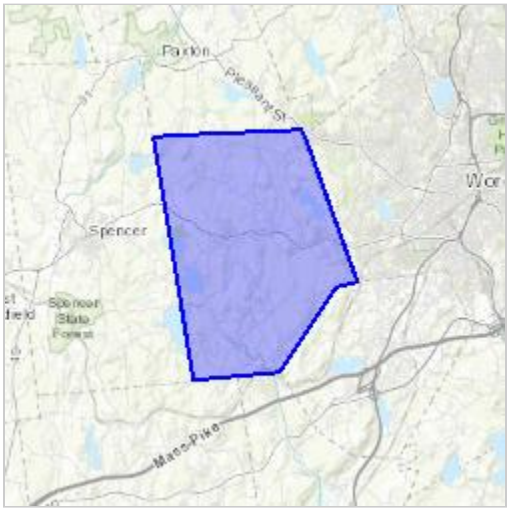
Project Name: Leicester, Massachusetts Small MS4 General Permit Notice of Intent

Project Type: Regulation Promulgation

Project Description: On behalf of the Town of Leicester, Massachusetts, we are preparing to submit a Notice of Intent (NOI) to the U.S. Environmental Protection Agency (EPA) for coverage under the 2016 Massachusetts Small MS4 General Permit for Stormwater Discharge. As part of the submission, the Town is required to consult with the U.S. Fish and Wildlife Service (USFWS) with regard to Federal Endangered and Threatened Species and Critical Habitat Protection. We have reviewed data on the Information, Planning, and Conservation (IPaC) online system process for the Town of Leicester and have determined that one federally listed threatened mammal (Northern Long-Eared Bat) is located within the subject area. The Town is not planning any new stormwater Best Management Practices (BMPs) within any habitat areas. No earth moving and no tree cutting activities are planned and thus on effect on the Northern Long-Eared Bat.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.23701535479377N71.90574253714824W



Counties: Worcester, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

ATTACHMENT B

EPA STORMWATER DISCHARGE AUTHORIZATION LETTER

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

VIA EMAIL

April 5, 2019

David A. Genereux
Town Administrator

And;

Dennis Griffin
Highway Superintendent
59 Peter Salem Road
Leicester, MA. 01524
Griffind@leicesterma.org

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041202, Town of Leicester

Dear Dennis Griffin:

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

ATTACHMENT C

IDDE LEGAL AUTHORITY/BYLAW

Bylaw Governing Illicit Discharges to the Municipal Storm Drain System (ATM 5-6-14)

SECTION 1: PURPOSE

The purpose of this bylaw is to provide for the health, safety, and general welfare of the citizens of the Town of Leicester through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. The bylaw establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this bylaw are:

1. To prevent pollutants from entering Leicester's municipal separate storm sewer system;
2. To prohibit illicit connections and unauthorized discharges to the MS4;
3. To require the removal of all such illicit discharges;
4. To comply with state and federal regulations relating to storm water discharges; and
5. To establish legal authority to ensure compliance with the provisions of this bylaw through inspection, monitoring, and enforcement.

SECTION 2: DEFINITIONS
For the purposes of this bylaw, the following shall mean:

Authorized Enforcement Agency: The Town of Leicester's Board of Selectmen shall administer and implement this bylaw. The Town's Highway Department shall enforce this bylaw. Any powers granted to or duties imposed must be delegated in writing by the Board of Selectmen to the appropriate agents of the town, i.e. the employees of and agents of the Highway Department, the Board of Health, the Conservation Commission, District Water and Sewer Superintendents, Building Inspector, and Town Engineer.

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C § 1251 et seq.) and any subsequent amendments thereto.

Hazardous Material: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge: Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section 5 of this bylaw.

Illicit Connections: An illicit connection is defined as either of the following: Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and waste water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or, any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not

been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity: Activities subject to NPDES Industrial Permits as defined in 40 CFR. Section 122.26 (b)(14).

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit: A permit issued by EPA that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Storm Water Discharge: Any discharge to the storm drain system that is not composed entirely of storm water.

Person: Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drain System: Publically-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Wastewater: Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

SECTION 3: APPLICABILITY

This bylaw shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

SECTION 4: RESPONSIBILITY FOR ADMINISTRATION

The Board of Selectmen shall administer and implement the provisions of this bylaw. The Highway Department shall enforce this bylaw. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the Chairman of the Board of Selectmen to persons or entities acting in the beneficial interest of the Town of Leicester.

SECTION 5: DISCHARGE PROHIBITIONS

Prohibition of Illegal Discharges: No person shall discharge or cause to be discharged into the municipal separate storm sewer system (MS4) or watercourses any materials, including but not limited to pollutants or waters containing pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt from discharge prohibitions established by this bylaw:
    - Water line flushing or other potable water sources
    - Landscape irrigation or lawn watering
    - Diverted stream flows
    - Rising ground water
    - Uncontaminated ground water infiltration from storm drains
    - Uncontaminated pumped ground water
    - Foundation or footing drains
    - Crawl space pumps
    - Air conditioning condensation
    - Springs
    - Individual resident car washing
    - Natural riparian habitat or wet-land flows
    - De-chlorinated Swimming pools
    - Street wash waters
    - Residential building wash waters without detergents
    - Firefighting activities

2. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.
3. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.
4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Prohibition of Illicit Connections:

1. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
2. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
3. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4 or watercourse, or allows such a connection to continue.

SECTION 6: NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the MS4 system, or water of the U.S. said person shall take all the necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies and the Leicester Highway Department. In the event of non-hazardous materials, said person shall notify the Leicester Highway Department in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Leicester Highway Department within three business days of the phone notice. If the discharge of prohibited material emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 7: MONITORING OF DISCHARGES

Inspectors authorized by the Board of Selectmen shall be permitted to enter and inspect facilities subject to regulation under this bylaw as often as may be necessary to determine compliance with this bylaw. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized inspectors.

SECTION 8: ENFORCEMENT

The Board of Selectmen through the Highway Department shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

Civil Relief: If a person violates the provisions of this bylaw, regulations, permit, notice, or order issued thereunder, the Board of Selectmen may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Orders: The Board of Selectmen or another authorized agent may issue a written order to enforce the provisions of this bylaw or the regulations thereunder, which may include:

1. Elimination of illicit connections or discharges to the MS4;
2. Performance of monitoring, analyses, and reporting;
3. That unlawful discharges, practices, or operations shall cease and desist; and
4. Remediation of contamination in connection therewith.

If the enforcing body determines that abatement or remediation of contamination is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the enforcing body may, at its option, undertake such work, and expenses thereof shall be charged to the violator.

Criminal Penalty: Any person who violates any provision of this bylaw, regulation, order or permit issued thereunder, shall be punished by a fine of not more than $250.00. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

Non-Criminal Disposition: As an alternative to criminal prosecution or civil action, the Board of Selectmen may elect to utilize the non-criminal disposition procedure set forth in G.L. Ch. 40, §21D in which case the Highway Department shall be the enforcing Town department. The penalty for the 1st violation shall be $100.00. The penalty for the 2nd violation shall be $250.00. The penalty for the 3rd and subsequent violations shall be $300.00. Each day or part thereof that such violations occurs or continues shall constitute a separate offense.

Entry to Perform Duties Under This Bylaw: To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Highway Department, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under the bylaw and regulations and may make or cause to be made such examinations, surveys or sampling as the Department deems reasonably necessary.

Appeals: The decisions or orders of the Board of Selectmen shall be final. Further relief shall be to a court of competent jurisdiction.

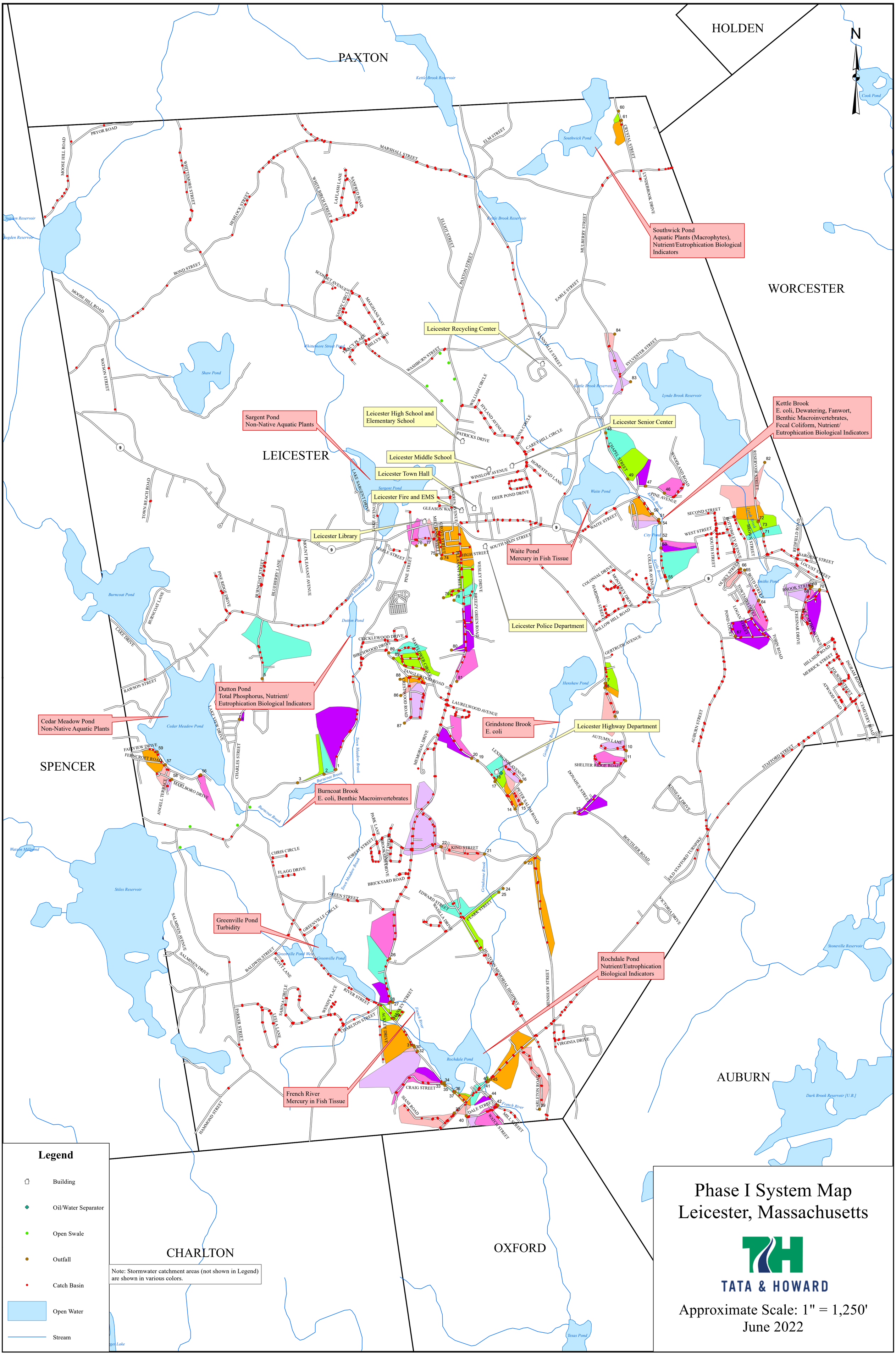
Remedies Not Exclusive: The remedies listed in this bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

SECTION 9: SEVERABILITY

The provisions of this bylaw are hereby declared to be severable. If any provision, paragraph, sentence or clause of this bylaw or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this bylaw.

ATTACHMENT D

PHASE I MAP OF STORM SEWER SYSTEM


PAXTON
HOLDEN
WORCESTER
LEICESTER
SPENCER
AUBURN
CHARLTON
OXFORD
N
Southwick Pond
Aquatic Plants (Macrophytes), Nutrient/Eutrophication Biological Indicators
Leicester Recycling Center
Sargent Pond
Non-Native Aquatic Plants
Leicester High School and Elementary School
Leicester Middle School
Leicester Town Hall
Leicester Fire and EMS
Leicester Library
Leicester Senior Center
Kettle Brook
E. coli, Dewatering, Fanwort, Benthic Macroinvertebrates, Fecal Coliform, Nutrient/ Eutrophication Biological Indicators
Waite Pond
Mercury in Fish Tissue
Leicester Police Department
Dutton Pond
Total Phosphorus, Nutrient/ Eutrophication Biological Indicators
Cedar Meadow Pond
Non-Native Aquatic Plants
Grindstone Brook
E. coli
Leicester Highway Department
Burncoat Brook
E. coli, Benthic Macroinvertebrates
Greenville Pond
Turbidity
Rochdale Pond
Nutrient/Eutrophication Biological Indicators
French River
Mercury in Fish Tissue
Legend
Building
Oil/Water Separator
Open Swale
Outfall
Catch Basin
Open Water
Stream
Note: Stormwater catchment areas (not shown in Legend) are shown in various colors.
Phase I System Map
Leicester, Massachusetts
TATA & HOWARD
Approximate Scale: 1" = 1,250'
June 2022

ATTACHMENT E

IDDE PLAN

ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PLAN

JUNE 2019

UPDATED JUNE 2023

Town of Leicester, Massachusetts

TATA & HOWARD

Illicit Discharge Detection and Elimination (IDDE) Plan
Leicester, Massachusetts

Issued: June 28, 2019

Updated: June 30, 2023

Prepared by

TATA & HOWARD

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SECTION 1 - EXECUTIVE SUMMARY

1.1 General

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by the Town of Leicester to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

The 2016 Massachusetts MS4 Permit requires that each permittee, or regulated community, address six Minimum Control Measures. These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination Program
4. Construction Site Stormwater Runoff Control
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Under Minimum Control Measure 3, the permittee is required to 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. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, with the exception of discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities.

Illicit discharges may take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4, or a sump pump that discharges contaminated water on an intermittent basis.

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a resident or contractor illegally tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters.

Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

Elimination of some discharges may require substantial costs and efforts, such as funding and designing a project to reconnect sanitary sewer laterals. Others, such as improving self-policing of dog waste management, can be accomplished by outreach in conjunction with the minimal additional cost of dog waste bins and the municipal commitment to disposal of collected materials on a regular basis.

Regardless of the intention, when not addressed, illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to surface waters.

1.3 Allowable Non-Stormwater Discharges

The following categories of non-storm water discharges are allowed under the MS4 Permit unless the permittee, USEPA or Massachusetts Department of Environmental Protection (MassDEP) identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

If these discharges are identified as significant contributors to the MS4, they must be considered an “illicit discharge” and addressed in the IDDE Plan (i.e., control these sources so they are no longer significant contributors of pollutants, and/or eliminate them entirely).

1.4 Receiving Waters and Impairments

Table 1-1 lists the "impaired waters" within the boundaries of the Town of Leicester's regulated area based on the Town of Leicester Massachusetts 2016 Integrated List of Waters produced by MassDEP every two years. At the time of development of this plan, the 2016 Integrated List of Waters was the most recent list not in draft form. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.

Table 1-1
Impaired Waters

Water Body Name	Segment ID	Category	Impairment(s)	Associated Approved TMDL
Southwick Pond	MA51157	4a	Aquatic Plants (Macrophytes), Nutrient/Eutrophication Biological Indicators	2390 – Phosphorus for Selected Northern Blackstone Lakes
Waite Pond	MA51170	4a	Mercury in Fish Tissue	33880 – Northeast Regional Mercury
Dutton Pond	MA42015	4a	Nutrient/Eutrophication Biological Indicators, Phosphorous (Total)	2354 – Phosphorus for Selected French Basin Lakes
Greenville Pond	MA42023	4a	Turbidity	2355 – Phosphorus for Selected French Basin Lakes
Rochdale Pond	MA42048	4a	Nutrient/Eutrophication Biological Indicators	2356 – Phosphorus for Selected French Basin Lakes
Bouchard Pond	MA42003	4c	(Non-Native Aquatic Plants)	
Cedar Meadow Pond	MA42009	4c	(Non-Native Aquatic Plants)	
Sargent Pond	MA42049	4c	(Non-Native Aquatic Plants)	
Kettle Brook	MA51-01	5	(Dewatering), Fanwort, Benthic Macroinvertebrates, Escherichia Coli (E. Coli), Fecal Coliform, Nutrient/Eutrophication Biological Indicators	
Burncoat Brook	MA42-07	5	Benthic Macroinvertebrates, Escherichia coli (E. Coli)	
French River	MA42-03	5	Mercury in Fish Tissue	

Grindstone Brook	MA42-18	5	Escherichia Coli (E. Coli)	

Category 4a Waters – impaired water bodies with a completed Total Maximum Daily Load (TMDL).
Category 4c Waters – impaired water bodies where the impairment is not caused by a pollutant. No TMDL required.
Category 5 Waters – impaired water bodies that require a TMDL.
"Approved TMDLs" are those that have been approved by EPA as of the date of issuance of the 2016 MS4 Permit.

1.5 IDDE Program Goals, Framework, and Timeline

The goals of the IDDE program are to find and eliminate illicit discharges to the municipal separate storm sewer system and to prevent illicit discharges from happening in the future. The program consists of the following major components as outlined in the MS4 Permit:

- Legal authority and regulatory mechanism to prohibit illicit discharges and enforce this prohibition
- Storm system mapping
- Inventory and ranking of outfalls
- Dry weather outfall screening
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening
- Employee training.

The IDDE investigation procedure framework is shown in Figure 1-1**.** The required timeline for implementing the IDDE program is shown in Table 1-2.

Figure 1-1 IDDE Investigation Procedure Framework

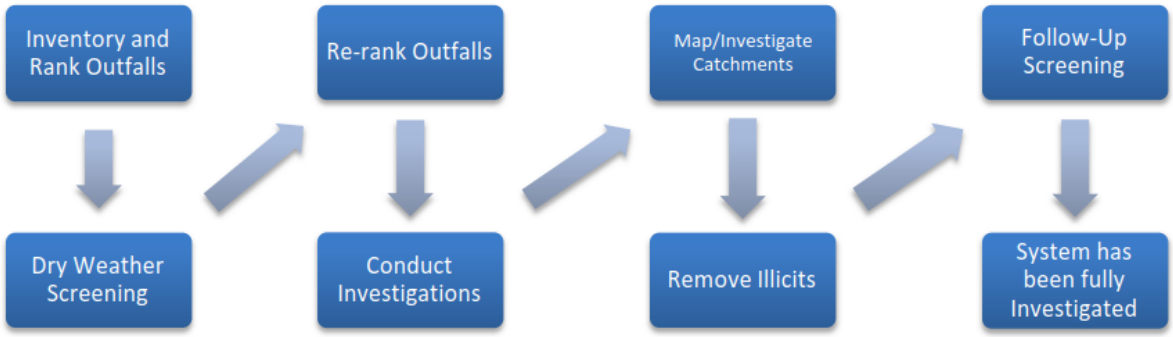


Table 1-2
IDDE Program Implementation Timeline

IDDE Program Requirement	Completion Date from Effective Date of Permit					
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years
Written IDDE Program Plan	***X***					
SSO Inventory	***X***					
Written Catchment Investigation Procedure		***X***				
Phase I Mapping			***X***			
Phase II Mapping						***X***
IDDE Regulatory Mechanism or By-law (if not already in place)				***X***		
Dry Weather Outfall Screening				***X***		
Follow-up Ranking of Outfalls and Interconnections				***X***		
Catchment Investigations – Problem Outfalls					***X***	
Catchment Investigations – all Problem, High and Low Priority Outfalls						***X***

1.6 Work Completed to Date

The 2003 MS4 Permit required each MS4 community to develop a plan to detect illicit discharges using a combination of storm system mapping, adopting a regulatory mechanism to prohibit illicit discharges and enforce this prohibition, and identifying tools and methods to investigate suspected illicit discharges. Each MS4 community was also required to define how confirmed discharges would be eliminated and how the removal would be documented.

The Town of Leicester has completed the following IDDE program activities consistent with the 2003 MS4 Permit requirements:

- Developed a map of outfalls and receiving waters
- Adopted an IDDE bylaw or regulatory mechanism

In addition to the 2003 MS4 Permit requirements, other IDDE-related activities that may have been completed include:

- SSO inventory
- Additional storm system mapping, including the locations of catch basins

SECTION 2 - AUTHORITY AND STATEMENT OF IDDE RESPONSIBILITIES

2.1 Legal Authority

The Town of Leicester has adopted a Bylaw Governing Illicit Discharges to the Municipal Storm Drain System, dated May 6, 2014 and amended May 2, 2023. A copy of the Town of Leicester Bylaw is provided in Appendix A. The Town of Leicester Bylaw provides the Town of Leicester with adequate legal authority to:

- Prohibit illicit discharges
- Investigate suspected illicit discharges
- Eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system
- Implement appropriate enforcement procedures and actions

2.2 Statement of Responsibilities

The Leicester Department of Public Works (DPW) – Highway Division is the lead municipal agency or department responsible for implementing the IDDE program pursuant to the provisions of the Town of Leicester. Other agencies or departments with responsibility for aspects of the program include:

- Board of Selectmen – Administer and implement the provisions of the IDDE bylaw and enforce the bylaw through the DPW – Highway Division.

SECTION 3 - STORMWATER SYSTEM MAPPING

The Town of Leicester originally developed mapping of its stormwater system to meet the mapping requirements of the 2003 MS4 Permit. A copy of the existing storm system map is provided in Appendix B. The 2016 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit. The revised mapping is intended to facilitate the identification of key infrastructure, factors influencing proper system operation, and the potential for illicit discharges.

The 2016 MS4 Permit requires the storm system map to be updated in two phases as outlined below. The Leicester DPW – Highway Division is responsible for updating the stormwater system mapping pursuant to the 2016 MS4 Permit. The Town of Leicester will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in Appendix B.

3.1 Phase I Mapping

The Town of Leicester has completed Phase I mapping, which includes the following information:

- Catch basin mapping
- Water bodies
- Outfalls and receiving waters
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems (do not exist)
- Municipally owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations.

3.2 Phase II Mapping

Phase II mapping must be completed within ten (10) years of the effective date of the permit (July 1, 2028) and include the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.
- Municipal Sanitary Sewer System (Sewer Districts)

The Town of Leicester will update its stormwater mapping by July 1, 2028 to include the remaining following Phase II information.

SECTION 4 - SANITARY SEWER OVERFLOWS (SSOS)

The 2016 MS4 Permit requires municipalities to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

The Town of Leicester has completed an inventory of SSOs that have discharged to the MS4 within the five (5) years prior to the effective date of the 2016 MS4 Permit, based on review of available documentation pertaining to SSOs (Table 4-1). All municipal sewer service within the Town of Leicester is owned and operated by five Sewer Districts that operate independent of the Town of Leicester. All Sewer Districts with sewer systems within the Town of Leicester confirmed that no sanitary sewer overflows occurred within this timeframe. Should SSOs occur in the future, the SSO inventory will include all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities or where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems.

Upon detection of an SSO, the Town of Leicester will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated. Upon becoming aware of an SSO to the MS4, the applicable Sewer District will provide oral notice to EPA within 24 hours and written notice to EPA and MassDEP within five (5) days of becoming aware of the SSO occurrence.

The inventory in Table 4-1 will be updated by the Town of Leicester DPW – Highway Division when new SSOs are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

Table 4-1
SSO Inventory
Revision Date: June 30, 2023

SSO Location[1]	Discharge Statement[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]

[1] Location (approximate street crossing/address and receiving water, if any)
[2] A clear statement of whether the discharge entered a surface water directly or entered the MS4
[3] Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge)
[4] Estimated volume(s) of the occurrence
[5] Description of the occurrence indicating known or suspected cause(s)
[6] Mitigation and corrective measures completed with dates implemented
[7] Mitigation and corrective measures planned with implementation schedules

Section 5 - ASSESSMENT AND PRIORITY RANKING OF OUTFALLS

The 2016 MS4 Permit requires an assessment and priority ranking of outfalls in terms of their potential to have illicit discharges and SSOs and the related public health significance. The ranking helps determine the priority order for performing IDDE investigations and meeting permit milestones.

5.1 Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall or interconnection. The catchments for each of the MS4 outfalls will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As described in Section 3, initial catchment delineations will be completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations.

5.2 Outfall and Interconnection Inventory and Initial Ranking

The Leicester DPW – Highway Division will complete an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The initial inventory and ranking will be completed within one (1) year from the effective date of the permit. An updated inventory and ranking will be provided in each annual report thereafter. The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections.

The outfall and interconnection inventory will identify each outfall and interconnection discharging from the MS4, record its location and condition, and provide a framework for tracking inspections, screenings and other IDDE program activities.

Outfalls and interconnections will be classified into one of the following categories:

1. **Problem Outfalls**: Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening indicates likely sewer input. Likely sewer input indicators are any of the following:

    - Olfactory or visual evidence of sewage,
    - Ammonia $\geq$ 0.5 mg/L, surfactants $\geq$ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
    - Ammonia $\geq$ 0.5 mg/L, surfactants $\geq$ 0.25 mg/L, and detectable levels of chlorine.

    Dry weather screening and sampling, as described in Section 6 of this IDDE Plan and Part 2.3.4.7.b of the MS4 Permit, is not required for Problem Outfalls.

2. **High Priority Outfalls**: Outfalls/interconnections that have not been classified as Problem Outfalls and that are:

    - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
    - Determined by the permittee as high priority based on the characteristics listed below or other available information.

3. **Low Priority Outfalls**: Outfalls/interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.

4. **Excluded outfalls**: Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. This category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

Outfalls will be ranked into the above priority categories (except for excluded outfalls, which may be excluded from the IDDE program) based on the following characteristics of the defined initial catchment areas, where information is available. Additional relevant characteristics, including location-specific characteristics, may be considered but must be documented in this IDDE Plan.

- **Poor receiving water quality** – the following guidelines are recommended to identify waters as having a high illicit discharge potential:
    - Exceeding water quality standards for bacteria
    - Ammonia levels above 0.5 mg/l
    - Surfactants levels greater than or equal to 0.25 mg/l

- **Density of generating sites** – Generating sites are those places, including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.

- **Age of development and infrastructure** – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential. Developments 20 years or younger will probably have a low illicit discharge potential.

- **Sewer conversion** – Contributing catchment areas that were once serviced by septic systems, but have been converted to sewer connections may have a high illicit discharge potential.

- **Surrounding density of aging septic systems** – Septic systems thirty years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential.

- **Culverted streams** – Any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential.

- **Water quality limited waterbodies** that receive a discharge from the MS4 or waters with approved TMDLs applicable to the permittee, where illicit discharges have the potential to contain the pollutant identified as the cause of the water quality impairment.

Table 5-1 provides the outfall inventory and priority ranking matrix.

Table 5-1
Outfall Inventory and Priority Ranking Matrix
Revision Date: June 30, 2023

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
74	Sargent Pond	3	0	0	0	1	3	0	0	0	Sampling Indicates Illicit Sewer Discharge	7	Problem
75	Sargent Pond	3	0	0	0	1	3	0	0	0	Sampling Indicates Illicit Sewer Discharge	7	Problem
1	Burncoat Brook	0	0	0	2	1	3	0	0	0	Excessive Vegetation Around Outfall	6	High Priority
2	Burncoat Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Branches and Leaves	6	High Priority
3	Burncoat Brook	0	0	0	2	1	1	0	0	0	None	4	High Priority
4	Cedar Meadow Pond	0	3	0	3	1	3	0	0	0	None	10	High Priority
5	Cedar Meadow Pond	0	3	0	3	1	1	0	0	0	Excessive Sediment	8	High Priority
7	Henshaw Pond	0	0	0	0	1	1	0	0	0	None	2	High Priority
8	Henshaw Pond	0	0	0	0	1	1	0	0	0	None	2	High Priority
9	Henshaw Pond	0	0	0	0	1	1	0	0	0	None	2	High Priority
10	Henshaw Pond	0	0	0	0	1	3	0	0	0	Crumbling Outfall, Ditch Work Required, Pipe Buried in Leaves	4	High Priority
11	Henshaw Pond	0	0	0	0	1	3	0	0	0	Ditch Work Required, Rocks, Sediment, and Leaves causing standing water	4	High Priority
12	Grindstone Brook	0	0	0	2	1	3	0	0	0	None	6	High Priority
14	Grindstone Brook	0	0	0	2	2	3	0	0	0	Ditch Work Required, Sediment Blocking Pipe	7	High Priority
15	Grindstone Brook	0	0	0	2	2	3	0	0	0	Ditch Work Required, Sediment and Leaves Blocking Pipe	7	High Priority
16	Grindstone Brook	0	0	0	2	2	3	0	0	0	None	7	High Priority
17	Grindstone Brook	0	0	0	2	2	3	0	0	0	None	7	High Priority
18	Grindstone Brook	0	0	0	2	2	3	0	0	0	None	7	High Priority
19	Grindstone Brook	0	0	0	2	2	1	0	0	0	None	5	High Priority

20	Grindstone Brook	0	0	0	2	2	1	0	0	0	Ditch Work Required, Sediment and Trees Blocking Pipe	5	High Priority
21	Grindstone Brook	0	0	0	2	1	3	0	0	0	None	6	High Priority
22	Grindstone Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Rocks, Sediment blocking pipe	6	High Priority
23	Grindstone Brook	0	0	0	2	1	1	0	0	0	None	4	High Priority
24	Grindstone Brook	0	0	0	2	1	1	0	0	0	None	4	High Priority
25	Grindstone Brook	0	0	0	2	1	3	0	0	0	None	6	High Priority
26	Greenville Pond	0	0	0	3	1	1	0	0	0	None	5	High Priority
27	French River	0	0	0	2	1	1	0	0	0	Crumbling Headwall Fell and Broke Pipe	4	High Priority
28	French River	0	0	0	2	1	3	0	0	0	None	6	High Priority
29	Unnamed	0	0	0	0	1	3	0	0	0	Pipe in Poor Condition	4	High Priority
30	Rochdale Pond	0	0	0	3	1	3	0	0	0	None	7	High Priority
31	Rochdale Pond	0	0	0	3	1	3	0	0	0	None	7	High Priority
32	Rochdale Pond	0	0	0	3	1	3	0	0	0	None	7	High Priority
33	Rochdale Pond	0	3	0	3	1	3	0	0	0	Ditch Work Required, Excessive Sediment	10	High Priority
34	Rochdale Pond	0	3	0	3	1	3	0	0	0	None	10	High Priority
35	Rochdale Pond	0	3	0	3	1	3	0	0	0	None	10	High Priority
36	Rochdale Pond	0	3	0	3	1	1	0	0	0	None	8	High Priority
37	Rochdale Pond	0	3	0	3	1	1	0	0	0	None	8	High Priority
38	Rochdale Pond	0	3	0	3	1	3	0	0	0	Ditch Work Required, Excessive Sediment	10	High Priority
39	French River	0	0	0	2	1	3	0	0	0	None	6	High Priority
40	Rochdale Pond	0	0	0	3	1	3	0	0	0	None	7	High Priority
41	Rochdale Pond	0	3	0	3	3	3	0	0	0	None	12	High Priority
42	French River	0	0	0	2	3	3	0	0	0	Ditch Work Required, Excessive Sediment	8	High Priority
43	Rochdale Pond	0	3	0	3	3	3	0	0	0	None	12	High Priority
44	French River	0	0	0	2	3	3	0	0	0	Ditch Work Required, Leaves Blocking Swale	8	High Priority
45	Rochdale Pond	0	3	0	3	3	3	0	0	0	Crumbling Pipe	12	High Priority
49	Waite Pond	0	0	0	3	1	3	0	0	0	None	7	High Priority
56	Cedar Meadow Pond	0	3	0	3	1	3	0	0	0	Ditch Work Required, Leaves and Branches around Opening	10	High Priority
57	Cedar Meadow Pond	0	3	0	3	1	1	0	0	0	None	8	High Priority
58	Cedar Meadow Pond	0	3	0	3	1	3	0	0	0	Ditch Work Required, Leaves, Rocks, Sediment, and Branches around Opening	10	High Priority
59	Cedar Meadow Pond	0	3	0	3	1	3	0	0	0	Excessive Sediment	10	High Priority
60	Southwick Pond	0	3	0	3	1	3	0	0	0	Ditch Work Required, Excessive Sediment, Blocked Pipe	10	High Priority
61	Southwick Pond	0	3	0	3	1	3	0	0	0	None	10	High Priority
65	Smiths Pond	0	3	0	0	1	3	0	0	0	Section of Pipe Disconnected	7	High Priority

66	Smiths Pond	0	3	0	0	1	3	0	0	0	None	7	High Priority
76	Sargent Pond	0	0	0	0	1	3	0	0	0	None	4	High Priority
77	Sargent Pond	0	0	0	0	1	3	0	0	0	Covered with Debris	4	High Priority
78	Dutton Pond	0	0	0	3	2	3	0	0	0	Ditch Work Required, Excessive Sediment, Blocked Pipe	8	High Priority
79	Dutton Pond	0	0	0	3	2	3	0	0	0	Covered with Debris	8	High Priority
80	Henshaw Pond	0	3	0	0	2	3	0	0	0	Grass Clippings, Leaves, Sediment, Debris	8	High Priority
81	Henshaw Pond	0	3	0	0	2	2	0	0	0	Some Sediment	7	High Priority
83	Lynde Brook Reservoir	0	3	0	0	1	3	0	0	0	None	7	High Priority
84	Lynde Brook Reservoir	0	3	0	0	1	3	0	0	0	Remove Propane Tank in Swale	7	High Priority
85	Town Meadow Brook	0	0	0	0	1	3	0	0	0	None	4	High Priority
86	Town Meadow Brook	0	0	0	0	1	3	0	0	0	None	4	High Priority
87	Town Meadow Brook	0	0	0	0	1	3	0	0	0	None	4	High Priority
88	Town Meadow Brook	0	0	0	0	1	3	0	0	0	None	4	High Priority
89	Town Meadow Brook	0	0	0	0	1	3	0	0	0	Ditch Work Required, Sediment and Leaves Mostly Covering Opening	4	High Priority
46	Kettle Brook	0	0	0	2	1	1	0	0	0	None	4	Low Priority
47	Kettle Brook	0	0	0	2	1	1	0	0	0	Leaves at Opening	4	Low Priority
48	Kettle Brook	0	0	0	2	1	2	0	0	0	Ditch Work Required, Rip Rap and Leaves Blocking Pipe	5	Low Priority
50	Kettle Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Sediment and Leaves Covering Pipe	6	Low Priority
51	Kettle Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Vegetation and Leaves Covering Pipe	6	Low Priority
52	City Pond	0	0	0	0	1	1	0	0	0	None	2	Low Priority
53	City Pond	0	0	0	0	1	1	0	0	0	None	2	Low Priority
54	Kettle Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Sediment and Leaves at Opening	6	Low Priority
55	Kettle Brook	0	0	0	2	1	3	0	0	0	Ditch Work Required, Sediment and Leaves at Opening	6	Low Priority
64	Smiths Pond	0	0	0	0	1	1	0	0	0	None	2	Low Priority
67	Smiths Pond	0	0	0	0	1	3	0	0	0	Ditch Work Required, Sediment and Rocks Blocking Pipe	4	Low Priority
68	Smiths Pond	0	0	0	0	1	1	0	0	0	None	2	Low Priority
69	Smiths Pond	0	0	0	0	1	3	0	0	0	Excessive Vegetation Around Outfall	4	Low Priority
70	Smiths Pond	0	0	0	0	1	3	0	0	0	Ditch Work Required, Downed Trees and	4	Low Priority

											Branches Covering Pipe		
71	Lynde Brook	0	0	0	0	1	3	0	0	0	None	4	Low Priority
72	Lynde Brook	0	0	0	0	1	3	0	0	0	None	4	Low Priority
73	Lynde Brook	0	0	0	0	1	3	0	0	0	None	4	Low Priority
82	Unnamed	0	0	0	0	1	3	0	0	0	None	4	Low Priority

Scoring Criteria:

[1] Previous screening results indicate likely sewer input if any of the following are true:

- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine

[2] Outfalls/interconnections that discharge to or near any of the following areas: public beaches, recreational areas, drinking water supplies, or shellfish beds

[3] Receiving water quality based on latest version of MassDEP Integrated List of Waters.

- Poor = Waters with approved TMDLs (Category 4a Waters) where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment
- Fair = Water quality limited waterbodies that receive a discharge from the MS4 (Category 5 Waters)
- Good = No water quality impairments

[4] Generating sites are institutional, municipal, commercial, or industrial sites with a potential to contribute to illicit discharges (e.g., car dealers, car washes, gas stations, garden centers, industrial manufacturing, etc.)

[5] Age of development and infrastructure:

- High = Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old
- Medium = Developments 20-40 years old
- Low = Developments less than 20 years old

[6] Areas once served by combined sewers and but have been separated, or areas once served by septic systems but have been converted to sanitary sewers.

[7] Aging septic systems are septic systems 30 years or older in residential areas.

[8] Any river or stream that is culverted for distance greater than a simple roadway crossing.

Section 6 - DRY WEATHER OUTFALL SCREENING AND SAMPLING

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls/interconnections (excluding Problem and excluded Outfalls) to be inspected for the presence of dry weather flow. The Leicester DPW – Highway Division is responsible for conducting dry weather outfall screening, starting with High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section.

6.1 Weather Conditions

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring. For purposes of determining dry weather conditions, program staff will use precipitation data from the National Weather Service (NWS), Worcester, Massachusetts weather station; https://www.weather.gov/box/stationobs?siteid=ORH. If the NWS Worcester location is not available or not reporting current weather data, then the NWS Fitchburg location will be used as a back-up; https://www.weather.gov/box/stationobs?siteid=FIT.

6.2 Dry Weather Screening/Sampling Procedure

The following summarizes general procedures, field equipment, and sample and collection analysis associated with dry weather outfall screening and sampling.

6.2.1 General Procedure

The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking
2. Acquire the necessary staff, mapping, and field equipment (see Table 6-1 for list of potential field equipment)
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall
    b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device) (see form in Appendix C)
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in the following sections.

5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.
6. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

6.2.2 Field Equipment

Table 6-1 lists field equipment commonly used for dry weather outfall screening and sampling.

Table 6-1
Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and Dry weather sampling should be available with extras
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers	For proper labeling
Nitrile Gloves	To protect the sampler as well as the sample from contamination
Flashlight/headlamp w/batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice	For transporting samples to the laboratory
Digital Camera	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, Safety glasses and boots at a minimum
GPS Receiver	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter	Handheld meter, if available, for testing for various water quality parameters such as ammonia, surfactants and chlorine
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags	For damming low flows in order to take samples
Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
Utility Knife	Multiple uses

Equipment	Use/Notes
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required permit parameters listed in Table 6-2. The general procedure for collection of outfall samples is as follows:

1. Fill out all sample information on sample bottles and field sheets
2. Put on protective gloves (nitrile/latex/other) before sampling
3. Collect sample with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling)
5. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see Table 6-2)
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern
7. Fill out chain-of-custody form (Appendix C) for laboratory samples
8. Deliver samples to laboratory or schedule pick up of samples by laboratory, if available.
9. Dispose of used test strips and test kit ampules properly
10. Decontaminate all testing personnel and equipment

In the event that an outfall is submerged, either partially or completely, or inaccessible, field staff will proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. Field staff will continue to the next upstream structure until there is no longer an influence from the receiving water on the visual inspection or sampling.

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. Table 6-2 lists various field test kits and field instruments that can be used for outfall sampling associated with the 2016 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern.

Table 6-2
Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach™ Ammonia Test Strips
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine	CHEMetrics™ V-2000, K-2513 Hach™ Pocket Colorimeter™ II	NA
Conductivity	CHEMetrics™ I-1200 YSI Pro30 YSI EC300A Oakton 450	NA
Temperature	YSI Pro30 YSI EC300A Oakton 450	NA
Salinity	YSI Pro30 YSI EC300A Oakton 450	NA
Temperature	YSI Pro30 YSI EC300A Oakton 450	NA
Indicator Bacteria: *E. coli* (freshwater) or Enterococcus (saline water)	EPA certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern[1]	EPA certified laboratory procedure (40 CFR § 136)	NA

[1] *Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL, the sample must be analyzed for the pollutant(s) of concern identified as the cause of the water quality impairment.*

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136. Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. Table 6-3 lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

Table 6-3
Required Analytical Methods, Detection Limits, Hold Times, and Preservatives[4]

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	**EPA**: 350.2, **SM**: 4500-NH3C	0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2, No preservative required if analyzed immediately
Surfactants	**SM**: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Chlorine	**SM**: 4500-Cl G	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	**SM**: 2550B	*NA*	Immediate	None Required
Specific Conductance	**EPA**: 120.1, **SM**: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	**SM**: 2520	-	28 days	Cool ≤6°C
Indicator Bacteria: *E.coli* Enterococcus	*E.coli* **EPA**: 1603 **SM**: 9221B, 9221F , 9223 B **Other**: Colilert®, Colilert-18® *Enterococcus* **EPA**: 1600 **SM**: 9230 C **Other**: Enterolert®	*E.coli* **EPA**: 1 cfu/100mL **SM**: 2 MPN/100mL **Other**: 1 MPN/100mL *Enterococcus* **EPA**: 1 cfu/100mL **SM**: 1 MPN/100mL **Other**: 1 MPN/100mL	8 hours	Cool ≤10°C, 0.0008% $Na_2S_2O_3$
Total Phosphorus	**EPA**: Manual-365.3, Automated Ascorbic acid digestion-365.1 Rev. 2, ICP/AES4-200.7 Rev. 4.4 **SM**: 4500-P E-F	**EPA**: 0.01 mg/L **SM** : 0.01 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2
Total Nitrogen (Ammonia + Nitrate/Nitrite, methods are for Nitrate-Nitrite and need to be combined with Ammonia listed above.)	**EPA**: Cadmium reduction (automated)-353.2 Rev. 2.0, **SM**: 4500-NO_3 E-F	**EPA**: 0.05 mg/L **SM** : 0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2

SM = Standard Methods

6.3 Interpreting Outfall Sampling Results

Outfall analytical data from dry weather sampling can be used to help identify the major type or source of discharge. Table 6-4 shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 6-4
Benchmark Field Measurements
for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria: *E.coli* *Enterococcus*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 235 colonies per 100 ml *Enterococcus:* the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 33 colonies per 100 ml and no single sample taken during the bathing season shall exceed 61 colonies per 100 ml

6.4 Follow-up Ranking of Outfalls and Interconnections

The Town of Leicester updated and re-prioritized the initial outfall and interconnection rankings based on information gathered during dry weather screening. Per the permit requirements, this was completed within three (3) years of the effective date of the permit (July 1, 2021).

During the dry weather screenings and investigations, evidence of a potential illicit discharge was found at Outfall Nos. 74 and 75 located near 76 Grove Street. The Town conducted additional sampling upstream of the outfalls to isolate the area of concern to the point of a dry drain manhole. Sampling from dry weather discharges indicated satisfactory water quality results at all other observed locations. Other outfalls and interconnections were re-ranked based on any new information from the dry weather screening.

Section 7 - CATCHMENT INVESTIGATIONS

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing. This section outlines a systematic procedure to investigate outfall catchments to trace the source of potential illicit discharges. All data collected as part of the catchment investigations will be recorded and reported in each annual report.

7.1 System Vulnerability Factors

The Leicester DPW – Highway Division will review relevant mapping and historic plans and records to identify areas within the catchment with higher potential for illicit connections. The following information will be reviewed:

- Plans related to the construction of the drainage network
- Plans related to the construction of the sewer drainage network
- Prior work on storm drains or sewer lines
- Board of Health or other municipal data on septic systems
- Complaint records related to SSOs
- Septic system breakouts

Based on the review of this information, the presence of any of the following System Vulnerability Factors (SVFs) will be identified for each catchment:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
- Common or twin-invert manholes serving storm and sanitary sewer alignments
- Common trench construction serving both storm and sanitary sewer alignments
- Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
- Areas formerly served by combined sewer systems
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs

- Any sanitary sewer and storm drain infrastructure greater than 40 years old
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
- History of multiple Board of Health actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).

An SVF inventory will be documented for each catchment (see Table 7-1), retained as part of this IDDE Plan, and included in the annual report.

Table 7-1
Outfall Catchment System Vulnerability Factor (SVF) Inventory
Revision Date: TBD

Outfall ID	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Underdrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential In Event of System Failures	10 Sanitary and Storm Drain Infrastructure >40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
Sample 1	XYZ River	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Presence/Absence Evaluation Criteria:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Common or twin-invert manholes serving storm and sanitary sewer alignments
3. Common trench construction serving both storm and sanitary sewer alignments
4. Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
5. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
6. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
7. Areas formerly served by combined sewer systems
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations
9. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old
11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
12. History of multiple Board of Health actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)

7.2 Dry Weather Manhole Inspections

The Town of Leicester will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling, and evaluating key junction manholes in the MS4 to determine the approximate location of suspected illicit discharges or SSOs.

The Leicester DPW – Highway Division will be responsible for implementing the dry weather manhole inspection program and making updates, as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

Several important terms related to the dry weather manhole inspection program are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.

- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather, field crews will systematically inspect key junction manholes for evidence of illicit discharges. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

The manhole inspection methodology will be conducted in one of two ways (or a combination of both):

- By working progressively up from the outfall and inspecting key junction manholes along the way, or
- By working progressively down from the upper parts of the catchment toward the outfall.

For most catchments, manhole inspections will proceed from the outfall moving up into the system.

However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system, but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections. A sample field inspection form is provided in Appendix C.

2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. Sampling and analysis will be in accordance with procedures outlined in Section 6. Additional indicator sampling may assist in determining potential sources (e.g., bacteria for sanitary flows, conductivity to detect tidal backwater, etc.).

3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges or SSOs, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.

4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two manholes.

5. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

7.3 Wet Weather Outfall Sampling

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. The Leicester DPW – Highway Division will be responsible for implementing the wet weather outfall sampling program and making updates, as necessary.

Outfalls will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4.

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening.

2. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.

3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in Section 7.4.

4. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

7.4 Source Isolation and Confirmation

Once the source of an illicit discharge is approximated between two manholes, more detailed investigation techniques will be used to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges

- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- IDDE Canines

These methods are described in the sections below. Instructions and Standard Operating Procedures (SOPs) for these and other IDDE methods are provided in Appendix F.

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, the Leicester DPW – Highway Division will notify property owners in the affected area.

7.4.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur.

Sandbags are typically left in place for 48 hours, and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours, it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

7.4.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the system itself. Typically, a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. Test personnel are place in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

If the initial test of the storm drain system is unsuccessful then a more thorough smoke-test of the sanitary sewer lines can also be performed. Unlike storm drain smoke tests, buildings that do not emit smoke during sanitary sewer smoke tests may have problem connections and may also have sewer gas venting inside, which is hazardous.

It should be noted that smoke may cause minor irritation of respiratory passages. Residents with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

7.4.3 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, and sinks and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Similar to smoke testing, it is important to inform local residents and business owners. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

A team of two or more people is needed to perform dye testing (ideally, all with two-way radios). One person is inside the building, while the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The person inside the building adds dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The person inside the building then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

7.4.4 CCTV/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through stormwater drain lines to observe possible illicit discharges. IDDE program staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other source isolation techniques.

7.4.5 Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener monitoring can be done in two ways. The most common, and least expensive, methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved at a later date and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in water sample collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly and is not as effective at isolating intermittent discharges as other source isolation techniques.

7.4.6 IDDE Canines

Dogs specifically trained to smell human related sewage are becoming a cost-effective way to isolate and identify sources of illicit discharges. While not widespread at the moment, the use of IDDE canines is growing as is their accuracy. The use of IDDE canines is not recommended as a standalone practice for source identification; rather it is recommended as a tool to supplement other conventional methods, such as dye testing, in order to fully verify sources of illicit discharges.

7.5 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, the Town of Leicester will exercise its authority as necessary to require its removal. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery

- Date of discovery
- Date of elimination, mitigation or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- Estimate of the volume of flow removed

7.5.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation.

7.6 Ongoing Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized for screening and scheduled for ongoing screening once every five (5) years. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in Section 6 of this plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in Section 7.3. All sampling results will be reported in the annual report.

Section 8 - TRAINING

Annual IDDE training will be made available to all employees involved in the IDDE program. This training will at a minimum include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program. Training records will be maintained in Appendix E. The frequency and type of training will be included in the annual report.

Section 9 - PROGRESS REPORTING

The progress and success of the IDDE program will be evaluated on an annual basis. The evaluation will be documented in the annual report and will include the following indicators of program progress:

- Number of SSOs and illicit discharges identified and removed
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections/screenings
- Number of wet weather outfall inspections/sampling events
- Number of enforcement notices issued
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- Number of employees trained annually.

The success of the IDDE program will be measured by the IDDE activities completed within the required permit timelines.

Appendix A

Legal Authority (IDDE Bylaw)

TATA & HOWARD

Bylaw Governing Illicit Discharges to the Municipal Storm Drain System (ATM 5-6-14)

SECTION 1: PURPOSE

The purpose of this bylaw is to provide for the health, safety, and general welfare of the citizens of the Town of Leicester through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. The bylaw establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this bylaw are:

1. To prevent pollutants from entering Leicester's municipal separate storm sewer system;
2. To prohibit illicit connections and unauthorized discharges to the MS4;
3. To require the removal of all such illicit discharges;
4. To comply with state and federal regulations relating to storm water discharges; and
5. To establish legal authority to ensure compliance with the provisions of this bylaw through inspection, monitoring, and enforcement.

SECTION 2: DEFINITIONS
For the purposes of this bylaw, the following shall mean:

Authorized Enforcement Agency: The Town of Leicester's Board of Selectmen shall administer and implement this bylaw. The Town's Highway Department shall enforce this bylaw. Any powers granted to or duties imposed must be delegated in writing by the Board of Selectmen to the appropriate agents of the town, i.e. the employees of and agents of the Highway Department, the Board of Health, the Conservation Commission, District Water and Sewer Superintendents, Building Inspector, and Town Engineer.

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C § 1251 et seq.) and any subsequent amendments thereto.

Hazardous Material: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge: Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section 5 of this bylaw.

Illicit Connections: An illicit connection is defined as either of the following: Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and waste water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or, any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not

been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity: Activities subject to NPDES Industrial Permits as defined in 40 CFR. Section 122.26 (b)(14).

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit: A permit issued by EPA that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Storm Water Discharge: Any discharge to the storm drain system that is not composed entirely of storm water.

Person: Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drain System: Publically-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Wastewater: Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

SECTION 3: APPLICABILITY

This bylaw shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

SECTION 4: RESPONSIBILITY FOR ADMINISTRATION

The Board of Selectmen shall administer and implement the provisions of this bylaw. The Highway Department shall enforce this bylaw. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the Chairman of the Board of Selectmen to persons or entities acting in the beneficial interest of the Town of Leicester.

SECTION 5: DISCHARGE PROHIBITIONS

Prohibition of Illegal Discharges: No person shall discharge or cause to be discharged into the municipal separate storm sewer system (MS4) or watercourses any materials, including but not limited to pollutants or waters containing pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt from discharge prohibitions established by this bylaw:
    - Water line flushing or other potable water sources
    - Landscape irrigation or lawn watering
    - Diverted stream flows
    - Rising ground water
    - Uncontaminated ground water infiltration from storm drains
    - Uncontaminated pumped ground water
    - Foundation or footing drains
    - Crawl space pumps
    - Air conditioning condensation
    - Springs
    - Individual resident car washing
    - Natural riparian habitat or wet-land flows
    - De-chlorinated Swimming pools
    - Street wash waters
    - Residential building wash waters without detergents
    - Firefighting activities

2. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.
3. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.
4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Prohibition of Illicit Connections:

1. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
2. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
3. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4 or watercourse, or allows such a connection to continue.

SECTION 6: NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the MS4 system, or water of the U.S. said person shall take all the necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies and the Leicester Highway Department. In the event of non-hazardous materials, said person shall notify the Leicester Highway Department in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Leicester Highway Department within three business days of the phone notice. If the discharge of prohibited material emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 7: MONITORING OF DISCHARGES

Inspectors authorized by the Board of Selectmen shall be permitted to enter and inspect facilities subject to regulation under this bylaw as often as may be necessary to determine compliance with this bylaw. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized inspectors.

SECTION 8: ENFORCEMENT

The Board of Selectmen through the Highway Department shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

Civil Relief: If a person violates the provisions of this bylaw, regulations, permit, notice, or order issued thereunder, the Board of Selectmen may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Orders: The Board of Selectmen or another authorized agent may issue a written order to enforce the provisions of this bylaw or the regulations thereunder, which may include:

1. Elimination of illicit connections or discharges to the MS4;
2. Performance of monitoring, analyses, and reporting;
3. That unlawful discharges, practices, or operations shall cease and desist; and
4. Remediation of contamination in connection therewith.

If the enforcing body determines that abatement or remediation of contamination is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the enforcing body may, at its option, undertake such work, and expenses thereof shall be charged to the violator.

Criminal Penalty: Any person who violates any provision of this bylaw, regulation, order or permit issued thereunder, shall be punished by a fine of not more than $250.00. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

Non-Criminal Disposition: As an alternative to criminal prosecution or civil action, the Board of Selectmen may elect to utilize the non-criminal disposition procedure set forth in G.L. Ch. 40, §21D in which case the Highway Department shall be the enforcing Town department. The penalty for the 1st violation shall be $100.00. The penalty for the 2nd violation shall be $250.00. The penalty for the 3rd and subsequent violations shall be $300.00. Each day or part thereof that such violations occurs or continues shall constitute a separate offense.

Entry to Perform Duties Under This Bylaw: To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Highway Department, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under the bylaw and regulations and may make or cause to be made such examinations, surveys or sampling as the Department deems reasonably necessary.

Appeals: The decisions or orders of the Board of Selectmen shall be final. Further relief shall be to a court of competent jurisdiction.

Remedies Not Exclusive: The remedies listed in this bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

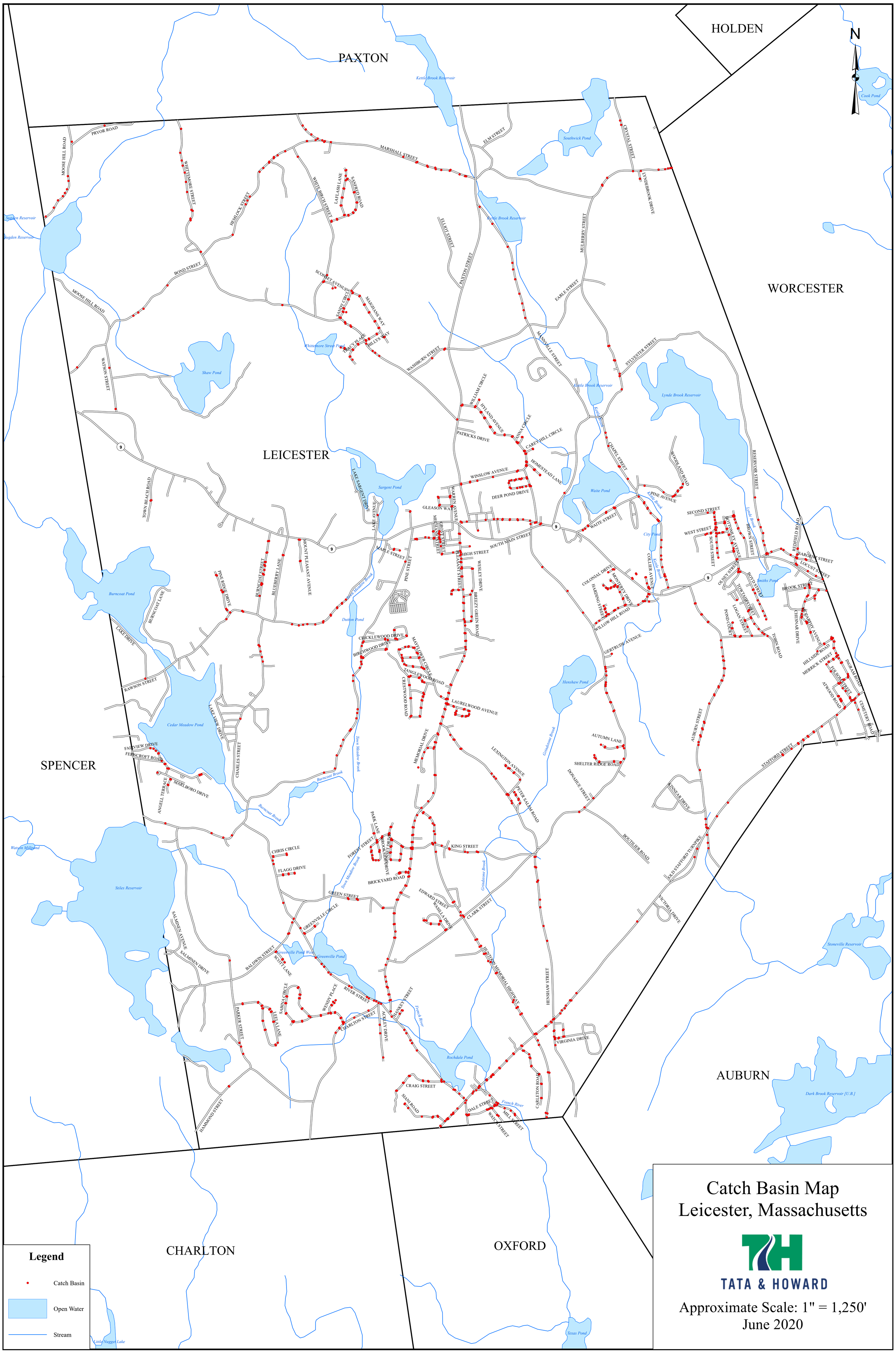
SECTION 9: SEVERABILITY

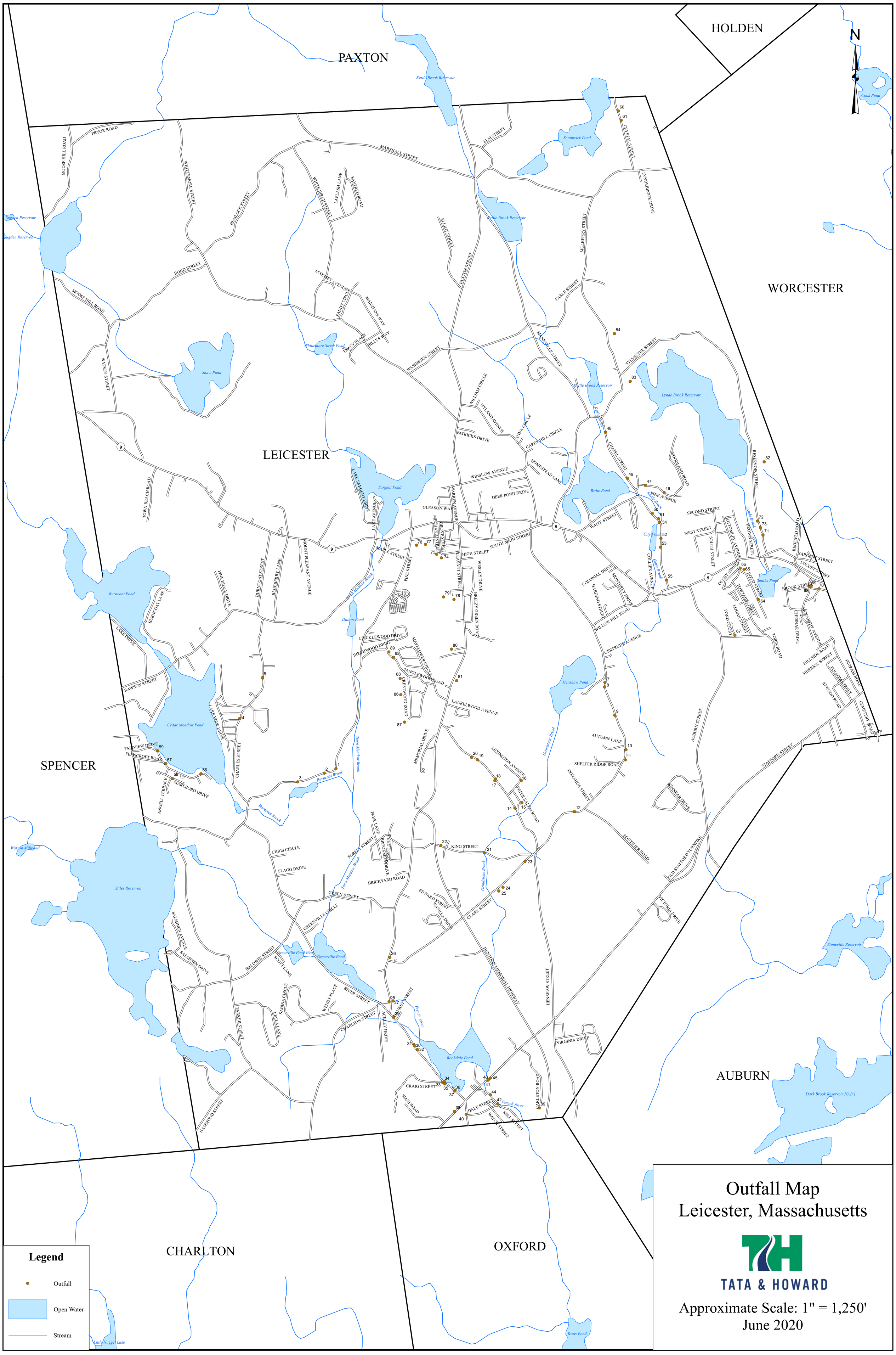
The provisions of this bylaw are hereby declared to be severable. If any provision, paragraph, sentence or clause of this bylaw or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this bylaw.

Appendix B

Storm System Mapping

TATA & HOWARD


Catch Basin Map
Leicester, Massachusetts
TATA & HOWARD
Approximate Scale: 1" = 1,250'
June 2020
Legend
Catch Basin
Open Water
Stream
N
PAXTON
HOLDEN
WORCESTER
LEICESTER
SPENCER
AUBURN
CHARLTON
OXFORD
Kettle Brook Reservoir
Cook Pond
Southwick Pond
Sugden Reservoir
Shaw Pond
Whittemore Street Pond
Lynde Brook Reservoir
Sargent Pond
Waite Pond
City Pond
Burncoat Pond
Dutton Pond
Smiths Pond
Cedar Meadow Pond
Henshaw Pond
Watson Millpond
Stiles Reservoir
Greenville Pond
Rochdale Pond
Stoneville Reservoir
Dark Brook Reservoir [U.B.]
Texas Pond
Little Nugget Lake
MOOSE HILL ROAD
PRYOR ROAD
WHITTEMORE STREET
HEMLOCK STREET
BOND STREET
WATSON STREET
TOWN BEACH ROAD
MARSHALL STREET
ELM STREET
CRYSTAL STREET
LYNDEBROOK DRIVE
WHITE BIRCH STREET
LAFLASH LANE
SANFORD ROAD
ELLIOT STREET
PAXTON STREET
MULBERRY STREET
EARLE STREET
SCONSET AVENUE
SANDY CIRCLE
MAIGHANS WAY
TRACY PLACE
BILLYS WAY
WASHBURN STREET
MANVILLE STREET
SYLVESTER STREET
WILLIAM CIRCLE
HYLAND AVENUE
ANNA CIRCLE
PATRICKS DRIVE
CAREY HILL CIRCLE
HOMESTEAD LANE
WINSLOW AVENUE
DEER POND DRIVE
CHAPEL STREET
WOODLAND ROAD
RESERVOIR STREET
PINE AVENUE
WAITE STREET
SECOND STREET
WEST STREET
SOUTH STREET
BOTTOMLEY AVENUE
BROWN STREET
REDFIELD ROAD
SARGENT STREET
LOCUST STREET
BROOK STREET
OLNEY STREET
BOYD STREET
TOWTAUSIK STREET
LOGAN STREET
POND COURT
TOBIN ROAD
CHESNAR DRIVE
MCCARTHY AVENUE
HILLSIDE ROAD
MERRICK STREET
FOLSOM STREET
INGRAM ROAD
ATWOOD ROAD
CEMETERY ROAD
AUBURN STREET
STAFFORD STREET
KINNEAR DRIVE
OLD STAFFORD TURNPIKE
VICTORIA DRIVE
HENSHAW STREET
VIRGINIA DRIVE
HUNTOON MEMORIAL HIGHWAY
CLARK STREET
WASILA DRIVE
EDWARD STREET
KING STREET
BOUTILIER ROAD
DONAHUE STREET
SHELTER RIDGE ROAD
AUTUMN LANE
LEXINGTON AVENUE
PETER SALEM ROAD
CARLETON ROAD
MILL STREET
WATCH STREET
DALE STREET
CRAIG STREET
SIANI ROAD
HAMMOND STREET
LAKE SARGENT DRIVE
LAKE AVENUE
GLEASON WAY
WARREN AVENUE
GROVE STREET
MELANCTON STREET
SOUTH MAIN STREET
HIGH STREET
PLEASANT STREET
WESLEY DRIVE
BREEZY GREEN ROAD
MAPLE STREET
PINE STREET
MOUNT PLEASANT AVENUE
BLUEBERRY LANE
BURNCOAT STREET
PINE RIDGE DRIVE
BURNCOAT LANE
LAKE DRIVE
RAWSON STREET
LAKE VIEW DRIVE
CHARLES STREET
FAIRVIEW DRIVE
FERNCROFT ROAD
ANGELL TERRACE
MARLBORO DRIVE
COLONIAL DRIVE
MONTHEY DRIVE
HARDING STREET
WILLOW HILL ROAD
COLLIER AVENUE
GERTRUDE AVENUE
CRICKLEWOOD DRIVE
BIRCHWOOD DRIVE
MAYFLOWER CIRCLE
TANGLEWOOD ROAD
CRESTWOOD ROAD
LAURELWOOD AVENUE
MEMORIAL DRIVE
PARK LANE
FOREST STREET
BROOKSIDE DRIVE
BRICKYARD ROAD
CHRIS CIRCLE
FLAGG DRIVE
GREEN STREET
GREENVILLE CIRCLE
SALMINEN AVENUE
SALMINEN DRIVE
BALDWIN STREET
SCOTT LANE
PARKER STREET
SABINA CIRCLE
LEELA LANE
WENDY PLACE
RIVER STREET
CHARLTON STREET
ACKLEY DRIVE
HANKEY STREET
Burncoat Brook
Town Meadow Brook
Grindstone Brook
French River


Outfall Map
Leicester, Massachusetts
TATA & HOWARD
Approximate Scale: 1" = 1,250'
June 2020
Legend
Outfall
Open Water
Stream
PAXTON
HOLDEN
WORCESTER
LEICESTER
SPENCER
AUBURN
CHARLTON
OXFORD
N

Appendix C

Field Forms, Sample Bottle labels, and Chain of Custody Forms

TATA & HOWARD

Job No.: _____ **Entity:** _____

Inspector: _____ **Date:** _____

CATCH BASIN INSPECTION FORM

Catch Basin I.D.	_____	**Final Discharge from Structure?** Yes ☐ No ☐ **If Yes, Discharge to Outfall No:**_____	
Catch Basin Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Basin Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Catch Basin Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other:_____	**Pipe Measurements:**	Inlet Dia. (in): d= ____ Outlet Dia. (in): D= ____

Required Maintenance/ Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Grate is Required
- ☐ Pipe is Blocked
- ☐ Frame Maintenance is Required
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Basin Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Ditch Work
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash & Debris
- ☐ Need Cement Around Grate

Other: _____

Catch Basin Grate Type :	**Sediment Buildup Depth :**	**Repair/Replace:**	**Street Name/ Structure Location:**
Bar: ☐ Cascade: ☐ Other:_____ Properly Aligned: Yes ☐ No ☐	0-6 (in): _____ 6-12(in): _____ 12-18 (in): _____ 18-24 (in): _____ 24 + (in): _____	Repair ☐ Replace ☐ No Action ☐ Comments:	

***If the outlet is submerged check yes and indicate approximate height of water above the outlet invert.** h above invert (in):___	Yes ☐	No ☐

☐ **Flow** ☐ **Standing Water** **(check one or both)**	**Observations:**		**Circle those present:**
	Color:		Foam / Oil Sheen
	Odor:		Sanitary Waste / Bacterial Sheen
Weather Conditions :	Dry > 24 hours ☐	Wet ☐	Orange Staining / Floatables
Sample of Screenings Collected for Analysis? Yes ☐ No ☐			Excessive sediment / Pet Waste
Comments:			Other:_____ / Optical Enhancers

Job No.: _____ **Entity:** _____

Inspector: _____ **Date:** _____

OUTFALL INSPECTION FORM

Outfall I.D.	_____	**Final Discharge from Structure?** Yes ☐ No ☐	
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Headwall Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Outfall Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other:_____	**Pipe Measurements:**	Inlet Dia. (in): d= ____ Outlet Dia. (in): D= ____

Required Maintenance/ Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Grate is Required
- ☐ Pipe is Blocked
- ☐ Headwall Maintenance is Required
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Outrfall Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Ditch Work
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash & Debris
- ☐ Need Cement Around Grate

Other: _____

Sketch:	**Sediment Buildup Depth :**	**Repair/Replace:**	**Street Name/ Structure Location:**
	0-6 (in): _____ 6-12(in): _____ 12-18 (in): _____ 18-24 (in): _____ 24 + (in): _____	Repair ☐ Replace ☐ No Action ☐ Comments:	

***If the outlet is submerged check yes and indicate approximate height of water above the outlet invert.** h above invert (in):___ Yes ☐ No ☐

☐ **Flow** ☐ **Standing Water** **(check one or both)**	**Observations:**		**Circle those present:**
	Color:		Foam / Oil Sheen
	Odor:		Sanitary Waste / Bacterial Sheen
Weather Conditions :	Dry > 24 hours ☐	Wet ☐	Orange Staining / Floatables
Sample of Screenings Collected for Analysis? Yes ☐ No ☐			Excessive sediment / Pet Waste
Comments:			Other:_____ / Optical Enhancers

Outfall ID: _____ **Town:** _____

Inspector: _____ **Date:** _____

Street Name _____

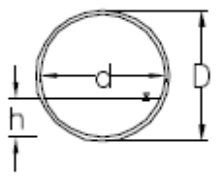
Last rainfall event _____

DRY WEATHER OUTFALL INSPECTION SURVEY

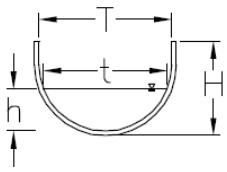
Type of Outfall (check one):		**Pipe Outfall** ☐	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐	**Ground Inset** ☐ **Sign** ☐	**None** ☐ **Other**_____

Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

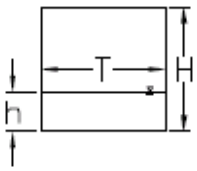


☐



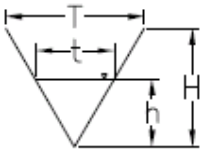
☐

Rounded Pipe/Swale



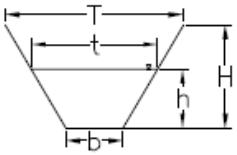
☐

Rectangular Pipe/Swale



☐

Triangular Swale



☐

Trapezoidal Swale

Pipe Measurements:	**Swale Measurements:**	**Is there a headwall?**	**Location Sketch**
Inner Dia. (in): d= _____	Swale Width (in): T= _____	Yes ☐ No ☐	
Outer Dia. (in): D= _____	Flow Width (in): t = _____	**Condition:**	
Pipe Width (in): T= _____	Swale Height (in): H= _____	Good ☐ Poor ☐ Fair ☐ Crumbling ☐	
Pipe Height (in): H= _____	Flow Height (in): h= _____*		
Flow Width (in): h= _____*	Bottom Width (in): b=_____		

Description of Flow: Heavy ☐ Moderate ☐ Trickling ☐ Dry ☐

If the outlet is submerged check yes and indicate approximate height of water above the outlet invert. h above invert (in):

Odor: Yes ☐ No ☐
Optical enhancers suspected? Yes ☐ No ☐
Has channelization occurred? Yes ☐ No ☐
Has scouring occurred below the outlet? Yes ☐ No ☐

Required Maintenance:

Tree Work	Remove Trash/Debris
Ditch Work	Blocked Pipe
Structural Corrosion	Erosion at Structure
N/A	Other

Comments:

Circle All Materials Present:

Rip rap	Sheen: Bacterial
Excessive sediment	Sheen: Petroleum
Foam	Floatables
Sanitary Waste	Algae
Orange Staining	Excessive Vegetation

Outfall I.D.: _____ **Date:** _____

Inspector: _____

Time of Inspection: _____

Street Name _____

Last rainfall event _____

WET WEATHER OUTFALL INSPECTION SURVEY

Visual Inspection:	**Yes**	**No**	**Comments (Include probable source of observed contamination):**
Color	☐	☐	
Odor	☐	☐	
Turbidity	☐	☐	
Excessive Sediment	☐	☐	
Sanitary Waste	☐	☐	
Pet Waste	☐	☐	
Floatable Solids	☐	☐	
Oil Sheen	☐	☐	
Bacterial Sheen	☐	☐	
Foam	☐	☐	
Algae	☐	☐	
Orange Staining	☐	☐	
Excessive Vegetation	☐	☐	
Optical Enhancers	☐	☐	
Other _____			

Sample Parameters	**Analytical Test Method**	**Benchmark***	**Field Screening Result**	**Full Analytical?**
Ammonia[1]	EPA 350.2/SM4500-NH3C	>50.0 mg/L		☐ Yes ☐ No
Specific Conductance[1]	SM 2510B	>2,000		☐ Yes ☐ No
Detergents & Surfactants[2]	EPA 425.1/SM5540C	> 0.25 mg/L		☐ Yes ☐ No
Fluoride[2]	EPA 300.0	>0.25 mg/L		☐ Yes ☐ No
pH[1]	EPA 150.1/SM 4500H	<5		☐ Yes ☐ No
Potassium[1]	EPA 200.7	>20 mg/L		☐ Yes ☐ No

Comments:

[1] – *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection and Robert Pitt of University of Alabama, 2004, p. 134, Table 45.

[2] – *Appendix I – Field Measurements, Benchmarks and Instrumentation*, Draft Massachusetts North Coastal Small MS4 General Permit, 2009.

Appendix D

Water Quality Analysis Instructions, User's Manuals and Standard Operating Procedures

APPENDIX D

TATA & HOWARD

Water Quality Analysis Instructions, User’s Manuals, and Standard Operating Procedures – TO BE DETERMINED.

Appendix E

IDDE Employee Training Record

TATA & HOWARD

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Town of Leicester, Massachusetts

Date of Training: DECEMBER 18, 2019

Duration of Training: 75 MINUTES

Name (PRINT)	Title	Signature
BILL BURTT	DRIVER	
DEREK FENNER	L.E.O.	
MIKE McCORMICK	LEO	
Rob PROVOST	HED	
Eric Bulak	Driver	
DENNIS GRIFFIN	HGWY SUPER	
Derek Keat	Mechanic	

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Town of Leicester, Massachusetts

Date of Training: December 16, 2020

Duration of Training: 60 MINUTES

Name	Title	Signature
Robert A. Prairie	Equip Operator	
Brian Knott	Foreman	
Brandon L. Baird	Labor	
Jared Gagne	Labor	
Bill Butler	Truck Driver	
Eric Bulak	Truck Driver	
Dennis Griffin	Super	
Mike McCarl	LEO	
Derek A Fenner	LEO	
Anthony Dube	Truck Driver	
Derek Keats	Mechanic	

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Town of Leicester, Massachusetts

Date of Training: December 17, 2021

Duration of Training: 60 MINUTES

Name	Title	Signature
Zach St. Pierre	truck driver/laborer	
JAMES FLEMING	Truck driver/laborer	
Jared Gagne	Truck driver/laborer	
Eric Bulak	Truck driver/laborer	
BILL BURGETT	TRUCK DRIVER/laborer	
Brian Knott	Foreman	
Mike McCormick	LEO	
Anthony Dube	Truck driver/laborer	
Derek Fenner	LEO	
Rob PROVOST	HEO	
DENNIS GRIFFIN	SUPER	
DEREK KEATS	MECH.	

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Town of Leicester, Massachusetts

Date of Training: December 21, 2022

Duration of Training: 80 MINUTES

Name	Title	Signature
Derek A Fenner	HEO.	Derek A Fenner
Anthony Dube	LEO	
Jared Gagne	Truck Driver/Labor	
Keith John	Truck Driver/Laborer	
Han Tu	Truck Driver/Laborer	
Mike McCormick	HEO	
Rob Prevost	Foreman	
Derek Kent	Mechanic	Derek Kent
CB Knott	Mechanic	CB Knott

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Town of Leicester, Massachusetts

Date of Training: _____

Duration of Training: _____

Name	Title	Signature

Appendix F

Source Isolation and Confirmation Methods: Instructions, Manuals, and SOPs

TATA & HOWARD

Source Isolation and Confirmation Methods: Instructions, Manuals, and SOPs – TO BE DETERMINED.

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | VT | AZ

800-366-5760
www.tataandhoward.com

ATTACHMENT F

SEDIMENT AND EROSION CONTROL ORDINANCE

Leicester Stormwater Regulations
Adopted by the Leicester Planning Board on September 6, 2011

1.0 PURPOSE:

The purpose of these Stormwater Regulations is to establish procedures for conducting the business of the Planning Board under its jurisdiction as a permit granting authority for the Spencer Stormwater Bylaw (Leicester General Bylaws, See Appendix A).

2.0 APPLICABILITY:

These Regulations apply to new development and redevelopment that is not exempt under the Stormwater Bylaw. Projects and/or activities that are not exempt must obtain a permit from the Planning Board or its designee.

3.0 PERMIT PROCEDURES

Projects requiring a permit shall submit the materials specified in Section 3 (Permit Procedures) and Section 4 (Application Submittal Requirements), and meet the stormwater management criteria specified in Section 5 (Post-Development Stormwater Management Criteria). Filing an application for a permit grants the Planning Board, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with the resulting permit. The Planning Board is authorized to retain a Registered Engineer or other professional consultant to advise on any aspect of the permit application at the applicant's expense.

A. Projects Requiring Site Plan Review or Definitive Subdivision Approval

Nearly all projects subject to the Stormwater Bylaw also require either Site Plan Review or Definitive Subdivision Approval by the Planning Board. For all such projects, the Stormwater Permit application shall be processed and reviewed concurrently with the Site Plan or Definitive Subdivision application and the Stormwater Permit Decision may be incorporated into the Planning Board's Decision/Order of Conditions. The procedural requirements, including plan submittal requirements, deadlines, plan distribution, fees, and notification requirements shall follow the requirements for Site Plan Review or Definitive Subdivision Approval as applicable, except where specified otherwise in these regulations. [Note: In the rare instance where both Site Plan Review and Definitive Subdivision Approval are required for the same project, the fee and deadline requirements shall follow the requirements for Definitive Subdivision Approval.]

B. Other Projects:

1) Municipal project applicants shall submit sufficient information to evaluate the stormwater system, specifically Section 4A, Items 9-17, and Section 4B.

2) Any other project subject to the Stormwater Bylaw, but not Site Plan Review or Definitive Subdivision Approval shall follow the requirements for Site Plan Review.

C. Action:

The Planning Board may take one of the following actions for a permit application: "approval", "approval with conditions", "disapproval", or "withdrawal without prejudice". A written report of the decision shall be made. The failure of the Planning Board to take action within the applicable deadline shall be deemed approval of that application. Applicants shall not receive any building or land development permits until the stormwater permit is issued.

The project shall begin within one year after issuance of the stormwater permit. If the project does not begin within one year, unless there is an extension granted, and the Planning Board finds that the approved Stormwater Management Plan is no longer valid, the applicant shall submit a modified Plan that requires approval prior to the commencement of land-disturbing activities.

D. <u>Modification:</u>

The permittee must notify the Planning Board in writing before any change or alteration is made to a Stormwater Management Permit or approved Operation and Maintenance Plan. If the change or alteration is significant, the Planning Board may require that an amended application be filed. The owner(s) of the stormwater management system must notify the Planning Board or its agent of changes in ownership or assignment of financial responsibility. The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of this by-law by mutual agreement of the Planning Board or its agent and the Responsible Parties. Amendments must be in writing and signed by all responsible parties.

E. <u>Project Completion:</u>

The permittee shall submit as-built drawings of all stormwater controls, which shall show any deviations from the approved plans and be certified by a Registered Professional Engineer.

4.0 APPLICATION SUBMITTAL REQUIREMENTS:

In addition to the plans and information normally required for Site Plan Review or Definitive Subdivision Approval, applicants shall submit the information described in this Section.

A. <u>Stormwater Management Plan:</u>

A Stormwater Management Plan submitted with the permit application shall contain sufficient information to evaluate the environmental impact and effectiveness of the measures proposed for reducing adverse impacts from stormwater runoff. This plan shall comply with the criteria established in these regulations and must be submitted with the stamp and signature of a Professional Engineer (PE) licensed in the Commonwealth of Massachusetts. The Plan shall fully describe the project in drawings, narrative, and calculations. It shall include:

1) Contact Information. The name, address, and telephone number of all persons having a legal interest in the property and the tax reference number and parcel number of the property or properties affected;
2) A locus map;
3) The existing zoning, and land use at the site;
4) The proposed land use;
5) The location(s) of existing and proposed easements;
6) The location of existing and proposed utilities;
7) The site's existing & proposed topography with contours at 2 foot intervals,
8) A delineation of 100-year flood plains, if applicable;

[Note: Items 1-8 are already required for SPR and/or Subdivision plans]

9) The existing site hydrology;

10) A depiction of all areas of cut and fill, and soil disturbance

11) A description & delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows;

12) Estimated seasonal high groundwater elevation in areas to be used for stormwater retention, detention, or infiltration;

13) The existing and proposed vegetation and ground surfaces with runoff coefficients for each;

14) Landscaping plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater practice.

15) A drainage area map showing pre and post construction watershed boundaries, drainage area and stormwater flow paths, including municipal drainage system flows;

16) A description and drawings of all components of the proposed stormwater management system including:

    a. Locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;
    b. All measures for the detention, retention or infiltration of water;
    c. All measures for the protection of water quality;
    d. The structural details for all components of the proposed drainage systems and stormwater management facilities;
    e. Notes on drawings specifying materials to be used, construction specifications, and expected hydrology with supporting calculations;
    f. Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable;

17) Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in this Regulation. Such calculations shall include:

    a. Description of the design storm frequency, intensity and duration;
    b. Time of concentration;
    c. Soil Runoff Curve Number (RCN) based on land use and soil hydrologic group;
    d. Peak runoff rates and total runoff volumes for each watershed area;
    e. Information on construction measures used to maintain the infiltration capacity of the soil where any kind of infiltration is proposed;
    f. Infiltration rates, where applicable;
    g. Culvert capacities;
    h. Flow velocities;
    i. Data on the increase in rate and volume of runoff for the specified design storms, and
    j. Documentation of sources for all computation methods and field test results.

18) Post-Development downstream analysis if deemed necessary by the Planning Board;

19) Soils Information from test pits performed at the location of proposed stormwater management facilities, including soil descriptions, depth to seasonal high groundwater, depth to bedrock, and percolation rates. Soils information will be based on site test pits logged by a Massachusetts Registered Soil Evaluator, or a Massachusetts Registered Professional Engineer;

20) Erosion and Sediment Control Plan

21) Identification of potential pollutant sources such as paint, pesticides, oil, or other toxic chemicals, etc.

B. **Operation & Maintenance Plan**

The maintenance plan shall ensure there is ongoing compliance with the permit and the Massachusetts Surface Water Quality Standards in all seasons and throughout the life of the system. All property owners are responsible for maintaining the proper operation of all permitted stormwater control features on their property. Stormwater structures shall be maintained to ensure compliance with the Permit, this Bylaw and that the Massachusetts Surface Water Quality Standards are met in all seasons and throughout the life of the system. The Operation & Maintenance (O&M) Plan shall remain on file with the Planning Board, and shall include:

1) The name(s) of the owner(s) for all components of the system

2) Maintenance Agreements that specify

    a. The names and addresses of the person(s) responsible for operation & maintenance
    b. The person(s) responsible for financing maintenance and emergency repairs
    c. A maintenance schedule for all drainage structures, including swales and ponds
    d. A list of easements with the purpose and location of each
    e. Record maintenance agreement

3) Stormwater Management Easement(s).

    a. Stormwater management easements shall be provided by the property owner(s) as necessary for:
        - access for facility inspections and maintenance,
        - preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event.
        - direct maintenance access by heavy equipment to structures requiring regular cleanout.
    b. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Planning Board or its agent.
    c. The purpose of each easement shall be specified in the maintenance agreement signed by the property owner.

5.0 POST-DEVELOPMENT STORMWATER MANAGEMENT CRITERIA

All projects shall comply with the Massachusetts Stormwater Management Policy and achieve the following performance standards:

A. **No Untreated Discharges**

Stormwater shall not be discharged directly to a wetland, local water body, municipal drainage system, or abutting property, without adequate treatment.

B. **Channel Protection**
The post-development peak discharge rate from the 2-year storm event shall be equal to the pre-development rate in order to prevent stream bank erosion and channel degradation.

C. **Construction Disturbance**
A sediment and erosion control plan shall show best management practices for site conditions, and minimize the area of the land disturbance.

D. **Flood Protection**
The post-development peak discharge rate for the 10-year storm event shall be equal to the pre-development rate in order to protect downstream property. The 100-year storm event shall be evaluated to demonstrate there will be no increased flooding impacts off-site.

E. **Groundwater Recharge**
Post-development recharge shall mimic pre-development conditions. Annual recharge rates shall be maintained by use of structural and non structural management practices. The stormwater runoff volume to be recharged shall be determined by methods in the latest version of the Stormwater Management Handbook of the Massachusetts Department of Environmental Protection.

F. **Water Quality**
Stormwater treatment shall be based on design criteria in the Massachusetts DEP Stormwater Management Handbook, and shall remove at least 80% of total suspended solids (TSS).

G. **Water Quality Volume**
The volume for sizing a structural stormwater facility shall designed according to criteria specified by the Massachusetts DEP Stormwater Management Policy.

H. **Sensitive Areas**
Stormwater discharges to swimming beaches, water supplies and other sensitive water resources may be subject to special criteria established by the Planning Board after conducting a public hearing in accordance with the Stormwater Bylaw.

I. **Hotspots**
Stormwater discharges from land uses with higher pollutant loadings, known as “hotspots”, require treatment practices specified in the Massachusetts DEP Stormwater Management Handbook.

J. **Low Impact Design**
Improved site design and nonstructural controls are encouraged to minimize use of structural stormwater controls. The applicant may request credit for site design practices that can reduce other requirements in these regulations. The Planning Board may adopt criteria for practices that qualify as low impact designs.

6.0 WAIVERS

The Planning Board may waive strict compliance with these regulations if: such action is allowed by federal, state and local statutes; is in the public interest; and is consistent with the purpose of the Stormwater Bylaw. Any applicant may submit a written request for a waiver, accompanied by supporting information explaining how the waiver will comply with the purpose of the Stormwater Bylaw.

7.0 SURETY:

The Planning Board may require the permittee to post a bond, cash, or other acceptable surety. The form of the bond shall be approved by the Town of Leicester, in an amount deemed sufficient to ensure that the work will be completed in accordance with the permit. A portion of the bond may be released as each phase of the project is completed in compliance with the permit, but the bond shall not be fully released until the Planning Board has issued a Certificate of Completion.

8.0 CONSTRUCTION INSPECTIONS

A. **Inspections**
The Planning Board may appoint an inspector, at the owner's expense, to perform routine inspections during construction, to determine compliance with conditions of the permit and to ascertain in the owner is maintaining water quality protection measures.

B. **Notification**
The applicant must notify the Planning Board before starting a land disturbing activity. The applicant must also notify the Planning Board before constructing the key components of the stormwater management system.

C. **Reports**
Inspections and written reports of the stormwater system construction shall be conducted by the applicant's professional engineer. The Planning Board may also require inspections during construction by the Town or a professional engineer at the expense of the applicant. Written reports shall include: the inspection date and location; evaluation of compliance with the stormwater permit; any variations from approved specifications, or violations of the Stormwater Management Plan.

D. **Inspections**
At a minimum, inspections shall include: an initial site inspection prior to permit approval; inspection of site erosion controls; inspection of the stormwater system prior to backfilling of underground drainage or conveyance structures; and a final inspection before the surety is released or occupancy permit issued. The stormwater system shall be inspected at least twice a month and following any storm event of 0.5 inches or greater during construction. The Planning Board will issue a Certificate of Completion following review of as-built drawings of all stormwater infrastructure certified by a Registered Professional Engineer.

E. **System Inadequacy**
If the system is found to be inadequate due to operational failure, even though built according to the Stormwater Management Plan, the system shall be corrected by the applicant. If the applicant fails to act, the Planning Board may use the surety bond to complete the work. If the system does not comply with the Plan, the applicant shall be notified in writing of the violation and the required corrective actions. A Stop Work Order shall be issued until any violations are corrected and all work previously completed has received approval by the Planning Board.

9.0 CERTIFICATE OF COMPLETION

Upon completion, the applicant shall certify that the project is in accordance with plan specifications and shall provide inspections to adequately document compliance. All required

easements shall be recorded with the Worcester County Registry of Deeds prior to issuance of a Certificate of Completion by the Planning Board or its agent. The Planning Board will issue a letter certifying completion upon its receipt and approval of the final inspection reports, and/or otherwise determining that all work was completed in conformance with these regulations.

10.0 POST-CONSTRUCTION INSPECTION AND MAINTENANCE

A. **General Requirements**
Structures and practices used to manage stormwater shall be inspected to ensure compliance with Operation and Maintenance Plan (O&M Plan) approved by the Planning Board. The owner of the property, or other person in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, structures, vegetation, erosion controls, and other protective measures. Repairs and maintenance shall comply with the approved O&M Plan.

B. **Inspection Schedule**
At a minimum, inspections shall occur quarterly during the first year of operation. Inspection schedules beyond the first year shall be determined on a case-by-case basis during the permit review process. An agreement between the property owner and the Planning Board shall be executed for privately-owned stormwater systems, which specifies the responsible party for conducting long-term inspections.

C. **Reports**
Inspection reports shall include: the date of the inspection; an evaluation of the condition of structures and practices used to manage stormwater; and a description of any needed maintenance.

D. **Inspection Agreement**
The inspection agreement shall allow the Planning Board or its designee to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. Parties responsible for the operation and maintenance of a stormwater management facility shall provide records of all maintenance and repairs to the Planning Board upon request (or as specified in the project approval), and shall retain those records for five years.

If a responsible person fails to meet the requirements of the inspection agreement, the Planning Board may take action to restore a stormwater facility or practice after 30 days written notice. If the violation is an immediate threat to public health or public safety, 24 hours notice shall be sufficient prior to actions required to return the facility or practice to proper working condition. The Planning Board may assess the owner(s) of the facility for the cost of repair work which shall be a lien on the property.

11.0 ENFORCEMENT

The Planning Board or its designee shall enforce these Regulations, and may pursue all remedies for violations, including a written enforcement order. If remediation is required, the order may set forth a deadline when work shall be completed. Said order may advise that failure to remedy violations may require the Town of Leicester to correct violations and to obtain reimbursement from the property owner. Within thirty days after correcting the violation, the violator and the property owner shall be notified of the costs incurred by the Town of Leicester including administrative costs.

Any person who violates the Stormwater Bylaw, or any regulation, or permit issued hereunder, may be punished by a fine of not more than $ 300. Each day or part thereof that such violation continues shall constitute a separate offense. The decisions or orders of the Planning Board may be appealed to a court of competent jurisdiction. The remedies described in these regulations do not exclude other remedies available under any applicable federal, state or local law.

12.0 SEVERABILITY

The invalidity of any section, provision, paragraph, sentence, or clause of these Regulations shall not invalidate any section, provision, paragraph, sentence, or clause thereof, nor shall it invalidate any permit or determination that previously has been issued.

g:\town planners office\regulations\current pb regulations\leicester stormwater regs, 9-2011.doc

STORMWATER BYLAW (New bylaws accepted @ ATM May 5, 08)

1.0 PURPOSE

The purpose of this Bylaw is to protect the public health, safety, and welfare by establishing requirements to better manage stormwater runoff from new development and redevelopment. This Bylaw seeks to meet that purpose through the following objectives:

1. Establish stormwater management standards and design criteria that will prevent or reduce sedimentation, flooding, stream erosion, pollution, property damage, harm to aquatic life, and overloading or clogging of municipal drainage systems.
2. Encourage the use of "low-impact development practices", such as reducing the amount of impervious area and preserving existing vegetation;
3. Ensure that stormwater management practices will be well-maintained and will continue to function as intended;
4. Establish procedures for issuance of stormwater management permits and for the Town's inspection of approved stormwater treatment practices.

2.0 DEFINITIONS

Definitions in Appendix A of this Bylaw shall apply in the interpretation and implementation of the Bylaw. Terms not defined in this Appendix shall be understood according to their customary and usual meaning.

3.0 ADMINISTRATION

A) The Planning Board shall administer, implement and enforce this Bylaw. Any powers granted to or duties imposed on the Planning Board may be delegated in writing by the Planning Board to its employees or agents, as defined in the regulations adopted for this Bylaw.

B) Regulations. The Planning Board may adopt and amend rules and regulations for administration of this Bylaw by majority vote of the Planning Board, after conducting a public hearing to receive comments. Such hearing dates shall be advertised in a newspaper of general local circulation, at least fourteen (14) days prior to the hearing date.

C) Stormwater Management Manual. The Planning Board will use specifications and standards that are consistent with the Massachusetts Stormwater Management Policy. This Policy provides criteria for stormwater treatment practices, which are based on engineering, science, monitoring, and maintenance experience. Stormwater treatment practices that are designed, constructed and maintained in accord with these design and sizing criteria will be presumed to be protective of Massachusetts water quality standards.

D) Actions by the Planning Board. The Planning Board may take any of the following actions after reviewing an application for a Stormwater Management Permit - Approval, Approval with Conditions, Disapproval, or Withdrawal without Prejudice.

E) Appeals. A decision of the Planning Board shall be final. Further relief of a decision by the Planning Board made under this Bylaw shall be reviewable in the Superior Court in an action filed within sixty (60) days thereof, in accordance with M.G.L. Ch 249 § 4.

F) Low Impact Design. The Planning Board may adopt criteria for practices that will qualify as low impact designs, as part of the Regulations authorized by this Bylaw. These criteria will allow applicants the option to use low-impact practices to improve the amount and quality of stormwater runoff.

4.0 APPLICABILITY

A. This Bylaw shall apply to proposed new development including but not limited to residential subdivisions, site plan applications, commercial uses, municipal uses and multi-family dwellings.

This Bylaw shall also apply to other activities that will increase the amount of stormwater runoff or pollutants from a parcel of land or that will alter the drainage characteristics of a parcel of land, unless the activity is listed as an exemption under Section 4.D of this Bylaw.

All new development and redevelopment under the jurisdiction of this Bylaw shall be required to obtain a Stormwater Management Permit from the Planning Board.

B. Redevelopment projects will fulfill the Bylaw requirements if the amount and quality of stormwater is improved from existing conditions. Where site conditions prevent reduction in impervious area, stormwater treatment shall improve runoff, as determined by the Planning Board.

C. The redevelopment or conversion of land to an automotive salvage yard, fueling facility, storage yard or commercial parking lot, or storage area for road salt or hazardous substances, or other land use with greater potential for pollution, as defined by the Massachusetts Stormwater Policy or the Bylaw regulations, shall require a Stormwater Management Permit.

D. Exemptions. No person shall alter land within the Town of Leicester without having obtained a Stormwater Management Permit for the property with the following exceptions:

1. Any activity that will affect an area less than 10,000 square feet, or less than 2,500 square feet if the activity is within the Water Resources Protection Overlay.

2. Normal maintenance and improvement of land in agricultural use;
3. Timber harvesting under an approved Forest Cutting Plan as defined by the Forest Cutting Practices Act regulation 304 CMR 11.00 and MGL Chapter 132 Sections 40 through 46, and the Town of Leicester Forest Cutting Bylaw.
4. Construction of a single-family dwelling, where "approval is not required" (ANR), as defined in the Subdivision Control Act. Persons constructing a single-family dwelling are encouraged to use stormwater practices and site planning methods to be described in the Town of Leicester Best Development Practices Guidebook;
5. Maintenance of landscaping, gardens or lawn areas associated with residential uses;
6. Construction of a house addition, garage, deck, patio, retaining wall, shed, swimming pool, tennis or basketball court associated with residential uses;
7. Repair or replacement of a roof of an existing building;
8. Repair or replacement of an existing septic system;
9. The construction of any fence that will not alter existing terrain or drainage patterns;
10. Construction of utilities (gas, water, electric, telephone, etc.) other than drainage, which will not alter terrain, ground cover, or drainage patterns;
11. Emergency repairs to any stormwater management practice that poses a threat to public health or safety, or as deemed necessary by the Planning Board;
12. Any work or projects for which all necessary approvals and permits have been issued before the effective date of this Bylaw.

5.0 STORMWATER MANAGEMENT PERMITS

The Permit Application shall be filed with the Planning Board, and copies shall be provided to other Town Boards, as defined in the regulations adopted for this Bylaw. The permit application shall include information that describes stormwater management practices, including sediment and erosion controls, which will be installed and maintained. Specifications for the application form and the stormwater management information shall be part of the rules and regulations adopted under Section 3 of this Bylaw.

Nothing in this Bylaw is intended to replace the requirements of the Town of Leicester Flood Plain District, Water Resources Protection Overlay District, Wetland Bylaw, or any other Bylaw that may be adopted by the Town of Leicester. Any activity subject to the provisions of the above-cited Bylaws must comply with the specifications of each. A driveway permit from the Highway Superintendent is also required for the construction of any dwelling, as provided in Section 6.2A of the Town of Leicester Zoning Bylaw.

The Stormwater Management Permits will not go into effect until the regulations are adopted by the Planning Board, as provided in Section 3.0 B of this Bylaw.

6.0 ENFORCEMENT

The Planning Board or its authorized agent shall enforce this Bylaw and may pursue all civil and criminal remedies for violations. Enforcement shall be further defined as part of the rules and regulations adopted under Section 3 of this Bylaw.

7.0 AUTHORITY

This Bylaw is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution, and pursuant to the regulations of the federal Clean Water Act, and as authorized by the residents of Leicester at Town Meeting, dated May 5, 2008.

8.0 SEVERABILITY

The invalidity of any section, provision, paragraph, sentence, or clause of this Bylaw shall not invalidate any section, provision, paragraph, sentence, or clause thereof, nor shall it invalidate any permit or determination that previously has been issued.

APPENDIX A DEFINITIONS

ALTER: Any activity, which will measurably change the ability of a ground surface area to absorb water or will change existing surface drainage patterns.

STORMWATER MANAGEMENT PRACTICES: Structures and techniques that prevent flooding, reduce pollution, and protect local rivers, streams, lakes and water supplies.

BETTER SITE DESIGN: Site design techniques that can reduce environmental impacts, such as protecting existing vegetation, reducing impervious areas, and using natural drainage ways for stormwater management.

IMPERVIOUS AREA: A material or a structure that prevents water from entering the underlying soil, such as paved parking lots, paved roads, sidewalks, and buildings.

MASSACHUSETTS STORMWATER MANAGEMENT POLICY: The Policy issued by the state Department of Environmental Protection, which provides performance standards to prevent water pollution and control the amount of runoff from new development.

PERSON: Any individual, group of individuals, association, partnership, corporation, company, trust, estate, a political subdivision of the Commonwealth or the federal government, to the extent subject to the Bylaws of the Town of Leicester.

PRE-DEVELOPMENT: The conditions that exist at the time that plans for the land development of a tract of land are submitted to the Planning Board. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first plan submission shall establish pre-development conditions.

POST-DEVELOPMENT: The conditions that reasonably may be expected after completion of the land development activity on a specific site or tract of land. Post-development does not refer to the construction phase of a project.

REDEVELOPMENT: Any construction, alteration, or improvement exceeding land disturbance of 10,000 square feet, where the existing land use is commercial, or institutional.

PLANNING BOARD: The Town of Leicester Planning Board OR its authorized agent(s). The Planning Board is responsible for coordinating the review, approval and permit process as defined in this Bylaw. Other Boards and/or departments will participate in the permit process as defined in the rules and regulations adopted by the Planning Board.

STORMWATER MANAGEMENT PERMIT (SMP): A permit issued by the Planning Board, which protects the streams, lakes and water supplies in the Town from the adverse affects of uncontrolled and untreated stormwater runoff.

LOW IMPACT DESIGN: Low impact practices allow for the reduction of impervious areas that result in smaller volumes required for stormwater storage. These site design techniques can reduce the size and costs of stormwater collection systems and detention basins

ATTACHMENT G

SITE PLAN REVIEW ORDINANCE

SECTION5: SPECIAL REGULATIONS

5.1 PARKING AND LOADING REQUIREMENTS

5.1.01 No use of land for either residential or non-residential purposes in any district in the Town will be permitted which does not provide off-street parking and loading and unloading space adequate for its customary needs.

5.1.02 The Planning Board is authorized to adopt from time to time Parking Regulations to regulate parking and to define adequacy for off-street parking and loading and unloading space for residential and non-residential use

5.1.03 Parking shall be located on the same lot as the principal use or on a contiguous lot within the same zoning district or in an adjacent zoning district in which such parking is permitted provided that no space is counted as meeting the requirements for more than one building or use except in accordance with the shared parking requirements in the Planning Board's Parking Regulations.

5.1.04 In the Business (B) and Central Business (CB) districts all parking shall be provided on the same lot as the principal use or on another lot within a radius of 300 feet in the same zoning district or in an adjacent zoning district in which such parking is permitted provided that such parking is located on a lot on the same side of a major road (e.g. Route 9, Pleasant Street, Stafford Street) as the principal use and that no space is counted as meeting the requirements of more than one building or use except in accordance with the shared parking requirements in the Planning Board's Parking Regulations. Properties within the CB District shall not be required to comply with the 300 foot limitation and may share parking anywhere within the CB District on the same side of a major road. By Special Permit, the Planning Board may allow parking on the opposite side of the road in the CB district.

5.8.03 Site Development Standards

A. Parking Requirements

1. Off-Street parking facilities sufficient to accommodate the motor vehicles of all employees, customers and other persons normally visiting the site shall be provided in accordance with the Planning Board's Parking Regulations.

2. Adequate turning and maneuvering space shall be provided for loading areas without encroachment into parking areas.

3. Adequate illumination shall be provided for the comfort and safety of persons using parking and loading areas.

4. Parking and loading area lighting shall not shine beyond the property lines, except for driveway entrances where light may shine onto the immediate area of the street right-of-way.

5. Provision for safe and convenient pedestrian access shall be incorporated into plans for new parking areas.

6. Parking areas for all non-commercial uses shall be hard paved.

7. Parking areas shall include handicapped-accessible parking spaces as required by 521 CMR, Architectural Access Board Code, as may be amended from time to time.

8. To the maximum extent feasible, parking and loading areas shall be located to the side or rear of the primary structure.

5.2 SITE PLAN REVIEW

5.2.01 PURPOSE.

The purpose of this Section is to provide for a comprehensive review of site plans for those uses and structures that may have a significant impact on the Town's character, infrastructure, environment and quality of life.

5.2.02 APPLICABILITY

1. Projects Requiring Site Plan Review:

Site Plan Review by the Planning Board shall be required in all zoning districts prior to the issuance of a Building Permit, except as exempted below, for the following:

- **a.** Any new use, or any expansion of an existing use, that results in 3,000 square feet of new floor area, addition or creation of more than 20 parking spaces, or 10,000 square feet of new land area devoted to a use
- **b.** Addition or creation of a drive-in or drive-through establishment

c. Any building over 35 feet in height
d. Radio or TV broadcasting towers and any structure meeting the definition of a wireless communication facility or large wind facility.
e. All non-residential projects in the Greenville Village Neighborhood Business District (NB) per Section5.6.02.2 of the Zoning Bylaw
f. All business and/or multiple family uses set forth in the BR-1, and RIB Zones per Section 4.4 of the Zoning Bylaw.
g. Medium-Scale Ground-Mounted Solar Energy Systems that occupy 3,000 square feet or more of surface area and Large-Scale Ground-Mounted Solar Energy Systems.
h. Medical Marijuana Treatment Centers and Marijuana Establishments

2. EXEMPTIONS:
Site Plan Review shall not be required for the construction or enlargement of any single-family or two-family dwellings, the construction or alteration of any structure to be used exclusively for agricultural purposes, or for any public buildings or uses of the Town of Leicester.

3. WAIVERS
When a Special Permit or Site Plan application is for a new use, but involves the reuse, alteration or reconstruction of an existing structure, the Board may waive the submittal of technical information, plans, or documents otherwise required hereunder when in the opinion of the Board said alteration or reconstruction does not substantially change the relationship of the structure to the site and to abutting properties and structures. Upon application as specified in the Site Plan Review Rules & Regulations, such a determination may be made by majority vote of the Board. The involved structure shall be as shown on a site plan previously approved under this Section or on a plan determined by the Planning Board to be sufficient to evaluate the proposed project. Such plan, with all proposed changes shown, shall be included with the application. This waiver provision shall not apply to applications for Adaptive Re- use Developments.

5.2.03 SITE PLAN REVIEW PROCEDURE:

1. FILING.
An applicant for site plan review shall file in accordance with the Planning Board's Site Plan Review Rules & Regulations.

2. PLAN REVIEW:
The Planning Board shall refer copies of the site plan application to the Boards and Departments specified in the Board's Sites Plan Review Rules & Regulations. These parties shall have thirty-five (35) days in which to review and comment on the plan. Failure to submit written comments within thirty-five days shall be interpreted as lack of opposition to the approval of the site plan. The Planning Board shall not make a finding and determination upon an application until it has received these recommendations or until thirty-five have elapsed without such recommendation being submitted.

3. PLAN REVIEW:
The Planning Board is authorized to retain a professional engineer, architect, landscape architect or other professional consultant to advise the Board on any and all aspects of the site plan. The Planning Board shall adopt, after a public hearing, and may later amend, a fee schedule which accurately reflects the cost of reviewing such plans. The site plan review fee must be paid by the applicant at the time of the plan submission.

4. DECISION:

A. **Standard Site Review Applications**: The Planning Board shall deliver its written decision to the Town Clerk and Building Inspector within sixty (60)) days of the receipt of the site plan application. This time limit may be ex- tended by written agreement between the applicant and the Planning Board. Failure of the Planning Board to take final action within sixty (60) days, or extended time, shall be deemed to be approval of the application

B. **Major Site Plan Review Applications**: Site Plan Review applications for projects involving new construction or expansion of more than 30,000 square feet of gross floor area, Large-Scale Ground-Mounted Solar Energy Systems that occupy 240,000 square feet (5.5 acres) or more of surface area or Ground-Mounted Solar Energy Systems that involve more than two (2) acres of tree clearing shall require a Planning Board public hearing. Such public hearing shall follow the procedures of MGL, Ch.40A regarding special permits with regard to scheduling, notification, and deadline for a decision. The public hearing shall be scheduled within

sixty-five (65) days after the application has been submitted to the Planning Board. Failure of the Planning Board to take final action within ninety (90) days of the close of the public hearing shall be deemed to be approval of the application. These time limits may be extended by written agreement between the applicant and the Planning Board in accordance with the Site Plan Review Rules and Regulations.

C. Final Action. The Planning Board's final action shall consist of either:

1. Approval of the site plan based upon a determination that the plan is in compliance with the standards set forth in this By-Law:
2. Disapproval of the site plan based upon determination that the proposed project does not meet the standards set forth in this By-Law; in the event of disapproval, the Board shall state the reasons why the plan was not approved and identify the specific corrective measures that must be taken to bring the plan into compliance with the standards; or
3. Approval of the site plan subject to any conditions, modifications and restrictions as required by the Planning Board which will ensure that the plan meets these standards.

5.2.04 SITE PLANS ALSO REQUIRING A SPECIAL PERMIT:

In cases where a development requires site plan review by the Planning Board and a Special Permit from the Board of Appeals for the same project, the applicant shall file site plan and special permit applications concurrently with the appropriate Board. This requirement shall not apply to special permits for signs. The Planning Board shall review the site plan, and shall submit a report with recommendations to the Board of Appeals within forty-five (45) days of the receipt of the application. The Board of Appeals shall incorporate the Planning Board's recommendations and conditions in its Special Permit decision, or shall state in the decision the reasons why such recommendations or conditions were not followed. In cases where a development requires site plan review and a special permit from the Planning Board, the applicant shall file site plan and special permit applications, along with application and public hearing fees, concurrently with the Planning Board. Where applicable, a combined hearing may be held for Planning Board special permit and site plan review applications for the same project.

5.2.05 STANDARDS FOR SITE PLAN APPROVAL:

The Planning Board shall approve a site plan when the following standards are met:

A. The use complies with all the provisions of the Leicester Zoning By-Law;

B. The use will not materially endanger or constitute a hazard to the public health and safety;

C. The use will not create undue traffic congestion or unduly impair pedestrian safety;

D. Sufficient off-street parking exists or will be provided to serve the use;

E. The use can be adequately served by water, sewer, and other necessary utilities, or if these are un- available, that they will be brought to the site at the owner's expense; or, the Planning Board is satisfied that the proposed alternatives will comply with all applicable regulations; and,

F. The use will not result in a substantial increase of volume or rate of surface water runoff to neighboring proper- ties and streets, nor will result in pollution or degradation to surface water or groundwater;

G. The use will not result in any undue disturbance to adjoining property owners or the Town caused by excessive or unreasonable noise, smoke, vapors, fumes, dust, glare, etc.

5.2.06 SITE PLAN CONDITIONS:

The Planning Board may impose conditions, safeguards and limitations on time and use as may be appropriate for the protection of the natural environment, the neighborhood, and the Town. Such conditions shall be imposed in writing on the site plan approval and shall be enforced by the Building Inspector. The applicant may be required to post a bond or other security in an amount satisfactory to the Planning Board for compliance with these conditions. The procedure for reducing or releasing the security shall be the same as those in the Planning Board's Subdivision Rules and Regulations.

5.2.07 TIME LIMITATIONS:

Construction on a site must be started or substantial activity commenced within one (1) year of the date of the site plan approval. This time may be extended for one additional year at the discretion of the Planning Board, for good cause, and upon a written request from the applicant prior to the expiration of the original one-year period.

Construction, once begun, shall be actively and continuously pursued to completion within a reasonable time. The Planning Board shall include in its decision a deadline to complete construction under an approved site plan, such time not to exceed 2 years from the date of approval, except for Senior Village Developments, which shall have up to 5 years. Such time may be extended for good cause upon the written request of the applicant prior to the specified deadline. If the time period for commencement or completion has elapsed, the rights granted by the site plan approval shall expire and may be reestablished only after another site plan review under this Section.

5.2.08 MODIFICATIONS

A. Modifications of Site Plans shall follow the same procedures as the original submittal, except that the Planning Board, where it is not otherwise inconsistent with this Section or with the Town's Zoning Bylaws, may approve minor engineering changes to a previously approved site plan in accordance with the Site Plan Re- view Rules and Regulations.

B. The Planning Board, acting through its Chair and professional staff, may approve insignificant changes to an approved site plan in accordance with the Site Plan Review Rules and Regulations.

SECTION 5.2.09 FLOOD PLAIN DISTRICT (formerly 5.2.04)

[Amended @ ATM 5-7-2008]

I. PURPOSE

A. The purposes of the Flood plain District are to:

1. Ensure public Safety through reducing the threats to life and personal injury;
2. Eliminate new hazards to emergency response officials;
3. Prevent the occurrence of public emergencies resulting from water quality, contamination, and pollution due to flooding;
4. Avoid the loss of utility service which if damaged by flooding would disrupt or shut down the utility network and impact regions of the community beyond the site of flooding;
5. Eliminate costs associated with the response and cleanup of flooding conditions; and
6. Reduce damage to public and private property resulting from flooding waters.

II. DEFINITIONS

BASE FLOOD: the flood having a one percent chance of being equaled or exceeded in any given year.

DEVELOPMENT: any manmade change to improved or unimproved real estate, including but not limited to building or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): administers the National Flood Insurance Program (NFIP). FEMA provides a nationwide flood hazard area mapping study program for communities as well as regulatory standards for development in the flood hazard areas.

FLOOD BOUNDARY AND FLOODWAY MAP: and official map of a community issued by FEMA that depicts, based on detailed analyses, the boundaries of the 100-year and 500-year floods and the 100-year floodway.

FLOOD INSURANCE RATE MAP (FIRM): an official map of a community in which FEMA has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.

FLOOD INSURANCE STUDY: and examination, evaluation, and determination of flood hazards, and if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of flood-related erosion hazards.

FLOODWAY: the channel or river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation.

NEW CONSTRUCTION: for floodplain management purposes, structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community.

SPECIAL FLOOD HAZARD AREA: means an area having special flood and/or flood-related erosion hazards, and shown on a Flood Hazard Boundary Map or FIRM as Zone A, AO, A1-30, A99, AH, V, V1-30, VE.

ATTACHMENT H

SITE INSPECTION FOR EROSION CONTROL SOP

SOP: CONSTRUCTION SITE INSPECTION

Construction sites that lack adequate stormwater controls can contribute a significant amount of sediment to nearby bodies of water. This Standard Operating Procedure describes the major components of a municipal Stormwater Construction Inspection Plan, as well as procedures for evaluating compliance of stormwater controls at construction sites.

Stormwater Construction Inspection Plan

A stormwater Construction Site Inspection program is a program developed by municipalities to track, inspect, and enforce local stormwater requirements at construction sites.

A municipal stormwater Construction Site Inspection program should include or address the following:

1. Construction Site Inventory
    - A tracking system to inventory projects and identify sites for inspection.
    - Track the results of inspection and prioritize sites based on factors such as proximity to waterways, size, slope, and history of past violations.
2. Construction Requirements and BMPs
    - Municipalities provide contractors with guidance on the appropriate selection and design of stormwater BMPs.
3. Plan Review Procedures
    - Submitted plans must be reviewed to ensure they address local requirements and protect water quality.
4. Public Input
    - The Program shall allow the public to provide comment on inspection procedures, and consider information provided by the public.
5. Construction Site Inspections
    - Identify an inspection frequency for each site.
    - See more detailed information below.
6. Enforcement Procedures
    - A written progressive enforcement policy for the inspection program.
    - Sanctions, both monetary and non-monetary, shall be utilized to ensure compliance with the program
7. Training and Education
    - Municipal staff conducting inspections should receive training on regulatory requirements, BMPs, inspections, and enforcement.

Conducting Stormwater Inspections at Construction Sites

The role of the construction inspector is to ensure that site operations match the approved site plans and the Stormwater Pollution Prevention Plan (SWPPP) for the project, and that

all precautions are taken to prevent pollutants and sediment from the construction site from impacting local waterways. The inspector is also expected to determine the adequacy of construction site stormwater quality control measures.

The attached Construction Site Stormwater Inspection Report shall be used by the inspector during site visits. Construction site inspectors should abide by the following guidelines:

1. Inspections to monitor stormwater compliance should be performed at least once per month at each active construction site, with priority placed on sites that require coverage under the USEPA 2017 Construction General Permit (i.e., that disturb one or more acres), and sites that are located in the watershed of any 303(d) water bodies.
2. The inspection shall begin at a low point and work uphill, observing all discharge points and any off-site support activities.
3. Written and photographic records shall be maintained for each site visit.
4. During the inspection, the inspector should ask questions of the contractor. Understanding the selection, implementation, and maintenance of BMPs is an important goal of the inspection process, and requires site-specific input.
5. The inspector should not recommend or endorse solutions or products. The inspector may offer appropriate advice, but all decisions must be made by the contractor.
6. The inspector shall always wear personal protective equipment appropriate for the site.
7. The inspector shall abide by the contractor's site-specific safety requirements.
8. The inspector has legal authority to enter the site. However, if denied permission to enter the site, the inspector should never force entry.

Prior to planning a site visit, the inspector shall determine if the project is subject to USEPA's 2017 Construction General Permit, which is true if the the project disturbs one or more acres, total. The 2017 Construction General Permit replaces the 2012 Construction General Permit, which expired on February 16, 2017. Operators of sites that required coverage under the USEPA's 2012 and/or 2008 Construction General Permits but continue to be active should have submitted a new Notice of Intent (NOI) under the 2017 Permit.

If the site requires this coverage, the inspector shall visit the USEPA Region 1 eNOI website (http://cfpub.epa.gov/npdes/stormwater/cgpenoi.cfm or http://cfpub.epa.gov/npdes/stormwater/ noi/noisearch.cfm) to determine if the contractor filed for coverage under the 2017, 2012, and/or 2008 Construction General Permits, respectively. Print a copy of the project's NOI.

If the project disturbs one or more acres and is under construction, but does not show up in either database, the project is in violation of the Construction General Permit. Call the contractor to determine if the NOI process has been started. If not, notify the contractor verbally of this requirement and the violation. Work cannot proceed on the site until a Notice of Intent (NOI) for coverage under the 2017 Construction General Permit has been approved by USEPA. The inspector may choose to print instructions on how to file an NOI

and meet with the contractor to review these. Issue a written Stop Work Order until the NOI has been approved by USEPA.

Once it has been determined that the site is in compliance with the 2017 Construction General Permit, the site inspection process can continue. The Construction Site Inspection process shall include the following:

1. Plan the inspection before visiting the construction site
    a. Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
    b. Print the approved NOI from the USEPA 2017 Construction General Permit NOI website, listed previously.
    c. Inform the contractor of the planned site visit.
2. Meet with the contractor
    a. Review the Construction SWPPP (if the site includes over one acre of disturbance) or other document, as required by the Town of Leicester. Compare BMPs in the approved site plans with those shown in the SWPPP.
    b. Review the project's approved NOI and confirm that information shown continues to be accurate.
    c. Get a general overview of the project from the contractor.
    d. Review inspections done by the contractor.
    e. Review the status of any issues or corrective actions noted in previous inspection reports.
    f. Discuss any complaints or incidents since the last meeting.
3. Inspect perimeter controls
    a. Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
    b. For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.
4. Inspect slopes and temporary stockpiles
    a. Determine if sediment and erosion controls are effective.
    b. Look for slumps, rills, and tracking of stockpiled materials around the site.
5. Compare BMPs in the site plan with the construction site conditions
    a. Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.
    b. Note any areas where additional BMPs may be needed which are not specified in the site plans.
6. Inspect site entrances/exits
    a. Determine if there has been excessive tracking of sediment from the site.
    b. Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
7. Inspect sediment basins
    a. Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
8. Inspect pollution prevention and good housekeeping practices

   a. Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
   b. Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.
9. Inspect discharge points and downstream, off-site areas
   a. Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
   b. Inspect down-slope catch basins to determine if they are protected, and identify whether sediment buildup has occurred.
10. Meet with the contactor again prior to leaving
   a. Discuss the effectiveness of current controls and whether modifications are needed.
   b. Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.
   c. Agree on a schedule for addressing all discrepancies, and schedule a follow-up inspection.
11. Provide a written copy of the inspection report to the contractor.
12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.
13. Use Stop Work orders, as needed, until compliance with the 2017 Construction General Permit and/or other document, as required by the municipality's legal authority, can be achieved.

Attachments

1. Construction Site Stormwater Inspection Report

CONSTRUCTION SITE STORMWATER INSPECTION REPORT

General Information

Project Name			
Project Location			
Site Operator			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Subject to USEPA Construction General Permit? Yes ☐ No ☐ If yes, has NOI been approved? Yes ☐ No ☐ If yes, attach approved NOI to this report. **If no, contact site operator immediately to determine status of NOI.**			
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe the current phase of construction			

Site-Specific BMPs

Customize the following BMPs to be consistent with the SWPPP for the site being inspected.

	BMP Description	Installed and Operating Properly?	Corrective Action Needed
1		Yes ☐ No ☐	
2		Yes ☐ No ☐	

(continued)

	BMP Description	Installed and Operating Properly?	Corrective Action Needed
3		Yes ☐ No ☐	
4		Yes ☐ No ☐	
5		Yes ☐ No ☐	
6		Yes ☐ No ☐	
7		Yes ☐ No ☐	
8		Yes ☐ No ☐	
9		Yes ☐ No ☐	
10		Yes ☐ No ☐	
11		Yes ☐ No ☐	
12		Yes ☐ No ☐	
13		Yes ☐ No ☐	
14		Yes ☐ No ☐	
15		Yes ☐ No ☐	
16		Yes ☐ No ☐	
17		Yes ☐ No ☐	
18		Yes ☐ No ☐	
19		Yes ☐ No ☐	
20		Yes ☐ No ☐	

Erosion and Sedimentation Control

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Have all ESC features been constructed before initiating other construction activities?	Yes ☐ No ☐	
Is the contractor inspecting and maintaining ESC devices regularly?	Yes ☐ No ☐	
Is existing vegetation maintained on the site as long as possible?	Yes ☐ No ☐	
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes ☐ No ☐	
Are disturbed areas restored as soon as possible after work is completed?	Yes ☐ No ☐	
Is clean water being diverted away from the construction site?	Yes ☐ No ☐	
Are sediment traps and sediment barriers cleaned regularly?	Yes ☐ No ☐	
Are vegetated and wooded buffers protected and left undisturbed?	Yes ☐ No ☐	
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes ☐ No ☐	
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes ☐ No ☐	
Is regular, light watering used for dust control?	Yes ☐ No ☐	
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes ☐ No ☐	

(continued)

Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes ☐ No ☐	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes ☐ No ☐	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes ☐ No ☐	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes ☐ No ☐	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes ☐ No ☐	
Do all entrances to the storm sewer system have adequate protection?	Yes ☐ No ☐	

Overall Site Conditions

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Are slopes and disturbed areas not being actively worked properly stabilized?	Yes ☐ No ☐	
Are material stockpiles covered or protected when not in use?	Yes ☐ No ☐	
Are natural resource areas protected with sediment barriers or other BMPs?	Yes ☐ No ☐	
Are perimeter controls and sediment barriers installed and maintained?	Yes ☐ No ☐	

(continued)

Issue	Status	Corrective Action Needed
Are discharge points and receiving waters free of sediment deposits and turbidity?	Yes ☐ No ☐	
Are storm drain inlets properly protected?	Yes ☐ No ☐	
Is there evidence of sediment being tracked into streets?	Yes ☐ No ☐	
Is trash/litter from the construction site collected and placed in dumpsters?	Yes ☐ No ☐	
Are vehicle/equipment fueling and maintenance areas free of spills and leaks?	Yes ☐ No ☐	
Are potential stormwater contaminants protected inside or under cover?	Yes ☐ No ☐	
Is dewatering from site properly controlled?	Yes ☐ No ☐	
Are portable restroom facilities properly sited and maintained?	Yes ☐ No ☐	
Are all hazardous materials and wastes stored in accordance with local regulations?	Yes ☐ No ☐	

Non-Compliance Actions

The Town of Leicester shall provide the site operator with a copy of this report, and notice of the corrective action(s) to be taken. The site operator shall have thirty days from the receipt of the notice to commence curative action of the violation.

ATTACHMENT I

SEDIMENT AND EROSION CONTROL SOP

SOP: EROSION AND SEDIMENTATION CONTROL

Erosion and sedimentation from land-disturbing human activities can be a significant source of stormwater pollution. This Standard Operating Procedure describes methods for reducing or eliminating pollutant loading from such activities.

Controlling Erosion and Sediment through Design and Planning

Prevention of erosion and sedimentation is preferable to installing treatment devices. Consistent application and implementation of the following guidelines during the design and review phases can prevent erosion and sedimentation:

1. Avoid sensitive areas, steep slopes, and highly erodible soils to the maximum extent possible when developing site plans.
2. Identify potential problem areas before the site plan is finalized and approved.
3. Plan to use sediment barriers along contour lines, with a focus on areas where short-circuiting (i.e., flow around the barrier) may occur.
4. Use berms at the top of a steep slopes to divert runoff away from the slope's edge.
5. Design trapezoidal or parabolic vegetated drainage channels, not triangular.
6. Use vegetated channels with rip rap check dams, instead of impervious pavement or concrete, to reduce the water velocity of the conveyance system.
7. Design a check dam or sediment forebay with level spreader at the exit of outfalls to reduce water velocity of the discharge and collect sediment.
8. Use turf reinforcement matting to stabilize vegetated channels, encourage vegetation establishment, and withstand flow velocities without scouring the base of the channel.
9. Plan open channels to follow land contours so natural drainage is not disrupted.
10. Use organic matting for temporary slope stabilization and synthetic matting for permanent stabilization.
11. Provide a stable channel, flume, or slope drain where it is necessary to carry water down slopes.

Controlling Erosion and Sediment on Construction Sites

During the construction phase, it is important to inspect active sites regularly to ensure that practices are consistent with approved site plans and the site's Stormwater Pollution Prevention Plan (SWPPP) or other document, as required by the Town of Leicester. The following guidelines apply:

1. Erosion and sediment control features should be constructed before initiating activities that remove vegetated cover or otherwise disturb the site. These shall be installed consistent with the approved site plans and with manufacturer's instructions.
2. Erosion and sediment control devices shall be inspected by the contractor regularly, and maintained as needed to ensure function.

3. In the SWPPP or other document, the contractor shall clearly identify the party responsible for maintaining erosion and sediment control devices.
4. An inspection should be completed of active construction sites every month, at a minimum, to check the status of erosion and sedimentation controls.
5. Existing vegetation should be maintained on site as long as possible.
6. Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed.
7. Stockpiles shall be stabilized by seeding or mulching if they are to remain for more than two weeks.
8. Disturbed areas shall be protected from stormwater runoff by using protective Best Management Practices (BMPs).
9. Clean water shall be diverted away from disturbed areas on construction sites to prevent erosion and sedimentation.
10. Sediment traps and sediment barriers should be cleaned out regularly to reduce clogging and maintain design function.
11. Vegetated and wooded buffers shall be protected.
12. Soils shall be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
13. Vegetation shall be allowed to establish before introducing flows to channels.
14. Regular light watering shall be used for dust control, as this is more effective than infrequent heavy watering.
15. Excessive soil compaction with heavy machinery shall be avoided, to the extent possible.
16. Construction activities during months with higher runoff rates shall be limited, to the extent possible.

Controlling Erosion and Sediment by Proper Maintenance of Permanent BMPs

Many construction phase BMPs can be integrated into the final site design, but ongoing inspection and maintenance are required to ensure long-term function of any permanent BMP. The following guidelines summarize the requirements for long-term maintenance of permanent BMPs.

1. Responsibility for maintaining erosion and sediment control devices shall be clearly identified.
2. Erosion and sediment control devices shall be inspected following heavy rainfall events to ensure they are working properly.
3. Erosion control blankets shall be utilized when seeding slopes.
4. Vegetated and wooded buffers shall be protected, and left undisturbed to the extent possible.
5. Runoff shall not be diverted into a sensitive area unless this has been specifically approved.
6. Sedimentation basins shall be cleaned out once sediment reaches 50% of the basin's design capacity.

7. Snow shall not be plowed into, or stored within, retention basins, rain gardens, or other BMPs.
8. Easements and service routes shall be maintained, to enable maintenance equipment to access BMPs for regular cleaning.

EROSION AND SEDIMENTATION CONTROL INSPECTION REPORT

General Information

Project Name			
Project Location			
Inspector's Name			
Site Operator			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Subject to USEPA Construction General Permit? Yes ☐ No ☐ If yes, has NOI been approved? Yes ☐ No ☐ If yes, attach approved NOI to this report. **If no, contact contractor immediately to determine status of NOI.**			
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe the current phase of construction			

Erosion and Sediment Control (ESC) on Construction Sites

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Have all ESC features been constructed before initiating other construction activities?	Yes ☐ No ☐	
Is the contractor inspecting and maintaining ESC devices regularly?	Yes ☐ No ☐	
Is existing vegetation maintained on the site as long as possible?	Yes ☐ No ☐	
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes ☐ No ☐	
Are disturbed areas restored as soon as possible after work is completed?	Yes ☐ No ☐	
Is clean water being diverted away from the construction site?	Yes ☐ No ☐	
Are sediment traps and sediment barriers cleaned regularly?	Yes ☐ No ☐	
Are vegetated and wooded buffers protected and left undisturbed?	Yes ☐ No ☐	
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes ☐ No ☐	
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes ☐ No ☐	
Is regular, light watering used for dust control?	Yes ☐ No ☐	
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes ☐ No ☐	

(continued)

Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes ☐ No ☐	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes ☐ No ☐	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes ☐ No ☐	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes ☐ No ☐	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes ☐ No ☐	
Do all entrances to the storm sewer system have adequate protection?	Yes ☐ No ☐	

Non-Compliance Actions

The Town of Leicester shall provide the site operator with a copy of this report, and notice of the corrective action(s) to be taken. The site operator shall have thirty days from the receipt of the notice to commence curative action of the violation.

ATTACHMENT J

PARKS AND OPEN SPACES OPERATIONS AND MAINTENANCE PROCEDURES

SOP: OPERATIONS AND MAINTENANCE OF PARKS AND OPEN SPACES

Introduction

Parks and open space operations and maintenance activities commonly involve the operation of equipment such as mowers and tractors; disposal of waste from mowing, planting, weeding, raking, pruning, and trash collection; application of pesticides, herbicides, and fertilizers; cleaning and maintenance of park amenities such as play equipment, restrooms, and structures; and snow removal. These activities have the potential to generate contaminants such as sediments and toxic chemicals that may be picked up by rainwater, thereby entering the storm drainage system and receiving waters. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees to reduce the discharge of pollutants from the MS4 and to receiving waters as a result of parks and open space operations and maintenance. If services are contracted, this SOP should be provided to the contractor. The contract should specify that the contractor is responsible for compliance with all applicable laws.

The Town of Leicester performs a variety of operations and maintenance activities at its municipal parks and open spaces.

The Town of Leicester has created an inventory of all municipal parks and open spaces and updates this inventory annually (refer to the attached inventory sheet).

Procedures

The Town of Leicester will implement the following procedures at municipal parks and open spaces to reduce the discharge of pollutants from the MS4:

General

- Repair damage to landscaped or mulch or vegetated bare areas as soon as possible to prevent erosion. If there are areas of erosion or poor vegetation, repair them as soon as possible, especially if they are within 50 feet of a surface water (e.g., pond, lake, or river).
- Remove (sweep or shovel) materials such as soil, mulch, and grass clippings from parking lots, streets, curbs, gutters, sidewalks, and drainage-ways.
- Do not clean up any unidentified or possibly hazardous materials found during maintenance; notify a supervisor immediately.

Maintenance

- Wastewater from power washing signs, structures, or bleachers cannot be discharged into the stormwater system.
- When painting park equipment, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Sweep parking lots with a street sweeper and dispose of street sweepings in designated

areas.
- Never wash debris from parking lots into the storm drain.

Mowing

- Remove debris and trash from landscaped areas prior to mowing.
- Collect grass clippings and leaves after mowing. Do not blow or wash them into the street, gutter, or storm drains.
- Properly recycle or dispose of organic waste after mowing, weeding, and trimming.
- Reduce mowing frequencies wherever possible by establishing low/no-mow areas in lesser-used spaces.
- Brush off mowers (reels and decks) and tractors over grassy areas or in contained washout areas.
- Leave clippings on grassy areas or dispose of them in the trash or by composting.
- Do not hose off mowers over paved areas that drain into the MS4 or directly to surface waters.
- Follow proper vehicle and equipment maintenance procedures to prevent leaks (see SOP: Operations and Maintenance of Municipal Vehicles and Equipment).
- Do not allow grease from mowers to fall onto areas where they can be washed into the stormwater system.

Irrigation

- Repair broken sprinkler heads as soon as possible.
- Only irrigate at a rate that can infiltrate into the soil to limit run-off.
- Avoid irrigating close to impervious surfaces such as parking lots and sidewalks.

Landscaping

- When establishing new plantings, use alternative landscaping materials, such as drought resistant or native plants to reduce the need for irrigation and extensive application of fertilizers and pesticides.
- Follow proper fueling procedures for all equipment to ensure that petroleum products do not enter the stormwater system.
- Fertilizers, herbicides, and pesticides should be properly used, stored, and handled.
- Municipalities that discharge into waters with phosphorus or nitrogen Total Maximum Daily Loads (TMDLs):
    - In accordance with Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes requirements, the Town of Leicester will use slow-release fertilizers in addition to reducing fertilizer use to reduce runoff to Smiths Pond and Southwick Pond. Phosphorus will only be applied in areas where a soil test indicates that it is not present in sufficient quantities. Phosphorus-free fertilizer options will be considered.
    - In accordance with Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes requirements, the Town of Leicester will use slow-release fertilizers in addition to reducing fertilizer use to reduce runoff to Cedar Meadow Pond, Dutton Pond, Greenville Pond, and Rochdale Pond. Phosphorus

will only be applied in areas where a soil test indicates that it is not present in sufficient quantities. Phosphorus-free fertilizer options will be considered.
    - In accordance with Total Maximum Daily Loads of Nitrogen for Long Island Sound requirements, the Town of Leicester will use slow-release fertilizers in addition to reducing fertilizer use to reduce runoff to waterbodies receiving flow from the MS4. Nitrogen will only be applied in areas where a soil test indicates that it is not present in sufficient quantities. Nitrogen-free fertilizer options will be considered.
- Municipalities subject to Lake and Pond Phosphorus TMDL requirements:
    - In accordance with Lake and Pond Phosphorous TMDL requirements, the Town of Leicester will document its compliance with Massachusetts Regulation 330 CMR 31 in its Lake Phosphorus Control Plans (LPCPs) and certify that all turf grass areas and fertilizer use are managed in accordance with the policy (https://www.mass.gov/files/documents/2018/01/22/330cmr31.pdf).
- The Town of Leicester discharges into the following phosphorus/nitrogen impaired waterbodies: Smiths Pond, Southwick Pond, Cedar Meadow Pond, Dutton Pond, Greenville Pond, and Rochdale Pond. Under MS4 Permit requirements, the Town of Leicester acknowledges that blowing organic waste material (grass cuttings, leaf litter) is strictly prohibited.

Snow Removal

- Store salt or sand for snow removal indoors under a roof or in a covered container and on impervious surfaces.
- See SOP: Winter Road Maintenance for more information on proper snow disposal and storage procedures.
- Any damage done to vegetated areas caused by plows or deicing materials should be repaired as early as possible in the spring.

Trash Management

- All waste and recycling containers must be leak-tight with tight-fitting lids or covers.
- Place waste and recycling containers indoors or under a roof or overhang whenever possible.
- Clean and sweep up around outdoor waste containers regularly.
- Arrange for waste and recyclables to be picked up regularly and disposed of at approved disposal facilities.
- Do not wash out waste or recycling containers outdoors or in a parking lot.
- Conduct periodic inspections of waste areas to check for leaks and spills.
- Ensure there are enough trash and recycling containers at appropriate areas.
- Monitor waste and recycling containers at heavily-used sites and on holidays to ensure that there is no overflow.

Other Activities

- Provide pet waste stations with bags and trash receptacles where pets are permitted. Post signs describing the proper disposal of pet waste.

- All portable toilets should be staked down in flat, secure locations where they are less likely to be knocked down or blown over. They should be placed in a location that would retain any spillage from washing into the MS4 or receiving waters. Ensure routine maintenance and cleaning of portable toilets.
- Identify undesirable waterfowl congregation areas and take steps to prevent waterfowl droppings from entering the stormwater system or surrounding waterbodies.
    - Take measures to discourage congregation near waterbodies and the storm system (e.g., use strobe lights or reflective tape, establish no-mow zones to reduce available feeding areas, or plant thick vegetation along waterlines). If waterfowl congregation cannot be managed, then isolate the drainage from congregation areas away from the storm system and waterbodies.

Install signage to educate the public on the negative effects of waterfowl feces entering the stormwater system or nearby waterbodies in order to discourage public feeding. Alternatively, enact feeding bans.

Employee Training

- Employees who perform maintenance or other applicable work at municipal parks and open spaces are trained once per year on these procedures and the proper operation of related equipment.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Parks and Open Spaces.

Inventory of Municipal Parks and Open Spaces
Town of Leicester, Massachusetts

Name of Park/Open Space	Location	Manager/Contact – Name, Position, Department, Phone Number	Potential Stormwater Pollutant Sources (e.g., trash containers, fertilizers, fuel)
Community Field	Waite St., Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Trash containers, fertilizers, mowing
Russell Memorial Park	South Main St., Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Trash containers, fertilizers, mowing
Rochdale Park	Stafford St., Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Trash containers, mowing Fertilizers
Towtaid Park	Church St, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Trash containers, mowing
Becker College Campus	Main St, Leicester, MA	Kyle Chavoor, 508-847-7728	Trash containers, mowing, weeding, trimming

- Mowing is performed on a weekly basis with mulching blades.
- Trash containers are emptied on a weekly basis.
- All fertilizer applied by the Town is low phosphorous.

ATTACHMENT K

BUILDINGS AND FACILITIES OPERATIONS AND MAINTENANCE PROCEDURES

SOP: OPERATIONS AND MAINTENANCE OF MUNICIPAL BUILDINGS AND FACILITIES

Introduction

Municipal buildings and facilities (schools, municipal offices, police and fire stations, municipal pools, parking garages, etc.) often house various chemicals, such as petroleum products and hazardous materials. As a result, these buildings and facilities are potential sources of pollutant discharges to the storm drainage system. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees on the use, storage, and disposal of chemicals and other stormwater pollutants to reduce the discharge of pollutants from the MS4. If services are contracted, this SOP should be provided to the contractor. The contract should specify that the contractor is responsible for compliance with all applicable laws.

The Town of Leicester performs a variety of operations and maintenance activities at its municipally owned and operated buildings.

The Town of Leicester has created an inventory of all municipal buildings and facilities and updates this inventory annually (refer to the attached buildings and facilities inventory sheet).

Procedures

The Town of Leicester will implement the following procedures for municipally owned or operated buildings and facilities to reduce the discharge of pollutants from the MS4:

Handling, Storage, Transfer, and Disposal of Trash and Recyclables

All liquid and solid waste must be disposed of properly. Some of the most common sources of pollution at municipal facilities are a result of littering, improper collection of debris, and improper disposal of solid or liquid waste.

- All waste and recycling receptacles must be leak-tight with tight-fitting lids or covers.
- Keep lids on dumpsters and containers closed at all times unless adding or removing material. If using an open-top roll-off dumpster, cover it and tie it down with a tarp unless adding materials.
- Place waste or recycling receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface and install berms or curbs around the storage area to prevent run-on and run-off.
- Do not locate dumpsters over or adjacent to catch basins.
- Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Clean and sweep up around outdoor waste containers regularly.
- Clean up any liquid leaks or spills with dry cleanup methods.
- Arrange for waste or recycling to be picked up regularly and disposed of at approved

disposal facilities.

- Never place hazardous materials, liquids, or liquid-containing wastes in a dumpster or recycling or trash container.
- Do not wash trash or recycling containers outdoors or in parking lots.
- Conduct periodic inspections of solid and liquid waste storage areas to check for leaks and spills.
- Conduct periodic inspections of work areas to ensure that all wastes are being disposed of properly.
- In dumpster areas, regularly pick up surrounding trash and debris and regularly sweep the area.
- In compactor areas, regularly check the hydraulic fluid hoses and reservoir to ensure that there are no cracks or leaks. Regularly sweep the area.

Building Maintenance

- When power washing buildings and facilities, ensure that the wash water does not flow into the storm system. Containment or filtering systems should be provided.
- Paint and other chemicals should not be applied on the outside of buildings when it is raining or prior to expected rain.
- When sanding, painting, power washing, etc., ensure that sites are properly prepared (e.g., use tarps) and cleaned (e.g., use dry cleaning methods) especially if they are near storm drains. Protect catch basins when maintenance work is conducted upgradient of them.
- When painting, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Buildings should be routinely inspected for areas of potential leaks.
- Do not discharge chlorinated pool water into the stormwater system. Water must be properly dechlorinated and tested before it is discharged.
- Streets and parking lots surrounding municipal buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system.
- Streets and parking lots around buildings and facilities will be swept in accordance with the procedures in SOP: Streets and Parking Lots.

Storage of Petroleum Products and Potential Pollutants

- Floor drains in storage areas should be disconnected from the stormwater system.
- Routinely inspect buildings and facilities for areas of potential leaks.
- All municipal buildings and facilities should be periodically inspected to address potential pollutant sources (e.g., leaks).

Spill Prevention Plan

- Spill prevention plans such as Spill Prevention Control and Countermeasure (SPCC) Plans should be in place where applicable, based on inventories of material storage and potential pollutants. Coordinate with the local fire department if necessary.

Employee Training

- Employees who perform maintenance or other applicable work at municipal buildings and facilities are trained once per year on these procedures and the proper operation of related equipment.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Buildings and Facilities.

Inventory of Municipal Buildings and Facilities
Town of Leicester, Massachusetts

Name of Building/Facility	Location	Manager/Contact – Name, Position, Department, Phone Number	Potential Stormwater Pollutant Sources (e.g., trash containers, fertilizers, fuel)
Leicester High School	174 Paxton Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Fertilizer on athletic fields – subcontracted through School District DPW performs maintenance and mowing
Leicester Middle School	70 Winslow Avenue, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Fertilizer on athletic fields – subcontracted through School District DPW performs maintenance and mowing
Leicester Elementary School	170 Paxton Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Fertilizer on athletic fields – subcontracted through School District DPW performs maintenance and mowing
Leicester Town Hall	3 Washburn Square, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing
Leicester Highway Department	59 Peter Salem Road, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing, fuel
Leicester Police Department	90 South Main Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing
Leicester Fire and EMS Headquarters	3 Paxton Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing
Leicester Library	1136 Main Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing
Leicester Recycling Center	200 Mannville Street, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Heavy brush cutting
Senior Center	40 Winslow Avenue, Leicester, MA	Kris Lauzon, DPW Director, Department of Public Works, 508-892-7021	Mowing

- All fertilizer is low phosphorus.
- All mowing is done with mulching blades.

ATTACHMENT L

VEHICLES AND EQUIPMENT OPERATIONS AND MAINTENANCE PROCEDURES

SOP: OPERATIONS AND MAINTENANCE OF MUNICIPAL VEHICLES AND EQUIPMENT

Introduction

Regular maintenance of both municipal and contracted vehicles and heavy equipment not only prolongs the life of municipal assets but also helps reduce the potential for leaking of fluids associated with normal wear and tear. Potential pollutants include fuels, oil, antifreeze, brake fluid, solvents, and battery acid. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees to help reduce the discharge of pollutants from the MS4 as a result of leaks from vehicles and equipment. If services are contracted with respect to vehicles and equipment, this SOP should be provided to the contractor. The contract should also specify that the contractor is responsible for compliance with all applicable laws.

The Town of Leicester undertakes various procedures in regard to its municipal vehicles and equipment.

The Town of Leicester has created an inventory of all municipal vehicles and equipment and updates this inventory annually (refer to the attached vehicles and equipment inventory sheet).

Procedures

The Town of Leicester will implement the following procedures for municipally owned and operated vehicles and equipment to reduce the discharge of pollutants from the MS4:

Vehicle and Equipment Maintenance

Vehicle Storage

- Monitor vehicles and equipment for leaks and use drip pans as needed until repairs can be performed.
- When drip pans are used, avoid overtopping.
- Drain fluids from leaking or wrecked vehicles and parts as soon as possible. Dispose of fluids properly.
- Store and park vehicles on impervious surfaces and/or under cover or indoors whenever possible.

Vehicle Maintenance

- Conduct routine inspections of heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.
- Perform routine preventive maintenance to ensure heavy equipment and vehicles are operating optimally.
- Recycle or dispose of waste properly and promptly.
- Sweep and pick up trash and debris as needed.

- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches.

Body Repair and Painting

- Conduct all body repair and painting work indoors.
- Minimize waste from paints and thinners. Calculate paint needs based on surface area.
- Use dry cleanup methods (vacuum, sweep) to clean up metal filings and dust and paint chips from grinding, shaving and sanding. Sweep debris from wet sanding after allowing it to dry overnight on the shop floor. Dispose of waste properly; never dump waste into storm or sanitary sewers.
- Use sanding tools equipped with vacuum capability to pick up debris and dust.

Fueling

- Fueling areas owned or operated by the municipality should be covered.
- Fueling areas should be evaluated to ensure that pollutants (e.g., gasoline or oil) do not enter the MS4.

Material Management

- Store materials and waste in labeled containers under cover and in secondary containment.
- Chemicals should not be combined in containers.
- Hazardous waste must be labeled and stored according to hazardous waste regulations.
- Carefully transfer collected fluids from containers into designated storage areas as soon as possible.
- Store new and used batteries securely to avoid breakage. Store indoors or in secondary containment to contain potential acid leaks. Recycle used batteries.
- Conduct periodic inspections of storage areas to detect possible leaks.
- Do not wash or hose down storage areas unless there is prior approval to collect and discharge the water into the sanitary sewer. Use dry cleanup methods whenever possible.
- Keep lids on containers. Store them indoors or under cover to reduce exposure to rain.
- Inspect and maintain all pretreatment equipment, including interceptors, according to the manufacturer's maintenance schedule and at least once per year.
- Proper spill protocol should be followed to prevent chemicals from entering the stormwater system.

Parts Cleaning

- Use designated areas for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors. If parts cleaning equipment is not available then capture parts cleaning fluids.
- Recycle cleaning solution. Never discharge waste to the sanitary sewer or storm sewer.
- Use steam cleaning or pressure washing of parts instead of solvent cleaning. Cleaning equipment must be connected to an oil/water interceptor prior entering the sanitary sewer.
- When using solvents for cleaning, drain parts over the solvent tank to avoid drips to the

floor. Catch excess solutions and divert them back to tank. Allow parts to dry over the hot tank.

Vehicle and Equipment Washing

Vehicle washing can result in the discharge of nutrients, sediment, petroleum products, and other contaminants to a surface water body or to a stormwater system. The MS4 Permit does not authorize the discharge of municipal vehicle washing byproducts into the MS4.

Outdoor Vehicle Washing Procedures

Outdoor washing of municipal vehicles should be avoided unless wash water is contained in a tight tank or similar structure. Where no alternative wash system is available, and full containment of wash water cannot be achieved, adhere to the following procedures:

- Avoid discharge of any wash water directly to the storm drainage system or surface water (e.g., stream, pond, or drainage swale).
- Minimize the use of water to the extent practicable.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Do not use solvents except in dedicated solvent parts washer systems or in areas not connected to a sanitary sewer.
- Do not power wash, steam clean, or perform engine or undercarriage cleaning.
- Grassy and pervious (porous) surfaces may be used to promote direct infiltration of wash water, providing treatment before recharging groundwater and minimizing runoff to an adjacent stormwater system. Pervious surfaces or other infiltration-based systems should not be used within wellhead protection areas or within other protected resources.
- Impervious surfaces discharging to the storm drainage system should not discharge directly to a surface water unless treatment is provided. The treatment device should be positioned such that all drainage must flow through the device, preventing bypassing or short-circuiting.
- Periodic sweeping and/or cleaning should be completed to prevent accumulation from forming on the washing area.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.
- Heavily soiled vehicles or vehicles dirtied from salting or snow removal efforts should follow the SOPs in the “Heavy Equipment Washing Procedures” below.

Indoor Vehicle Washing Procedures

- Vehicles and equipment should be washed inside whenever possible to reduce runoff to the stormwater system.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.

- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface water bodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Designate separate areas for routine maintenance and vehicle cleaning. This helps prevent contamination of wash water by motor oils, hydraulic lubricants, greases, or other chemicals.
- Dry cleanup methods are recommended within garage facilities. Do not wash down floors and work areas with water.
- Bring smaller vehicles to commercial washing stations.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Heavy Equipment Washing Procedures

- Mud and heavy debris removal should occur on impervious surfaces or within a retention area.
- Maintain these areas with frequent mechanical removal and proper disposal of waste.
- Impervious surfaces with engineered storm drain systems should not discharge directly to a surface water.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface waterbodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Engine and Steam Washing Procedures

- Do not wash parts outdoors.
- Maintain drip pans and smaller containers to contain motor oils, hydraulic lubricants, greases, etc. and to capture and collect spills or noticeable leaks observed during washing activities, to the extent practicable.
- Where use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Avoid cleaning with solvents except in dedicated solvent parts washer systems. Make use of pressure washing and steam cleaning.
- Recycle clean solutions and rinse water to the extent practicable.
- Wash water should discharge to a tight tank or a sanitary sewer via an oil/water separator. Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.

Employee Training

- Employees who perform work on/with municipal vehicles or equipment are trained once per year on these procedures and the proper operation of related equipment.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Vehicles and Equipment.

Inventory of Municipal Vehicles and Equipment
Town of Leicester, Massachusetts

Vehicle/Equipment	Department/Location	Contact – Name, Position, Department, Phone Number	Date of Last Inspection/Calibration
Elgin S9076S Pelican Road Sweeper	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
Trackless MT Series 7 Sidewalk Sweeper	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2016 Ford F350 Snow Removal	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2008 Ford F350 Snow Removal	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2014 International 700SER Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2002 International 2554 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2008 International 700SER Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2005 International 7400 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
1998 International 2554 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2006 Volvo L90E Loader Snow Removal	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2015 Ford F450 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.

2020 Mack R42 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2017 Ford F550 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2019 John Deere 544 L Loader Snow Removal	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2006 Ford F450 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2019 Ford F550 Snow Removal	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2011 Ford F450 Snow Removal and Spread Mix	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
2022 Ford F350	Department of Public Works – Highway Division	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
1 Ton Pickup Truck	Subcontractor	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
¾ Ton Pickup Truck	Subcontractor	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Seasonal inspections are performed. Winter operations are checked and calibrated in October. Other seasonal operations are checked and calibrated in April. Standard MassDOT check performed daily.
Ford Fusion	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Taurus	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Taurus	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford F250 Pick-Up	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Chevy Avalanche	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.

Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Ford Interceptor	Police Department	Kris Lauzon, DPW Director, Department of Public Works 508-892-7021	Police vehicles are maintained by the DPW - Highway Division. Inspected a minimum of once per year.
Fire Engine	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Fire Engine	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Fire Engine	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Fire Engine	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Ladder Truck	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Rescue Truck	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Rescue Truck	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.

Tanker Truck	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Pickup Forestry	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Pickup Forestry	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Fire Department SUV	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Fire Department SUV	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Ambulance	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Ambulance	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.
Ambulance	Fire/EMS Department	Leicester Fire and EMS Headquarters, 508-892-7022	Inspected a minimum of once per year.

ATTACHMENT M

INFRASTRUCTURE OPERATIONS AND MAINTENANCE PROCEDURES

SOP: CATCH BASIN INSPECTION AND CLEANING

Introduction

Catch basins help minimize flooding and protect water quality by removing trash, sediment, decaying debris, and other solids from stormwater runoff. These materials are retained in a sump below the invert of the outlet pipe. Catch basin cleaning reduces foul odors, prevents clogs in the storm drain system, and reduces the loading of suspended solids, nutrients, and bacteria to receiving waters.

During regular cleaning and inspection procedures, data can be gathered related to the condition of the physical basin structure and its frame and grate and the quality of stormwater conveyed by the structure. Observations such as the following can indicate sources of pollution within the storm drain system:

- Oil sheen
- Discoloration
- Trash and debris

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by a oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial sheen is not a pollutant but should be noted.

Observations such as the following can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit discharge.

- Indications of sanitary sewage, including fecal matter or sewage odors
- Foaming, such as from detergent
- Optical enhancers, fluorescent dye added to laundry detergent

Each catch basin should be cleaned and inspected at least annually. Catch basins in high-use areas may require more frequent cleaning. Performing street sweeping on an appropriate schedule will reduce the amount of sediment, debris, and organic matter entering the catch basins, which will in turn reduce the frequency with which structures need to be cleaned.

Cleaning Procedure

Catch basin inspection cleaning procedures should address both the grate opening and the basin's sump. Document any and all observations about the condition of the catch basin structure and water quality on the Catch Basin Inspection Form (attached).

Catch basin inspection and cleaning procedures include the following:

1. Work upstream to downstream.
2. Clean sediment and trash off grate.

3. Visually inspect the outside of the grate.
4. Visually inspect the inside of the catch basin to determine cleaning needs.
5. Inspect catch basin for structural integrity.
6. Determine the most appropriate equipment and method for cleaning each catch basin.
    a. Manually use a shovel to remove accumulated sediments, or
    b. Use a bucket loader to remove accumulated sediments, or
    c. Use a high pressure washer to clean any remaining material out of catch basin while capturing the slurry with a vacuum.
    d. If necessary, after the catch basin is clean, use the rodder of the vacuum truck to clean downstream pipe and pull back sediment that might have entered downstream pipe.
7. If contamination is suspected, chemical analysis will be required to determine if the materials comply with the Massachusetts DEP Hazardous Waste Regulations, 310 CMR 30.000 (http://www.mass.gov/dep/service/regulations/310cmr30.pdf). Chemical analysis required will depend on suspected contaminants. Note the identification number of the catch basin on the sample label, and note sample collection on the Catch Basin Inspection Form.
8. Properly dispose of collected sediments. See following section for guidance.
9. If fluids collected during catch basin cleaning are not being handled and disposed of by a third party, dispose of these fluids to a sanitary sewer system, with permission of the system operator.
10. If illicit discharges are observed or suspected, notify the Department of Public Works (DPW) – Highway Division.
11. At the end of each day, document location and number of catch basins cleaned, amount of waste collected, and disposal method for all screenings.
12. Report additional maintenance or repair needs to the DPW – Highway Division.

Disposal of Screenings

Catch basin cleanings from storm water-only drainage systems may be disposed at any landfill that is permitted by MassDEP to accept solid waste. MassDEP does not routinely require stormwater-only catch basin cleanings to be tested before disposal, unless there is evidence that they have been contaminated by a spill or some other means.

Screenings may need to be placed in a drying bed to allow water to evaporate before proper disposal. In this case, ensure that the screenings are managed to prevent pollution.

Attachments

1. Catch Basin Inspection Form

Job No.: _____ **Town:** _____

Inspector: _____ **Date:** _____

CATCH BASIN INSPECTION FORM

Catch Basin I.D.	_____	**Final Discharge from Structure?** Yes ☐ No ☐ **If Yes, Discharge to Outfall No:**_____	
Catch Basin Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Basin Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Catch Basin Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other:_____	**Pipe Measurements:**	Inlet Dia. (in): d= ____ Outlet Dia. (in): D= ____

Required Maintenance/ Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Grate is Required
- ☐ Pipe is Blocked
- ☐ Frame Maintenance is Required
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Basin Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Ditch Work
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash & Debris
- ☐ Need Cement Around Grate

Other: _____

Catch Basin Grate Type :	**Sediment Buildup Depth :**	**Description of Flow:**	**Street Name/ Structure Location:**
Bar: ☐ Cascade: ☐ Other:_____ Properly Aligned: Yes ☐ No ☐	0-6 (in): _____ 6-12(in): _____ 12-18 (in): _____ 18-24 (in): _____ 24 + (in): _____	Heavy ☐ Moderate ☐ Slight ☐ Trickling ☐	

***If the outlet is submerged check yes and indicate approximate height of water above the outlet invert.** h above invert (in):___ Yes ☐ No ☐

☐ **Flow** ☐ **Standing Water** **(check one or both)**	**Observations:**		**Circle those present:**
	Color:		Foam / Oil Sheen
	Odor:		Sanitary Waste / Bacterial Sheen
Weather Conditions :	Dry > 24 hours ☐	Wet ☐	Orange Staining / Floatables
Sample of Screenings Collected for Analysis? Yes ☐ No ☐			Excessive sediment / Pet Waste
Comments:			Other:_____ / Optical Enhancers

SOP: INSPECTING CONSTRUCTED BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Constructed BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body.

This Standard Operating Procedure provides a general summary of inspection procedures for eight common constructed BMPs, including:

1. Bioretention Areas and Rain Gardens
2. Constructed Stormwater Wetlands
3. Extended Dry Detention Basins
4. Proprietary Media Filters
5. Sand and Organic Filters
6. Wet Basins
7. Dry Wells
8. Infiltration Basins

This SOP is based on the Massachusetts Stormwater Handbook and is not intended to replace that document. This SOP is also not intended to replace the Stormwater BMP Operation and Maintenance (O&M) Plan required by the Massachusetts Wetlands Protection Act, Order of Conditions.

Bioretention Areas and Rain Gardens

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter; and
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting as a filter.

Inspection & Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule: Bioretention Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent required water quality treatment and the recharge of groundwater.

Constructed Stormwater Wetlands

Constructed stormwater wetlands maximize the pollutant removal from stormwater through the use of wetland vegetation uptake, retention and settling. Constructed storm water wetlands must be used in conjunction with other BMPs, such as sediment forebays.

Inspection & Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule, Constructed Stormwater Wetlands: Years 0-3

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Record and Map:	Year round	Annually
Types and distribution of dominant wetland plants	Year round	Bi-Annually
Presence and distribution of planted wetland species	Spring	Annually
Presence and distribution of invasive species	Fall and Spring	Bi-Annually
Indications other species are replacing planted wetland species	Spring	Annually
Percent of standing water that is not vegetated	Spring or Fall	Annually

Replace all media and vegetation	Late Spring/Early Summer	As Needed
Stability of original depth zones and micro-topographic features		
Accumulation of sediment in the forebay and micropool and survival rate of plants		

Maintenance Schedule, Constructed Stormwater Wetlands: Years 4-Lifetime

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Clean forebays	Year round	Annually
Clean sediment in basin/wetland system	Year round	Once every 10 years
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Never store snow within a constructed stormwater wetland. This would prevent required water quality treatment and the recharge of groundwater.

Extended Dry Detention Basins

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and to reduce local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micropool or shallow marsh.

Inspection & Maintenance

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include: erosion within the basin and banks, tree growth on the embankment, damage to the emergency spillway and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.

Maintenance Schedule: Extended Dry Detention Basins

Activity	Time of Year	Frequency
Inspect basins	Spring and Fall	Bi-Annually, and during and after major storms
Examine outlet structure for clogging or high outflow release velocities	Spring and Fall	Bi-Annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually
Remove trash and debris	Spring	Bi-Annually
Remove sediment from basin	Year round	At least once every 5 years

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals or nutrients, which are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite. Two types of Media Filters are manufactured: Dry Media Filters, which are designed to dewater within 72 hours; and Wet Media Filters, which maintain a permanent pool of water as part of the treatment system.

Inspection & Maintenance

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry Media Filters are required to dewater in 72 hours, thus preventing mosquito and other insect breeding. Proper maintenance is essential to prevent clogging. Wet Media Filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Maintenance Schedule: Proprietary Media Filters

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer's schedule	Bi-Annually (minimum)
Remove trash and debris	N/A	Each Inspection
Examine to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer's schedule	Per manufacturer's schedule

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

Inspection & Maintenance

If properly maintained, sand and organic filters have a long design life. Maintenance requirements include raking the sand and removing sediment, trash and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that replacement of the sand should be completed.

Maintenance Schedule: Proprietary Media Filters

Activity	Frequency
Inspect filters and remove debris	After every major storm for the first 3 months after construction completion. Every 6 months thereafter.

Wet Basins

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events, and if properly designed and maintained wet basins can add fire protection, wildlife habitat and aesthetic values to a property.

Inspection & Maintenance

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Maintenance Schedule: Wet Basins

Activity	Time of Year	Frequency
Inspect wet basins	Spring and/or Fall	Annually (Minimum)

Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually (Minimum)
Remove sediment, trash and debris	Spring through Fall	Bi-Annually (Minimum)
Remove sediment from basin	Year round	As required, but at least once every 10 years

Dry Wells

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Inspection & Maintenance

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24 and 48 hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop in water level (inches) by the time elapsed (hours).

Maintenance Schedule: Dry Wells

Activity	Frequency
Inspect dry wells	After every major storm for the first 3 months after construction completion. Annually thereafter.

Infiltration Basins

Infiltration basins are designed to contain stormwater quantity and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site, however high failure rates often occur due to improper siting, inadequate pretreatment, poor design and lack of maintenance.

Inspection & Maintenance

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction or low spots. Inspections should include signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, riprap condition, sediment accumulation and turf health.

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-Annually
Inspection	Spring and Fall	After every major storm for the first 3 months after construction completion. Bi-annually thereafter and discharges through the high outlet orifice.
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-Annually
Remove trash, debris and organic matter	Spring and Fall	Bi-Annually

INSPECTION OF BIORETENTION AREAS / RAIN GARDENS

General Information

BMP Description	Bioretention Area / Rain Garden		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for soil erosion and repair	Monthly	Yes ☐ No ☐	
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Remove trash	Monthly	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Years 0-3 of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

In addition, the following information should be recorded and mapped at least once per year:

- Types and distribution of dominant wetland plants
- Presence and distribution of planted wetland species
- Presence and distribution of invasive species
- Indications other species are replacing planted wetland species
- Percent of standing water that is not vegetated
- Replace all media and vegetation
- Stability of original depth zones and micro-topographic features
- Accumulation of sediment in the forebay and micropool and survival rate of plants

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Year 4 - Lifetime of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Clean forebays	Annually	Yes ☐ No ☐	
Clean sediment in basin/wetland system	Once every 10 years	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

INSPECTION OF EXTENDED DRY DETENTION BASINS

Inspections should be conducted bi-annually, and during and after major storm events.

General Information

BMP Description	Extended Dry Detention Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Examine outlet structure for clogging or high outflow release velocities	Bi-Annually	Yes ☐ No ☐	
Mow upper stage, side slopes, embankment and emergency spillway	Bi-Annually	Yes ☐ No ☐	
Remove trash and debris	Bi-Annually	Yes ☐ No ☐	
Remove sediment from basin	At least once every 5 years	Yes ☐ No ☐	

INSPECTION OF PROPRIETARY MEDIA FILTERS

General Information

BMP Description	Media Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for standing water, trash, sediment and clogging	Bi-Annually (minimum)	Yes ☐ No ☐	
Remove trash and debris	Each Inspection	Yes ☐ No ☐	
Examine to determine if system drains in 72 hours	Annually	Yes ☐ No ☐	
Inspect filtering media for clogging	Per manufacturer's schedule	Yes ☐ No ☐	

INSPECTION OF SAND AND ORGANIC FILTERS

Inspections should be conducted after every major storm event for the first 3 months following completion, then every 6 months thereafter.

General Information

BMP Description	Sand/Organic Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Remove sediment, trash, and debris	Every 6 months	Yes ☐ No ☐	
Rake sand	Every 6 months	Yes ☐ No ☐	

INSPECTION OF DRY WELLS

Regular inspections should be conducted after every major storm event for the first 3 months following completion, then annually thereafter.

General Information

BMP Description	Dry Well		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of dry well at time of inspection			

After a major storm event, the water depth in the observation well should be measured at 24 and 48 hour intervals and the clearance rate calculated.

INSPECTION OF WET BASINS

Inspections should be conducted after every major storm event for the first 3 months following completion, then biannually thereafter.

General Information

BMP Description	Wet Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of wet basin at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Preventative maintenance	Bi-Annually	Yes ☐ No ☐	
Mow/rake buffer area, side slopes and basin bottom	Bi-Annually	Yes ☐ No ☐	
Remove trash, debris and organic matter	Bi-Annually	Yes ☐ No ☐	
Inspect and clean pretreatment devices	Every other month and after every major storm event	Yes ☐ No ☐	

INSPECTION OF OTHER BMP

General Information

BMP Description			
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	

ATTACHMENT N

STREET SWEEPING PROGRAM SOP

STANDARD OPERATING PROCEDURE
LEICESTER DEPARTMENT OF PUBLIC WORKS
LEICESTER, MASSACHUSETTS

PROGRAM:
Sweeping Streets and Parking Lots

ISSUE DATE:
6-27-2019

REVISION DATE:
5-10-2023

Approved by:

Kris Lauzon_____
DPW Director

Purpose of SOP:

Procedures for the operation and maintenance of street sweepers, frequency of sweeping, disposal of debris, and recordkeeping to prevent pollution from entering the stormwater sewer systems.

Equipment Inventory:

The following is a list of street sweeping equipment:

Equipment Number	Make	Description	Sweeper Speed (or other notes)
17	Elgin S9076S Pelican	Road Sweeper	10-15 mph
16	Trackless MT Series 7	Sidewalk Sweeper	5-10 mph

Operations

1. Operate all sweepers and equipment according to the manufacturer's recommended settings, standards, and procedures.

2. While sweeping, drive between the optimal sweeping speed limit, as recorded in the equipment list above.

3. Sweeping will not take place during any winter weather event or a heavy/consistent rainfall event.

4. If spills occur or illegal discharges are seen, report to Kris Lauzon, DPW Director. Phone: 508-892-7021.

Maintenance

1. Sweepers will be checked for leaks during quarterly maintenance. Visual/circle checks are completed daily. Immediately contain and properly clean up any spills.

2. Regular preventative maintenance to prolong equipment use (such as greasing moving parts and minor adjustments) occurs four times per year.

3. Parts are replaced as needed. Brushes are replaced based on the manufacturer's recommendations and a measuring device provided by the brush manufacturer.

4. Equipment is washed at the wash bay located at the Highway Department Garage to trap grease, oils and sediment.

5. The left-over debris is scraped out from the hopper after every use of the equipment.

Schedule

1. Street sweeping will primarily take place between the months of March and November.

2. All streets with curbing and/or catch basins shall be swept a minimum of twice per year: once in the spring (following winter activities such as sanding) and once in the fall. Streets are swept according to the street list and schedule located at the Highway Department Garage.

3. Priority roads and parking lots are identified on the basis of pollutant load reduction potential, based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired or TMDL waters or other relevant factors. These roads and parking lots are listed below.

Priority Road	**Frequency of Sweeping**
Paxton Street	Minimum of twice annually
Route 56	Minimum of twice annually
Marshall Street	Minimum of twice annually
Winslow Avenue	Minimum of twice annually
Stafford Street	Minimum of twice annually
Pleasant Street	Minimum of twice annually
Parking Lots	**Frequency of Sweeping**
All schools	Minimum of twice annually
Town Hall	Minimum of twice annually
Fire Department	Minimum of twice annually
Police Department	Minimum of twice annually
Senior Center	Minimum of twice annually

- *The list of priority roads and parking lots will be reassessed annually.*

4. The sweeping schedule is assessed annually and updated as necessary.

5. A map of town roads and parking lots is located at the Highway Department Garage.

6. Events/activities that require special sweeping are the three annual road races that occur in Town, Memorial Day Parade, Little League Parade.

Storage and Disposal

1. Temporary storage of solid sweeping debris is on an impervious surface at the landfill composting site located on Manville Street.

2. Solid sweeping debris from the landfill composting site located on Manville Street will be reused as backfill material following the MassDEP Reuse and Disposal of Street Sweepings Policy.

Training

1. Employees are trained annually on this procedure and the proper operation of equipment. Employees are also trained on stormwater pollution prevention, spill and response, and illicit discharge detection and elimination procedures.

Record Keeping

1. Records are kept at the Highway Department Garage.
2. Records associated with street sweeping are recorded daily following street sweeping activities.
3. The number of curb miles swept is calculated bi-annually.
4. A list of employees implementing the SOPs and the completion of their training(s) can be found at the Highway Department Garage.

Revising the SOPs

1. These procedures are reviewed annually and updated as needed.

ATTACHMENT O

WINTER ROAD MAINTENANCE PROGRAM SOP

STANDARD OPERATING PROCEDURE
LEICESTER DEPARTMENT OF PUBLIC WORKS
LEICESTER, MASSACHUSETTS

PROGRAM:
Winter Road Maintenance

ISSUE DATE:
6-27-2019

REVISION DATE:
5-10-2023

APPROVED BY:

Kris Lauzon_____
DPW Director

Personnel

The following personnel are responsible for snow and ice removal. Employees performing the procedures in this SOP shall attend yearly stormwater pollution prevention training.

TABLE 1

Name	Responsibility
Kris Lauzon	Supervisor of Operations
Brian Knott	Mechanic/Operator/Driver
Robert Provost	Foreman/Heavy Equipment Operation
Derek Keats	Mechanic/Driver
Derek Fenner	Light Equipment/Driver
Michael McCormick	Heavy Equipment Operator/Driver
Eric Bulak	Second Mechanic/Driver
Han	Light Equipment Operator/Driver

Equipment

The municipality owns and maintains ice control and snow removal equipment listed in Table 2. The wash bay/ area is located at: inside garage area.

Plowing
When conditions warrant, plows are installed on the 12 over 19500 GVW larger trucks to move snow from the traveled roadway. Average time to install a plow is approximately 10-15 minutes. 3 smaller trucks are available for plowing of residential streets and clearing public lots.

Sand and Salt Mix Spreaders
When conditions warrant, sand and salt mix spreaders are installed on the 8 larger trucks to spread mix on the traveled roadway. Each spreader is calibrated prior to the deicing season and during service maintenance. Sand and salt mix spreaders are calibrated to dispense 600 pounds of mix per lane mile on main roads and 300 pounds of mix per lane mile on secondary roads.

TABLE 2

Equipment Number	Make and Model	Description	Additional Equipment	Primary Use
1	2016 Ford F350	1 Ton Truck	Plow	Snow Removal

2	2008 Ford F350	1 Ton Truck	Plow	Snow Removal
3	2014 International 700SER	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
4	2002 International 2554	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
5	2008 International 700SER	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
6	2005 International 7400	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
7	1998 International 2554	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
8	2006 Volvo L90E	Loader	Plow	Snow Removal
9	2015 Ford F450	1 Ton Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
10	2019 Mack R42	Dump Truck	Plow and Spreader	Snow Removal and Spreading Mix
15	2017 Ford F550	1 Ton Dump	Plow and Spreader	Snow Removal and Spreading Mix
18	2019 John Deere 544 L	Loader	Plow	Snow Removal
19	2006 Ford F450	1 Ton Truck	Plow and Spreader	Snow Removal and Spreading Mix
20	2019 Ford F-550	Dump Truck	Plow	Snow Removal
22	1986 John Deere DW570AX	Grader	Spreader	Spreading Mix
24	2011 Ford F450	Flatbed Dump	Plow and Spreader	Snow Removal and Spreading Mix

Other Equipment available from other divisions:
1 Ton Pickup Truck – Subcontractor
¾ Ton Pickup Truck – Subcontractor

Materials

The major materials are used in snow and ice control are coarse treated salt and 300 tons of coarse sand. These materials are stockpiled in advance of an event and are immediately available when needed and stocks are replenished between events.

Sand
Sand is used as an abrasive for traction on slick roadways during extreme icing events. Approximately 300 tons are anticipated to be used per year and are ordered from Bond Construction Corp., Spencer, MA prior to each deicing

season. Sand is stored at the Highway Department Garage stock yard. Loading areas and yards are maintained during normal sweeping schedules.

Salt
Salt is used to expedite the melting of snow and ice from the street surface and also to keep the ice from forming a bond to the street surface. Approximately 1875 tons of coarse treated salt are anticipated to be used per year and are ordered from Leed Salt prior to each deicing season. Salt is stored in the covered facility located at: Highway Department Garage. Loading areas and yards are maintained during normal sweeping schedules to prevent salt build-up and run-off.

Procedures

Salt and Sand Mix Application

1. Whenever conditions warrant, salt is applied to the roadway prior to accumulation of snow to prevent compacted snow from bonding to the roadway surface. The Department of Public Works will instruct staff when salt application is appropriate. Salting will not be done when pavement temperatures are above 34-36 degrees F or below 10 degrees F.
2. Prior to salt application, equipment will be checked to ensure proper working order and ensure proper calibration of equipment. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. The standard salt application speed is: 25 mph.
4. Follow the prioritized route or schedule. This schedule is located at: the Highway Department Garage.
5. Before parking any truck or equipment after use, all fluid levels will be checked and filled. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to the Department of Public Works. The Department of Public Works will determine importance and will assign the repairs according to schedule. All residual salt will be washed from equipment at the wash bay or designated wash area.

Snow Plowing

1. As the storm develops and 2-3 inches of snow have accumulated, all of the drivers and available equipment will begin to plow their assigned routes.
2. Prior to plowing operations, equipment will be checked to ensure proper working order. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. Avoid plowing, pushing, blowing or storing excess snow, deicer, or other debris in or near creeks, watercourses or storm drainage systems.
4. Reduce plowing speed in sensitive areas (near creeks, wetlands or other water courses) to prevent snow and deicing materials from entering waterways.
5. The standard plowing speed is: 25 mph.
6. Follow the prioritized route or schedule. This schedule is located at: Highway Department Garage.

7. Before parking any truck or equipment after use, all fluid levels will be checked and filled. Blades or bolts, which need replacing, will be taken care of unless told to do otherwise. Chains that need repairs will be repaired. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to the DPW Director. The DPW Director will determine importance and will assign the repairs according to schedule.

Record Keeping and Documentation

1. Maintain a master schedule of prioritized snow and sanding routes and the miles or roads plowed or sanded at the Highway Department Garage.
2. Keep copies of manufacturer's recommendations for equipment calibration, plowing speed and salt/sand application rates at the Highway Department Garage.
3. Keep records of the amounts of salt and sand applied per season at the Highway Department Garage.
4. Keep a list of all employees trained in the Town's Stormwater Management Plan files.

Salt Alternatives

1. The Department of Public Works is exploring options for pretreating roads with brine to help offset the volume of salt usage.
2. Spreaders were recently upgraded and provide more efficient calibration for distribution of materials.
3. The Department of Public Works is exploring options for more efficient cutting edges for plows to help reduce the volume of salt required after clearing snow and ice from roadways.
4. Alternative salt materials continue to be reviewed for possible use by the Department of Public Works.

ATTACHMENT P

MANAGING GRASS CLIPPINGS AND LEAF LITTER AND USE OF SLOW-RELEASE FERTILIZERS ON PERMITTEE PROPERTY SOP

STANDARD OPERATING PROCEDURE
LEICESTER DEPARTMENT OF PUBLIC WORKS
LEICESTER, MASSACHUSETTS

ISSUE DATE:

6-27-2019

REVISION DATE:

5-10-2023

PROGRAM:
Managing Grass Clippings and Leaf Litter and Use of Slow-Release Fertilizers on Permittee Property

Approved by:

Kris Lauzon_____
DPW Director

Personnel

The following personnel are responsible for municipal parks and open space management. Employees performing the procedures in this SOP shall attend annual stormwater pollution prevention training.

Name	Responsibility
Kris Lauzon	Director/Supervisor
Brian Knott	Mechanic
Rob Provost	Foreman/Heavy Equipment Operator
Derek Fenner	Light Equipment Operator/Lawn Mowing
Eric Bulak	Second Mechanic
Temporary Summer Help	Lawn Mowing

Lawn Mowing

Occurs at the following parks:

- Rochdale Park
- Community Field
- Town Hall
- Library
- Senior Center
- Police Department
- Fire Department
- All Veteran Squares
- Burncoat Park
- Towtaid Park
- Cherry Valley Cemetery
- Elliot Hill Cemetery
- Highway Department Garage

On the following schedule: Weekly for 8 months per year

Responsible Personnel: See Personnel list above.

Standard Operating Procedures:

→ Lawns shall be mowed to a height of 2-2.5".

→ Mowing pattern shall vary to prevent ruts and promote even growth.

→ Grass clippings shall be mulched using high lift mulching blades on mowers.

Other Landscaping

Involves the following *(add as appropriate):*

- Weeding
- Planting/reseeding
- Pruning
- Leaf litter removal
- Roadside mowing mulched in place
- Use of slow-release fertilizers

Occurs at the following parks: All locations listed under 'Lawn Mowing'.

On the following schedule: Evaluated during lawn mowing and completed as needed.

Responsible Personnel: See Personnel list above.

Standard Operating Procedures:

→ Landscaping waste shall be disposed of at the landfill composting site located on Manville Street so as to avoid entering the storm drain system.

→ Weeding shall be done manually where possible to avoid herbicide use. No herbicides are currently used.

→ Leaf litter shall be disposed of at the landfill composting site located on Manville Street so as to avoid entering the storm drain system.

→ Use slow-release fertilizers on permittee property to mitigate the release of nutrients into the environment.

- Fertilizers shall only be applied by properly trained personnel.
- Apply fertilizers per manufacturer's instructions, including time of year, quantity, and ambient weather conditions.
- Calibrate application equipment regularly to allow for proper application and loading rate.
- Do not hose down paved areas after fertilizer application if drainage will enter a storm drain.
- Consider alternatives to chemical fertilizers, such as natural compost and organic fertilizers.

Trash Management

Trash cans and/or dumpsters are located at the following parks:

- Community Field
- Rochdale Park
- Burncoat Park
- Town Common

Emptying and replacing bags/inspecting for leaks shall take place on the following schedule: Weekly

Responsible Personnel: See Personnel list above.

Additional trash cans or other necessary equipment shall be ordered by Kris Lauzon, DPW Director, based on the results of park inspections.

Parks shall be inspected and cleaned for litter on the following schedule: Weekly

Responsible personnel: See Personnel list above.

Pet waste receptacles and/or bags are located at the following parks:

- Rochdale Park
- No pets allowed on Community Field

Additional pet waste receptacles, signage, bags, etc. shall be ordered by Kris Lauzon, DPW Director, based on the results of park inspections.

ATTACHMENT Q

PHASE 1 LAKE PHOSPHORUS CONTROL PLAN

Phase 1 Lake Phosphorus Control Plan
Leicester, Massachusetts

Issued: June 30, 2021
Updated: June 30, 2023

TATA & HOWARD

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

SECTION 1 - BACKGROUND

1.1 General

Tata & Howard, Inc. was retained by the Leicester Department of Public Works (DPW) - Highway Division to assist the Town in meeting the requirements addressed in the General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts (Permit), made effective by the United States Environmental Protection Agency (EPA) on July 1, 2018 and modified on January 6, 2021. The Town of Leicester, Massachusetts is subject to phosphorus reduction requirements as stated in Appendix F, Section A.II. of the Permit, pertaining to lakes and ponds. This section requires that the Town of Leicester develop a Lake Phosphorus Control Plan (LPCP) in three distinct phases. The Town must complete a written Phase 1 Plan of the LPCP with specified components five years after the Permit effective date (June 30, 2023).

SECTION 2 – LEGAL ANALYSIS

2.1 Background

The first phase of the LPCP is the legal analysis, identified as Item 1 as stated in the Permit. The legal analysis requirement states that the permittee must identify existing regulatory mechanisms available to the MS4 such as by-laws and ordinances and discuss any changes to those mechanisms that may be necessary to implement all phases of the LPCP. Potential adjustments include the creation or amendment of financial and regulatory authorities. The permittee shall adopt any regulatory changes by the end of the permit term.

2.2 Applicable Regulatory Mechanisms

The Town of Leicester has multiple regulations and ordinances that pertain to proper stormwater management in the Town. The following such documents were reviewed as part of the legal analysis:

1. Chapter 10 of the General By-Laws for Leicester – Penalty
2. Section 5.2 Zoning By-Laws for Leicester – Site Plan Review
3. Chapter 15 of the General By-Laws for Leicester – Stormwater Bylaw
4. Chapter 16 of the General By-Laws for Leicester – Bylaw Governing Illicit Discharges to the Municipal Storm Drain System

The Town shall confirm that any new amendments, particularly those pertaining to the Town Code sections listed above, do not impact the Town's ability to implement the LPCP.

2.3 Potential Best Management Practices (BMPs)

Appendix F of the Permit states that permittees shall evaluate the effectiveness of the LPCP by tracking changes in phosphorus loads through implementation of structural and non-structural BMPs, as well as any increases from new development. According to the Permit, the Town is required to reduce the phosphorus load in six ponds. The locations and required percent reductions are summarized in Table No. 2-1 below.

Table No. 2-1
Phosphorus Impaired Ponds and Required Percent Reduction

Location	Required Percent Reduction
Cedar Meadow Pond	17%
Dutton Pond	23%
Greenville Pond	14%
Rochdale Pond	8%
Smiths Pond	30%
Southwick Pond	64%

The Permit describes structural and non-structural BMPs, which if implemented will qualify for phosphorus credits (Attachments 2 and 3 to Appendix F of the Permit).

Currently, the Town has several structural BMPs including an oil/water separator at the Leicester Highway Garage, a CULTEC system at Town Hall, an infiltration basin at the Fire Department, and a retention basin at the Leicester Library. There are also drainage swales at the following locations:

- Parker Street
- Paxton Street
- Pine Street
- Washburn Street
- Whittemore Street

The Town utilizes several non-structural BMPs as part of the Lake Phosphorus Control Plan. These include:

- An enhanced street sweeping program,
- Cleaning catch basins,
- An organic waste and leaf litter collection program,
- Use of phosphorus-free fertilizers on Town-owned land.

SECTION 3 – FUNDING SOURCE ASSESSMENT

3.1 Background

The second element of the LPCP is the funding source assessment, identified as Item 2 in the Permit. The funding source assessment requirement states that the permittee must determine known and anticipated funding mechanisms that will be used to fund LPCP implementation. Typical mechanisms include general funding, enterprise funding, and stormwater utilities. The permittee must also describe the steps it will take to implement its funding plan.

3.2 Funding Mechanisms

The Town of Leicester intends to fund its stormwater management activities through planning and budgeting using general funding. The Town intends to use current practices to fund LPCP implementation and anticipates that existing revenue sources can provide necessary future funding. If additional funding becomes necessary, the Town will consider the following solutions:

- General Fund
- Grants

SECTION 4 – LPCP BASELINE PHOSPHORUS LOAD and REDUCTION REQUIREMENT

4.1 Scope of LPCP Area

The Permit states under Milestone No. 3 of the LPCP requirements, included in Appendix F of the MS4 General Permit, that the permittee shall indicate the scope (area) in which it plans to implement the LPCP. The LPCP must be implemented in the entire area within its jurisdiction discharging to the impaired waterbodies (the municipal boundary) or only within the urbanized area (MS4 regulated area) portion of the permittee's jurisdiction discharging to the impaired waterbodies. The implementation area selected by the permittee will become known as the "LPCP Area" for that permittee. The implementation area selected will determine the corresponding baseline phosphorus load, stormwater phosphorus load reduction requirement, allowable phosphorus load, and stormwater percent reduction in phosphorus load to determine compliance with future LPCP milestones associated with this Phase and Phases 2 and 3.

Based on the Town of Leicester's Phase I stormwater mapping, the catchment areas of outfalls that drain to the impaired waterbodies shown in Table No. 2-1 exist entirely within the Leicester MS4 regulated area. As a result, the Town of Leicester will implement its LPCP within the MS4 regulated urbanized area portion of the Town's jurisdiction discharging to the impaired waterbodies. The Town expects to meet the MS4 General Permit phosphorus reduction requirements using the available space within the regulated area. Stormwater structural and non-structural BMPs can be installed outside of the Leicester MS4 regulated area, but only the improvements that impact the regulated area will be considered for phosphorus reduction credit. The majority of Town-owned properties, impervious area, and catch basins are also located within the MS4 regulated area.

4.2 Baseline Phosphorus Load and Reduction

The Permit states under Milestone No. 4 of the LPCP requirements that the permittee shall calculate their numerical Allowable Phosphorus Load and Phosphorus Reduction Requirement in mass/year by first estimating their Baseline Phosphorus Load in mass/year. from its LPCP Area. The Baseline Phosphorus Load was calculated using the methodology from Attachment 1 to Appendix F of the MS4 General Permit, which accounts for each land use within a catchment area. Massachusetts Geographic Information Systems (MassGIS) land use data from 2005 was utilized for these calculations. Annual composite phosphorus load export rates (PLERs) were provided in Attachment 1 to Appendix F of the MS4 General Permit and are included in Appendix A of this report. The following equation was utilized to calculate the Baseline Phosphorus Load of each outfall draining to a phosphorus impaired waterbody.

$$\text{Baseline P Load} = (\text{Area}_1 \times \text{PLER}_1) + (\text{Area}_2 \times \text{PLER}_2) + (\text{Area}_3 \times \text{PLER}_3) \ldots$$

The Phosphorus Reduction Requirements were calculated by multiplying the total Baseline Phosphorus Load for each waterbody by the Required Percent Reductions in Table No. 2-1. The Allowable Phosphorus Loads were calculated by subtracting the Phosphorus Reduction Requirement from the Baseline Phosphorus Load. The data tables for each phosphorus impaired waterbody are included in Appendix A. The data is summarized in Table No. 4-1 below.

Table No. 4-1
Baseline Phosphorus Load, Phosphorus Reduction Requirement, and Allowable Phosphorus Load

Waterbody	Baseline Phosphorus Load (lb./yr.)	Phosphorus Reduction Requirement (lb./yr.)	Allowable Phosphorus Load (lb./yr.)
Smiths Pond	10.68	3.20	7.48
Southwick Pond	1.38	0.88	0.50
Cedar Meadow Pond	14.45	2.46	11.99
Dutton Pond	35.30	8.12	27.18
Greenville Pond	14.66	2.05	12.61
Rochdale Pond	37.71	3.02	34.69

The Town must implement a series of structural and non-structural BMPs with the goals of reaching 20% of the phosphorus load reduction requirement for each impaired waterbody within eight years after the effective date of the Permit (June 30, 2026) and 40% of the phosphorus load reduction requirement for each impaired waterbody within ten years after the effective date of the Permit (June 30, 2028). The Town must reach their allowable phosphorus load for each impaired waterbody within fifteen years after the effective date of the Permit (June 30, 2033). Enhanced street sweeping programs (sweeping streets at least twice per year), and annual catch basin cleanings are non-structural BMP programs that will help the Town meet its phosphorous load reduction requirement.

SECTION 5 – NON-STRUCTURAL CONTROL MEASURES

5.1 Current Non-Structural BMPs

The Town of Leicester presently implements enhanced non-structural BMPs, which result in phosphorus reduction credits. The Town conducts an enhanced street sweeping program of its impervious surfaces. The Town sweeps streets with a mechanical broom two times per year. Sweeping is conducted using an Elgin S9076S Pelican Road Sweeper and a Trackless MT Series 7 Sidewalk Sweeper. Roads located within the MS4 regulated area and outfall catchment areas for phosphorus impaired lakes were considered for reduction credit.

The Town of Leicester presently cleans and inspects all catch basins in its stormwater system once per year. Problem catch basins are inspected and cleaned multiple times per year. Outfall catchment areas for inspected basins that drain to phosphorus impaired lakes were considered for reduction credit.

Phosphorus reduction credits were calculated using the BMP Accounting and Tracking Tool (BATT). BATT is a customized spreadsheet-based tool recommended by the EPA that provides accounting, tracking, and reporting for pollutant load reduction. The tool uses equations in Attachment 3 to Appendix F of the MS4 Permit to estimate phosphorus credits.

Approximately 33.0 acres of roads and parking lots are swept by the Town, therefore, the Town receives approximately 0.11 pounds per year (lb/yr) of phosphorus reduction credit annually. Catch basin cleaning can only be considered for credit if the catch basins that drain to phosphorus impaired lakes are cleaned at least twice per year. We recommend that the Town track and confirm that catch basins within these drainage areas are being cleaned multiple times per year. With approximately 59 acres of impervious area draining to applicable catch basins, the Town could receive a maximum phosphorous reduction credit of approximately 2.31 lb/yr. The Town plans to continue implementing its enhanced street sweeping program and has no plans for implementing new non-structural BMPs. The Town is aware that more reduction credit is earned as roads are swept more frequently.

SECTION 6 – STRUCTURAL CONTROL MEASURES

6.1 Existing Structural BMPs

The Town of Leicester owns several existing structural BMPs that could qualify for phosphorus load reduction credit. These BMPs include: the oil/water separator at the Leicester Highway Garage, the CULTEC system at Town Hall, the infiltration basin at the Fire Department, the retention basin at the Leicester Library, and drainage swales on Parker Street, Paxton Street, Pine Street, Washburn Street, and Whittemore Street. The Town is currently working to obtain information on these BMPs, including BMP dimensions, storage volume, and approximate area treated by the BMP, in order to apply for reduction credit. According to the BATT calculation, a retention basin that treats 0.25 acres of impervious area and has dimensions of 50'x50'x5' would achieve approximately 0.40 lb/yr of phosphorus reduction credit. The credit for retention basins increases in direct proportion to the area of impervious surface. An oil/water separator that treats 1.0 acre of impervious area and discharges water to a sand filter or other similar BMP with a surface area of 200 square feet would achieve approximately 0.55 lb/yr of phosphorus reduction credit. The phosphorous reduction credit for an oil/water separator increases as the impervious area and the storage volume of the oil/water separator increases.

The Town can receive credit for privately owned BMPs in the MS4 regulated area if they are properly maintained. It is recommended that the Town review existing as built drawings on record with the Town for additional BMPs located on privately owned land. Reportedly, there is a retention pond at the Walmart located off Main Street on the west side of town. The Town should review the plans for this retention pond so that a credit can be received for this BMP.

6.2 Planned Structural BMPs

The Town plans to install new or retrofit existing BMPs to achieve phosphorus load reduction and comply with phosphorus reduction requirements in Appendix F of the MS4 Permit. Within the next few years, the Leicester DPW - Highway Division intends to install a bioswale at the Leicester High School off its main parking lot, repair/replace a bioswale behind the Leicester Highway Garage property, install a bioswale at the front of the Leicester Senior Center property, and install permeable pavers in front of the Leicester Elementary School. CULTEC/subsurface infiltration systems may also be installed on permittee-owned properties in the future. CULTEC systems will need to be designed by an engineer and constructed by private contractors. Bioswales and rain gardens can be constructed by the Town's DPW – Highway Division.

The Town continues to assess its need for future structural BMPs in conjunction with the present remaining urbanized area phosphorus load reduction amounts required to reach the allowable phosphorus load.

SECTION 7 – OPERATIONS AND MAINTENANCE PROGRAM

7.1 General

The Standard Operating Procedure (SOP) for BMP Operations and Maintenance Procedures for Town-owned BMPs are included in Appendix B. The SOP provides a general summary of inspection procedures with maintenance schedules and inspection forms for eight common constructed BMPs, including:

1. Bioretention Areas and Rain Gardens
2. Constructed Stormwater Wetlands
3. Extended Dry Detention Basins
4. Proprietary Media Filters
5. Sand and Organic Filters
6. Wet Basins
7. Dry Wells
8. Infiltration Basins

The Leicester DPW - Highway Division oversees routine inspection and maintenance of all Town-owned BMPs. Currently, there is no anticipated increase in labor hours required to complete the necessary inspections and maintenance. Owners of private BMPs used for phosphorus load reduction credit will be responsible for maintaining their BMPs and the Town will only receive phosphorous reduction credit if these are properly maintained. Private landowners are not required to inform the Town of their BMPs or maintain their BMPs to the standard of the Town's SOP in Appendix B.

SECTION 8 – IMPLEMENTATION SCHEDULE

8.1 General

Non-structural BMPs currently being implemented by the Town will continue to be implemented annually and no new non-structural BMPs are planned. Table No. 8-1 includes a schedule of proposed structural BMPs to be implemented through Fiscal Year 2026. This schedule is subject to change as other projects may arise due to necessity.

Table No. 8-1
Proposed Structural BMP Implementation Schedule

BMP Type	Location	New Installation or Replacement	Expected Completion Date	Estimated Phosphorus Reduction Credit (lb/yr)
Bioswale	Leicester High School	New Installation	June 30, 2024	0.44
Bioswale	Leicester Highway Garage	Replacement	June 30, 2026	0.86
Bioswale	Leicester Senior Center	New Installation	June 30, 2027	0.29
Permeable Pavers	Leicester Elementary School	New Installation	June 30, 2028	0.02

Table No. 8-2 below provides a priority ranking of potential BMPs the Town is considering. These will be installed as funding becomes available and/or other work is proposed at that site.

Table No. 8-2
Potential Future Structural BMPs to be Implemented

Ranking	BMP Type	Location	New Installation or Replacement	Estimated Phosphorus Reduction Credit (lb/yr)
1	Subsurface Infiltration	Leicester Senior Center	New Installation	0.61
2	Subsurface Infiltration	Leicester Town Hall	New Installation	0.93
3	Subsurface Infiltration	Leicester High School	New Installation	1.17
4	Permeable Pavers	Leicester Highway Garage	New Installation	0.18

SECTION 9 – IMPLEMENTATION COSTS

9.1 General

The work required to implement non-structural BMPs will require no additional funds as this work is currently being implemented and is included in the Highway Division's annual budget. Work performed to maintain existing structural BMPs will not require any additional labor or funding as this work is currently being performed by the Town. Installation of any new rain gardens or bioswales in Town will typically be completed by the DPW-Highway Division. Material costs for construction of a rain garden are approximately $5 per square foot (/sq ft), depending on the complexity of the design and the amount and variety of the landscaping. Additional costs include $4/sq ft for mulching, weeding, soil tests, etc., as annual maintenance. A bioswale, assuming 9-16 feet wide, costs approximately $58 per linear foot to install.

Installation of permeable pavers would likely be completed by a permeable paver company. Permeable paver materials would cost approximately $4/sq ft. Installation on larger projects (2,000+ square feet) would cost $6/sq ft. Installation on smaller projects (1,000-2,000 square feet) would cost approximately $10/sq ft.

CULTEC system or other subsurface infiltration system costs vary greatly depending on site conditions. Typical chamber sizes are 12-18 inches in diameter, with one or two inspection ports per system. Field stone is installed 6-inches above and below the chambers and 12-inches of crushed stone is installed around the perimeter of the system. A CULTEC system would need to be designed by an engineer and constructed by a private contractor.

SECTION 10 – NEXT STEPS

10.1 General

The Permit lists future milestones that must be completed each year for the LPCP. Starting six years after the effective date of the Permit (June 30, 2024), the Town must conduct annual performance evaluations of the effectiveness of the LPCP by tracking the phosphorus reductions achieved through implementation of structural and non-structural BMPs. The Town must also track any phosphorus load increases resulting from development.

The Town of Leicester has a current phosphorus load reduction credit of 0.11 lb/yr from street sweeping. The phosphorus load reduction requirement for each impaired waterbody within eight years after the effective date of the Permit (June 30, 2026) is 20% of the phosphorus load reduction goal. The Town must reduce its phosphorus load for each impaired waterbody to comply with the Permit.

The Town should note that by June 30, 2028, the phosphorous load credit must be 40% of the phosphorus load reduction goal, and that by June 30, 2038, the Town must fully meet its phosphorous load reduction goal.

Appendix A

TATA & HOWARD

Baseline Phosphorus Load Calculations
Smiths Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
64	6	Medium Residential	4	0.49	Forest	2	0.12	N/A	0	0	N/A	0	0	2.20
65	5	Low Residential	1.67	0.3	Medium Residential	1.67	0.49	Forest	1.67	0.12	N/A	0	0	1.52
66	5	Medium Residential	2.5	0.49	Open Space	2.5	0.26	N/A	0	0	N/A	0	0	1.88
71	6	Forest	4.2	0.12	Medium Residential	0.9	0.49	Commercial	0.9	1.13	N/A	0	0	1.96
72	9	Forest	7.2	0.12	Low Residential	1.8	0.3	N/A	0	0	N/A	0	0	1.40
73	11	Forest	8.8	0.12	Low Residential	2.2	0.3	N/A	0	0	N/A	0	0	1.72
													Total	**10.68**
													Percent Reduction	30%
													Reduction Requirement	**3.20**
													Allowable Load	**7.48**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Baseline Phosphorus Load Calculations
Southwick Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
60	1	Forest	0.67	0.12	Low Residential	0.33	0.3	N/A	0	0	N/A	0	0	0.18
61	5	Low Residential	3.35	0.3	Forest	1.65	0.12	N/A	0	0	N/A	0	0	1.20
													Total	**1.38**
													Percent Reduction	64%
													Reduction Requirement	**0.88**
													Allowable Load	**0.50**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Baseline Phosphorus Load Calculations
Cedar Meadow Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
4	1	Low Residential	1	0.3	N/A	0	0	N/A	0	0	N/A	0	0	0.30
5	43	Forest	30.1	0.12	Low Residential	4.3	0.3	Agriculture	4.3	0.45	Open Space	4.3	0.26	7.96
56	5	Forest	4	0.12	Low Residential	1	0.3	N/A	0	0	N/A	0	0	0.78
57	5	Low Residential	4	0.3	Forest	0.75	0.12	Medium Residential	0.25	0.49	N/A	0	0	1.41
58	1	Low Residential	1	0.3	N/A	0	0	N/A	0	0	N/A	0	0	0.30
59	8	Medium Residential	7.2	0.49	Low Residential	0.4	0.3	Forest	0.4	0.12	N/A	0	0	3.70
													Total	**14.45**
													Percent Reduction	17%
													Reduction Requirement	**2.46**
													Allowable Load	**11.99**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Baseline Phosphorus Load Calculations
Dutton Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
74	28	Medium Residential	22.4	0.49	Commercial	4.2	1.13	Forest	1.4	0.12	N/A	0	0	15.89
75	3	Medium Residential	3	0.49	N/A	0	0	N/A	0	0	N/A	0	0	1.47
76	6	Medium Residential	3	0.49	Commercial	3	1.13	N/A	0	0	N/A	0	0	4.86
77	6	Commercial	3.6	1.13	Medium Residential	2.4	0.49	N/A	0	0	N/A	0	0	5.24
78	7	Medium Residential	7	0.49	N/A	0	0	N/A	0	0	N/A	0	0	3.43
79	9	Medium Residential	9	0.49	N/A	0	0	N/A	0	0	N/A	0	0	4.41
													Total	**35.30**
													Percent Reduction	23%
													Reduction Requirement	**8.12**
													Allowable Load	**27.18**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Baseline Phosphorus Load Calculations
Greenville Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
26	21	Forest	8.4	0.12	Medium Residential	6.3	0.49	Agriculture	6.3	0.45	N/A	0	0	6.93
27	16	Agriculture	4.8	0.45	Low Residential	4.8	0.3	Forest	3.2	0.12	Medium Residential	3.2	0.49	5.55
28	6	Forest	3	0.12	Open Space	1.8	0.26	Commercial	1.2	1.13	N/A	0	0	2.18
													Total	**14.66**
													Percent Reduction	14%
													Reduction Requirement	**2.05**
													Allowable Load	**12.61**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Baseline Phosphorus Load Calculations
Rochdale Pond
Leicester, Massachusetts

Outfall ID	Area (acres)	Land Use 1 (2005 data)	Area 1 (acres)	PLER 1	Land Use 2	Area 2 (acres)	PLER 2	Land Use 3	Area 3 (acres)	PLER 3	Land Use 4	Area 4 (acres)	PLER 4	Baseline Phosphorus (lb/yr)
30	1	Forest	1	0.12	N/A	0	0	N/A	0	0	N/A	0	0	0.12
31	20	Forest	12	0.12	Medium Residential	4	0.49	Open Space	2	0.26	Commercial	2	1.13	6.18
32	32	Agriculture	16	0.45	Forest	11.2	0.12	Low Residential	4.8	0.3	N/A	0	0	9.98
33	8	Low Residential	8	0.3	N/A	0	0	N/A	0	0	N/A	0	0	2.40
34	5	Low Residential	3.35	0.3	Forest	1.65	0.12	N/A	0	0	N/A	0	0	1.20
35	1	Commercial	0.5	1.13	Low Residential	0.5	0.3	N/A	0	0	N/A	0	0	0.72
36	1	Commercial	0.34	1.13	Medium Residential	0.33	0.49	Low Residential	0.33	0.3	N/A	0	0	0.64
37	2	Commercial	1.6	1.13	Medium Residential	0.2	0.49	Low Residential	0.2	0.3	N/A	0	0	1.97
41	4	Commercial	2	1.13	Medium Residential	2	0.49	N/A	0	0	N/A	0	0	3.24
43	1	Commercial	1	1.13	N/A	0	0	N/A	0	0	N/A	0	0	1.13
45	24	Low Residential	12	0.3	Agriculture	7.2	0.45	Forest	4.8	0.12	Commercial	2.4	1.13	10.13
													Total	**37.71**
													Percent Reduction	8%
													Reduction Requirement	**3.02**
													Allowable Load	**34.69**

Land Cover	Composite PLERs (lb/acre/yr)
Commercial	1.13
Industrial	1.27
High Residential	1.04
Medium Residential	0.49
Low Residential	0.3
Freeway	0.73
Open Space	0.26
Agriculture	0.45
Forest	0.12

Appendix B

TATA & HOWARD

SOP: INSPECTING CONSTRUCTED BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Constructed BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body.

This Standard Operating Procedure provides a general summary of inspection procedures for eight common constructed BMPs, including:

1. Bioretention Areas and Rain Gardens
2. Constructed Stormwater Wetlands
3. Extended Dry Detention Basins
4. Proprietary Media Filters
5. Sand and Organic Filters
6. Wet Basins
7. Dry Wells
8. Infiltration Basins

This SOP is based on the Massachusetts Stormwater Handbook and is not intended to replace that document. This SOP is also not intended to replace the Stormwater BMP Operation and Maintenance (O&M) Plan required by the Massachusetts Wetlands Protection Act, Order of Conditions.

Bioretention Areas and Rain Gardens

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter; and
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting as a filter.

Inspection & Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule: Bioretention Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent required water quality treatment and the recharge of groundwater.

Constructed Stormwater Wetlands

Constructed stormwater wetlands maximize the pollutant removal from stormwater through the use of wetland vegetation uptake, retention and settling. Constructed storm water wetlands must be used in conjunction with other BMPs, such as sediment forebays.

Inspection & Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule, Constructed Stormwater Wetlands: Years 0-3

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Record and Map:	Year round	Annually
Types and distribution of dominant wetland plants	Year round	Bi-Annually
Presence and distribution of planted wetland species	Spring	Annually
Presence and distribution of invasive species	Fall and Spring	Bi-Annually
Indications other species are replacing planted wetland species	Spring	Annually
Percent of standing water that is not vegetated	Spring or Fall	Annually

Replace all media and vegetation	Late Spring/Early Summer	As Needed
Stability of original depth zones and micro-topographic features		
Accumulation of sediment in the forebay and micropool and survival rate of plants		

Maintenance Schedule, Constructed Stormwater Wetlands: Years 4-Lifetime

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Clean forebays	Year round	Annually
Clean sediment in basin/wetland system	Year round	Once every 10 years
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Never store snow within a constructed stormwater wetland. This would prevent required water quality treatment and the recharge of groundwater.

Extended Dry Detention Basins

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and to reduce local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micropool or shallow marsh.

Inspection & Maintenance

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include: erosion within the basin and banks, tree growth on the embankment, damage to the emergency spillway and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.

Maintenance Schedule: Extended Dry Detention Basins

Activity	Time of Year	Frequency
Inspect basins	Spring and Fall	Bi-Annually, and during and after major storms
Examine outlet structure for clogging or high outflow release velocities	Spring and Fall	Bi-Annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually
Remove trash and debris	Spring	Bi-Annually
Remove sediment from basin	Year round	At least once every 5 years

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals or nutrients, which are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite. Two types of Media Filters are manufactured: Dry Media Filters, which are designed to dewater within 72 hours; and Wet Media Filters, which maintain a permanent pool of water as part of the treatment system.

Inspection & Maintenance

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry Media Filters are required to dewater in 72 hours, thus preventing mosquito and other insect breeding. Proper maintenance is essential to prevent clogging. Wet Media Filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Maintenance Schedule: Proprietary Media Filters

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer's schedule	Bi-Annually (minimum)
Remove trash and debris	N/A	Each Inspection
Examine to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer's schedule	Per manufacturer's schedule

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

Inspection & Maintenance

If properly maintained, sand and organic filters have a long design life. Maintenance requirements include raking the sand and removing sediment, trash and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that replacement of the sand should be completed.

Maintenance Schedule: Proprietary Media Filters

Activity	Frequency
Inspect filters and remove debris	After every major storm for the first 3 months after construction completion. Every 6 months thereafter.

Wet Basins

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events, and if properly designed and maintained wet basins can add fire protection, wildlife habitat and aesthetic values to a property.

Inspection & Maintenance

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Maintenance Schedule: Wet Basins

Activity	Time of Year	Frequency
Inspect wet basins	Spring and/or Fall	Annually (Minimum)

Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually (Minimum)
Remove sediment, trash and debris	Spring through Fall	Bi-Annually (Minimum)
Remove sediment from basin	Year round	As required, but at least once every 10 years

Dry Wells

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Inspection & Maintenance

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24 and 48 hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop in water level (inches) by the time elapsed (hours).

Maintenance Schedule: Dry Wells

Activity	Frequency
Inspect dry wells	After every major storm for the first 3 months after construction completion. Annually thereafter.

Infiltration Basins

Infiltration basins are designed to contain stormwater quantity and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site, however high failure rates often occur due to improper siting, inadequate pretreatment, poor design and lack of maintenance.

Inspection & Maintenance

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction or low spots. Inspections should include signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, riprap condition, sediment accumulation and turf health.

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-Annually
Inspection	Spring and Fall	After every major storm for the first 3 months after construction completion. Bi-annually thereafter and discharges through the high outlet orifice.
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-Annually
Remove trash, debris and organic matter	Spring and Fall	Bi-Annually

INSPECTION OF BIORETENTION AREAS / RAIN GARDENS

General Information

BMP Description	Bioretention Area / Rain Garden		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for soil erosion and repair	Monthly	Yes ☐ No ☐	
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Remove trash	Monthly	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Years 0-3 of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

In addition, the following information should be recorded and mapped at least once per year:

- Types and distribution of dominant wetland plants
- Presence and distribution of planted wetland species
- Presence and distribution of invasive species
- Indications other species are replacing planted wetland species
- Percent of standing water that is not vegetated
- Replace all media and vegetation
- Stability of original depth zones and micro-topographic features
- Accumulation of sediment in the forebay and micropool and survival rate of plants

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Year 4 - Lifetime of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Clean forebays	Annually	Yes ☐ No ☐	
Clean sediment in basin/wetland system	Once every 10 years	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

INSPECTION OF EXTENDED DRY DETENTION BASINS

Inspections should be conducted bi-annually, and during and after major storm events.

General Information

BMP Description	Extended Dry Detention Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Examine outlet structure for clogging or high outflow release velocities	Bi-Annually	Yes ☐ No ☐	
Mow upper stage, side slopes, embankment and emergency spillway	Bi-Annually	Yes ☐ No ☐	
Remove trash and debris	Bi-Annually	Yes ☐ No ☐	
Remove sediment from basin	At least once every 5 years	Yes ☐ No ☐	

INSPECTION OF PROPRIETARY MEDIA FILTERS

General Information

BMP Description	Media Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for standing water, trash, sediment and clogging	Bi-Annually (minimum)	Yes ☐ No ☐	
Remove trash and debris	Each Inspection	Yes ☐ No ☐	
Examine to determine if system drains in 72 hours	Annually	Yes ☐ No ☐	
Inspect filtering media for clogging	Per manufacturer's schedule	Yes ☐ No ☐	

INSPECTION OF SAND AND ORGANIC FILTERS

Inspections should be conducted after every major storm event for the first 3 months following completion, then every 6 months thereafter.

General Information

BMP Description	Sand/Organic Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Remove sediment, trash, and debris	Every 6 months	Yes ☐ No ☐	
Rake sand	Every 6 months	Yes ☐ No ☐	

INSPECTION OF DRY WELLS

Regular inspections should be conducted after every major storm event for the first 3 months following completion, then annually thereafter.

General Information

BMP Description	Dry Well		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of dry well at time of inspection			

After a major storm event, the water depth in the observation well should be measured at 24 and 48 hour intervals and the clearance rate calculated.

INSPECTION OF WET BASINS

Inspections should be conducted after every major storm event for the first 3 months following completion, then biannually thereafter.

General Information

BMP Description	Wet Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of wet basin at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Preventative maintenance	Bi-Annually	Yes ☐ No ☐	
Mow/rake buffer area, side slopes and basin bottom	Bi-Annually	Yes ☐ No ☐	
Remove trash, debris and organic matter	Bi-Annually	Yes ☐ No ☐	
Inspect and clean pretreatment devices	Every other month and after every major storm event	Yes ☐ No ☐	

INSPECTION OF OTHER BMP

General Information

BMP Description			
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	

ATTACHMENT R

STREET DESIGN AND PARKING LOT GUIDELINES REPORT

STREET DESIGN AND PARKING LOT GUIDELINES REPORT

June 2022

Leicester, Massachusetts

TATA & HOWARD

TATA & HOWARD

June 28, 2022

Mr. Dennis Griffin, Highway Superintendent
Leicester Highway Department
59 Peter Salem Road
Leicester, MA 01524

Subject: Street Design and Parking Lot Guidelines Report
2016 Massachusetts Separate Storm Sewer System (MS4) General Permit
Leicester, Massachusetts
T&H No. 7014

Dear Mr. Griffin:

Tata & Howard is pleased to provide an electronic copy of the Street Design and Parking Lot Guidelines Report for your review and comment. In accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit requirements, the report assesses existing Town bylaws that pertain to street and parking lot design and provides recommendations for new policies and design procedures.

During the course of this project, Mr. Justin Waters served as Assistant Project Engineer, Mr. Steven Daunais, P.E. served as Project Manager, Mr. Jon Gregory, P.E. served as Project Officer, and Ms. Karen Gracey, P.E. provided technical reviews.

We trust that the enclosed information meets your approval. Should you have any questions regarding this project, please do not hesitate to call.

Sincerely,

TATA & HOWARD, INC.

Jon W. Gregory, P.E.
Vice President

Enclosure

Tata & Howard
67 Forest Street | Marlborough, MA 01752
T: 508-303-9400 | F: 508-449-9400
www.tataandhoward.com

Other Offices
MA | NH | CT | AZ

TABLE OF CONTENTS

LIST OF APPENDICES

SECTION 1 - INTRODUCTION

1.1 General

Tata & Howard, Inc. was retained by the Town of Leicester Highway Department to prepare a Street Design and Parking Lot Guidelines Report in accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit set forth by the United States Environmental Protection Agency (USEPA). Section 2.3.6.b of the General Permit requires permittees to evaluate and report on the Town's street design and parking requirements that affect the creation of impervious cover within four years of the effective date of the Permit (June 30, 2022). This report assesses the Town's current street design and parking lot guidelines to determine if changes can be made to support low impact design options. Recommendations from this report and a schedule for changing relevant Town standards and policies must be incorporated into the Town's Stormwater Management Program (SWMP), with status updates included in the annual reports.

Roads and parking lots are a significant component of the Town's impervious area. Reducing the amount of this area helps reduce stormwater runoff and improve water quality in the local watersheds. Many of the Town's standards were written decades ago and have not been updated for many years. As part of this report, standards regulating roadway pavement widths, the number of parking spaces required, and parking space sizes have been reviewed. In addition, the use of low impact design options can reduce the volume of stormwater entering the drainage system and decrease pollutant loads entering local surface waters and wetlands.

SECTION 2 – CURRENT STREET DESIGN AND PARKING LOT GUIDELINES

2.1 Street Design

Section V, Design Standards, of the Town of Leicester Subdivision Rules and Regulations regulates street design for new subdivisions. The Town does not have a street design standard specific to the Town, but according to the Leicester Complete Streets Policy, published on February 13, 2017, the latest design guidance, standards, and recommendations available are to be used and streets shall be designed to maintain the character of the town. Street designs for subdivisions must be 28 feet wide and include curbing on both sides of the street. A stormwater drainage system consisting of concrete piping, catch basins, and manholes must be installed. Designs must be approved by the Town Planning Board. Permanent pavement for streets shall include Type I bituminous concrete placed in binder and finish courses matching the thicknesses of existing pavement courses. New subdivision roads shall be Type I bituminous concrete placed in two courses. The binder course shall be 2-inch thickness and the finish course shall be 1-inch thickness.

The Town's current stormwater bylaw, adopted in May 2008, encourages the use of "low impact development practices" such as reducing the amount of impervious area and preserving existing vegetation. The bylaw applies to all new development or other activities that will increase the amount of stormwater runoff.

Dead-end streets must be less than 500 feet in length unless otherwise approved by the Planning Board due to local conditions or topography. The turnaround diameter shall be at least 100 feet and meet the Fire Department's minimum equipment access requirements.

2.2 Sidewalks

In accordance with Section V, Design Standards, of the Town of Leicester Subdivision Rules and Regulations, sidewalks must be installed on both sides of the street for new subdivisions. The sidewalks must be at least five feet in width and consist of Type I bituminous concrete.

2.3 Parking Lots

The Leicester Planning Board Parking Regulations, adopted on July 9, 2013, detail the parking regulations for the Town. Sections 5.5 through 5.8 detail parking regulations for the Highway Business-Industrial District, the Greenville Village Neighborhood Business District, senior village developments, and the Business District and Central Business District. Off-street parking is required at the time of construction or enlargement, change of use, or conversion of any building. Section III of the parking regulations details the parking requirements for each type of building in Town. In general, parking spaces must be 10 feet wide by 20 feet long. The width of driving aisles in parking lots must be 24 feet for lots with 90 degree stalls and 16 feet for lots with stalls angled 60 degrees or less. All driveways for non-residential use shall be at least 20 feet wide if there are separate entrance

and exits and 25 feet wide where there is a common entrance/exit. Each zoning district has different landscaping requirements for parking lots. In general, landscaped islands are required with the size and requirements varying by zoning district.

SECTION 3 – RECOMMENDATIONS

3.1 Policies and Design Standards

The Town's stormwater bylaw encourages the use of "low impact development practices". We recommend that the Town define what practices they are encouraging and mandate them through the stormwater bylaw.

We recommend using the guidelines outlined below, based on the attached USEPA's technical support document from April 2011 entitled "Assessing Street and Parking Design Standards to Reduce Excess Impervious Cover in New Hampshire and Massachusetts", utilized by Massachusetts and New Hampshire communities to help evaluate street and parking lot standards. Please refer to Appendix A.

Currently, the Town requires the turn around diameter on a dead end street to be at least 100 feet. It is recommended that the Town require a vegetated island with a radius of 20 feet in the middle of the cul-de-sac to reduce the amount of impervious surface. Based on the USEPA document it is recommended the driving lane should be 20 feet wide to provide space for emergency vehicles. These two requirements will provide a total turning radius of 40 feet, a decrease of 10 feet from the current minimum.

The minimum street width for the Town is 28 feet. It is recommended that streets in the Town be separated into two categories: residential and non-residential/mixed use. Street widths for residential roadways should be set based on the number of homes served, anticipated vehicle usage, and on street parking requirements. The Town's standard should be revised to a minimum pavement width of 18 feet and a maximum pavement width of 22 feet for new developments, in accordance with USEPA recommendations.

Non-residential and mixed use roadways pavement widths should be set based on traffic volumes, types of vehicles, parking and pedestrian requirements, which may require a more complex analysis.

Currently, the Town requires the installation of concrete sidewalks five feet in width on both sides of the street for any new subdivision. It is recommended that the Town consider site conditions and the subject neighborhood characteristics before determining if sidewalks will be required on both sides of the roadway in an effort to reduce the amount of impervious surface created. In addition, the Town should allow sidewalks to be paved with pervious material, if appropriate, for the location.

The USEPA recommends that parking space dimensions be defined to avoid excessively wide stalls and that standard parking space dimensions be as small as nine feet wide by 18 feet long, or 162 square feet. The standard for parking spaces of larger vehicles is nine feet wide by 20 feet long, or 180 square feet. It is recommended that the Town revise the parking requirements from 10 feet by 20 feet (200 square foot) spaces, to a standard parking space dimension of nine feet by 18 feet for new or modified parking areas to reduce the amount of impervious surface at any location.

Permeable pavers should be considered as an alternative for replacing existing sidewalks when appropriate to reduce stormwater runoff. Permeable pavers are any type of paver installed on sand and gravel that allows runoff to flow through the gaps between the individual pavers into an infiltration area below. The Town should determine at its discretion where permeable paver installation is allowed or recommended and include a standard detail for permeable pavers in the Standard Construction Details in the Town Code.

3.2 Proposed Schedule

Recommended design standards discussed in Section 3.1 should be approved by the Town of Leicester Planning Board and other applicable Town Boards for implementation into the Town of Leicester Subdivision Rules and Regulations, Zoning Bylaws for Leicester, Leicester Planning Board Parking Regulations, and the Leicester General by-Laws. It is recommended that the Town incorporate these recommendations no later than June 30, 2024, in accordance with the MS4 General Permit. Updates to street design and parking lot guidelines shall be included in each MS4 General Permit Annual Report.

Appendix A

TATA & HOWARD

Assessing Street and Parking Design Standards to Reduce Excess Impervious Cover in New Hampshire and Massachusetts

Small MS4 Permit Technical Support Document, April 2011

Draft NPDES Permits require evaluation of local street and parking lot design standards

The draft NPDES Small MS4 permits for New Hampshire and North Coastal Massachusetts require permittees to evaluate and report on local street design and parking requirements that affect the **creation of impervious cover**. This assessment will be used to determine if design standards need to be revised to support the application of Low Impact Development (LID) techniques. Recommendations and a schedule for changing any relevant standards and policies need to be incorporated into the Stormwater Management Program (SWMP), with status updated in annual reports. This requirement is detailed in the draft permit Section 2.3.6.6 for New Hampshire and Section 2.4.6.7 for North Coastal Massachusetts, respectively.

Why evaluate current standards?

Roads and parking lots are a significant component of the urban landscape, and often constitute the majority of impervious area in a given the watershed. In many communities, the current standards guiding road design and parking lot layout were established decades ago with little consideration of potential impacts to pedestrians or the local environment. Consequently, outdated zoning by-laws, subdivision regulations, and road standards may not only promote excessive impervious cover (Figure 1), but they may effectively prohibit the application of many LID practices (Figure 2). Even where variances and special permitting procedures allow for design alternatives, these additional steps can be time-consuming and unpredictable; and therefore, unattractive to developers.

Figure 1. Unnecessarily wide cul-de-sacs and residential roads generate additional stormwater runoff, create un-friendly pedestrian environments, and increase overall construction costs.

Figure 2. (A) Example of narrow residential road with a bio-swale, utilities, and single-sided sidewalk in Duxbury, MA. (B) Use of pervious pavers and bioretention practices in the landscape islands in spillover parking lot in Wilmington, MA.

What design factors lead to excess imperviousness?

At a minimum, the following street and parking standards should be evaluated to determine if they are contributing to the unnecessary generation of surplus impervious cover from new construction or redevelopment projects:

Local street design:

- **Residential roadway pavement widths**—pavement widths should be set based on the number of homes served, anticipated vehicle usage, and on-street parking requirements. Establish minimum and maximum standards to meet these needs while avoiding excessively wide streets.
- **Non-residential and mixed use roadway pavement widths**—pavement widths should be set based on traffic volumes, types of vehicles, parking, and pedestrian requirements, which often require

more complex analysis. Provide flexibility to accommodate this analysis, particularly in mixed use/and or Traditional Neighborhood Districts.

- **Road right-of-way (ROW) widths and usage**—large ROW's can increase the overall area disturbed during development. Allow for flexibility in widths, where appropriate, and for the placement of utilities below the paved portion of the roadway to allow for the use of roadside swales or other stormwater practices.
- **Building frontage and setback requirements**—residential road length is often determined by the required frontage distance for individual lots.
- **Turnarounds for dead end streets**—road layouts that reduce the number of dead end streets are preferable. Provide options for turnaround designs (cul-de-sacs, loop-de-lanes, T-shaped, etc). To minimize impervious cover, maximum paved diameters for cul-de-sacs should be based on the required turning radius for emergency response vehicles and should also allow for landscaped islands (Figure 3).
- **Sidewalks**—consider pedestrian preferences when designing sidewalks, rather than the blanket application of a requirement for the placement of sidewalks on both sides of the roadway. Allow for sidewalks to be paved with pervious materials.
- **Driveways**—driveway dimensions can be minimized through reduced minimum widths and front yard setbacks. Standards should allow for pervious driveway materials, allow "two-track" designs (i.e., paved tire track with pervious median), and prohibit direct rooftop discharge on to impervious driveway surfaces. Shared driveways should be allowed and sample agreements should be provided by the municipality.

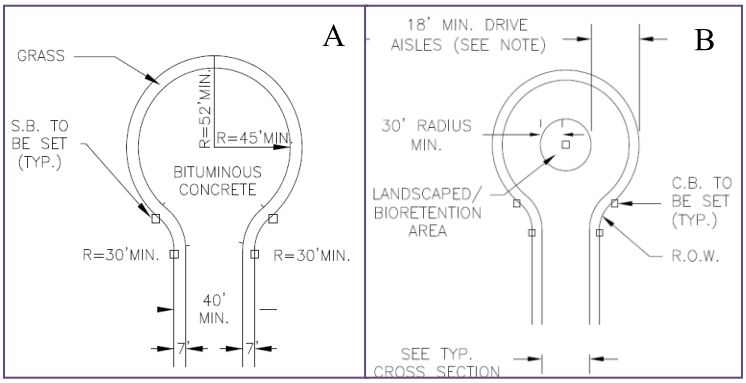


Figure 3. (A) Existing design details may require updating (B) to accompany revised street and parking requirements, such as in this revised cul-de-sac detail for Attleboro, MA that incorporates a reduced paved radius and a central bioretention/landscaped island.

Parking lot standards:

- **Parking ratios**—the number of required parking spaces is often based on parking demand studies that are not locally applicable, expressed only as a minimum standard for the worst case scenario, and often result in an oversupply of parking. In these cases, communities should be comfortable establishing maximum parking requirements at current minimum standards and new minimums set ~ 1/3 below these revised maximums (see Table 1).
- **Off-street and on-site parking**—in urban and village centers, consider dramatic changes to the typical parking demand requirements to provide flexibility in design. Consider revising off-site distance limits, as well as the amount of public parking allowed to help satisfy private parking requirements.
- **Credits for shared parking and mass transit**—allow for reductions in parking requirements for shared parking arrangements, parking garages, and in areas where mass transit is accessible. Provide model shared parking contracts.
- **Stall and driving aisle dimensions**—avoid requiring excessively wide stalls and driving aisles. Standard stall dimensions can be as small as 9 ft x 18 ft. Driving aisle widths should be based on orientation of parking stalls and whether traffic flow is single or two-way.
- **Pervious parking**—allow the use of structural permeable pavement options where appropriate; allow spillover parking (or parking above minimum requirement) to be pervious.
- **Landscape requirements**—landscape islands and borders are often required for traffic flow and screening purposes. The total landscaped area is often a calculated based on the number of parking spaces or amount of total impervious cover. Vegetated stormwater practices should be incorporated into these features; the amount of required landscaping should be sufficient to meet tree canopy/shade requirements and adequate for long-term tree survival.

A more detailed discussion of preferred parking lot design, planning options, and a model parking by-law can be found online at the **MA Smart Growth/Smart Energy Toolkit** www.mass.gov/envir/smart_growth_toolkit/.

Other important site design requirements

In addition, a number of other site design factors can have a significant impact on the amount of impervious cover created at a site and whether it is connected or disconnected to the storm drain system. Examples include:

- Allowing open space residential development (i.e., conservation design or low impact development) that provides for reduced setbacks and smaller lot sizes as "by-right" without additional permitting;
- Restricting the percentages of impervious and turf cover on individual lots;
- Allowing for open-section (i.e., curb-less) roads through flexibility in curbing requirements;
- Allowing for temporary ponding of stormwater on residential lots;
- Requiring the routing of rooftop runoff to pervious areas, dry wells, or other devices to promote infiltration and/or stormwater reuse;
- Requiring integration of landscaping and stormwater management requirements.

Table 1. Example of suggested parking requirements per 1,000 sq ft of Gross Floor Space (excerpt from the Smart Parking By-law, MA Smart Growth/Smart Energy Toolkit)

Land Use	Maximum	Minimum
Bank	3	2
Large Scale Retail	4	2
General Office Building	4	2
Medical Building	8	2
Nursing Home	3	2
Restaurants	10	6
Shopping Centers	4	3
Bed and Breakfast	1.2 spaces/guest room or suite	1 space/guest room or suite
Personal Services	3	2
Churches and Places of Worship	1 space/3 seats in service portion of the building	1 sp/5 seats in service portion of building
Museums and Libraries	2	1
Public and Private Educational Institutions	1 space/3 seats in the classroom	1 sp/5 seats in classroom

Challenges to updating design standards

Consider including representatives of local planning boards, water suppliers and other utilities, transportation, public works, emergency response, school superintendents; and the development community in the review process to help address some of the following concerns related to street design and parking standards:

- Safety concerns (i.e., fire, school bus) for setbacks, turnarounds, permeable pavers, and road widths;
- Utility installation and maintenance in public ROWs;
- Snow removal requirements for parking lots, landscape islands, and turnarounds; and
- Retail parking demands set by financial institutions for minimum parking requirements.

How do I report on our assessment of local regulations?

Within two years of the effective permit, permittees must have developed a report on the assessing current street design, parking lot guidelines, and other local requirements that affect the creation of impervious cover. *This report should clearly indicate which design* ***standards promote excess impervious cover and any*** *recommended changes.*

There are a number of checklists, self-audits, and model bylaws available to assist communities in evaluating street and parking standards including the ***Codes and Ordinance Worksheet*** from the Center for Watershed Protection (www.cwp.org) and the ***LID Local Codes Checklist*** from the Massachusetts Planning Commission (www.mapc.org/LID). **Table 2** provides a simplified checklist that can be used to help satisfy SWMP and annual reporting requirements. A narrative describing any recommended (or completed) changes must also be included.

Within three years, permittees must also have developed a report assessing regulatory barriers to implementing structural LID practices (e.g., green roofs, infiltration practices, and water harvesting devices).
It may be advantageous to conduct and report on both assessments concurrently.

Other References

CWP. 1998. Better Site Design: A handbook for changing development rules in your community www.cwp.org

EPA. 2006. Parking Spaces/Community Places: Finding the balance with smart growth solutions. www.epa.gov/smartgrowth/pdf/EPAParkingSpaces06.pdf

American Planning Association, Massachusetts and Home Builders Association of Massachusetts. October 2010. Sustainable Neighborhood Road Design: A guidebook for Massachusetts cities and towns. www.apa-ma.org/resources/publications/nrb-guidebook

New Hampshire Department of Environmental Services. 2008. Innovative Land Use Planning Techniques: A handbook for sustainable development. http://des.nh.gov/organization/divisions/water/wmb/repp/documents/ilupt_complete_handbook.pdf

Rhode Island Department of Environmental Management. Rhode Island Community LID Site Planning and Design Guidance Document. 2011.

Maryland Governor's Office of Smart Growth. Driving Urban Environments: Smart growth parking best practices.

Table 2. Checklist for evaluating street and parking standards (adapted from CWP *Codes and Ordinances Worksheet* and MAPC *LID Checklist**)

STREETS

1.Street width	**1.1. Is the minimum pavement width for low traffic residential roads (<500 average daily trips) between 18-22 ft?**						*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	1.2. Can parking lanes serve as traffic lanes in higher density areas?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	1.3. Are narrower pavement widths allowed on road sections were there are no houses, buildings, intersections, or on-street parking spaces?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	1.4. Are reductions in frontage distances allowable where appropriate (i.e., open space developments, around cul-de-sacs, and along outside sideline of curved streets) to minimize street length?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	1.5. Can permeable paving be used for residential roads, shoulders, and parking lanes?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
2. Right-of-way (ROW)	**2.1. Are minimum ROW widths less than 45 ft for a residential street?**						*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	2.2. Can utilities be placed below the paved section of the ROW?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
3. Dead-end streets and turnarounds	**3.1. Are landscaped/bioretention islands required in the center of cul-de-sacs?**						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	3.2. Is the minimum required radius for cul-de-sacs less than 35 ft?						*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	3.3. Are alternatives to cul-de-sacs such as "hammerheads" allowed for permanent turnarounds?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	3.4. Are alternative road layouts such as one-way loops encouraged to eliminate dead end streets?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised

4. Sidewalks	**4.1. Are sidewalks always required on both sides of residential streets?**						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	4.2. Is permeable paving allowed for sidewalks?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	4.3. Are alternative pedestrian pathway layouts allowed, rather than placement in road ROW?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
5. Driveways	**5.1. Are reductions in setback distances allowable where appropriate to minimize driveway lengths?**						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	5.2. Is the minimum driveway width 9 feet or less (single lane) or 18 feet (two lane)?					*ft*	*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	5.3. Are shared driveways allowable?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	5.4. Are alternative materials and designs (i.e., porous pavers, two-track design) allowed?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised

PARKING

6. Parking ratios	**6.1. Are parking ratios expressed as both minimum and maximums?**						
	☐ Yes	☐ No, minimum only	☐ No maximum only	☐ No, Expressed as medians	*Action*:	☐ Leave as is	☐ To be revised
	6.2. Are the minimum required # of parking spaces less than:				*# of spaces*		
	3 spaces per1000 sq ft for professional office building?	☐ Yes	☐ No	☐ No Standard		*Action*:	☐ Leave as is ☐ To be revised
	4.5 spaces per sq ft for shopping centers?	☐ Yes	☐ No	☐ No Standard		*Action*:	☐ Leave as is ☐ To be revised
	2 spaces per single family home?	☐ Yes	☐ No	☐ No Standard		*Action*:	☐ Leave as is ☐ To be revised
	6.3. Are parking requirements reduced for shared parking arrangements, structured parking, areas near mass transit, and special districts?						
	☐ Yes, all	☐ Not all	☐ Not for any	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	6.4. Are model shared parking agreements provided?						
	☐ Yes	☐ No	☐ Shared parking not allowed	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised
	6.5 Are there special design standards for urban village centers?						
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*:	☐ Leave as is	☐ To be revised

7. Stall and aisle dimensions	**7.1. Are minimum stall dimensions for standard parking space 9 x 18 feet or less?**					*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*: ☐ Leave as is	☐ To be revised
	7.2. Are minimum driving aisle widths for standard two-way traffic 22 feet or less?					*ft*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*: ☐ Leave as is	☐ To be revised
	7.3. Are smaller compact car stalls required for at least 30% of total parking spaces?					*%*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*: ☐ Leave as is	☐ To be revised
8. Landscape requirements	**8.1. Does a portion of impervious parking area require shading with mature tree canopy cover?**					
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*: ☐ Leave as is	☐ To be revised
	8.2. Is the minimum landscaping requirement at least 20% of the total parking area?					*%*
	☐ Yes	☐ No	☐ No standard	☐ Don't know	*Action*: ☐ Leave as is	☐ To be revised

**See these checklists for a more extensive set of evaluation questions that include additional site design factors.*

SUMMARY OF STANDARDS TO REVISE

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | ME | VT | AZ

800-366-5760
www.tataandhoward.com

ATTACHMENT S

GREEN INFRASTRUCTURE REPORT

GREEN INFRASTRUCTURE REPORT

JUNE 2022

Leicester, Massachusetts

TATA & HOWARD

TATA & HOWARD

June 28, 2022

Mr. Dennis Griffin, Highway Superintendent
Leicester Highway Department
59 Peter Salem Road
Leicester, MA 01524

Subject: Green Infrastructure Report
2016 Massachusetts Separate Storm Sewer System (MS4) General Permit
Leicester, Massachusetts
T&H No. 7014

Dear Mr. Griffin:

Tata & Howard is pleased to provide an electronic copy of the Green Infrastructure Report for your review and comment. In accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit requirements, the report assesses existing Town standards that pertain to green infrastructure and discusses new policies to be implemented.

During the course of this project, Mr. Justin Waters served as Assistant Project Engineer, Mr. Steven Daunais, P.E. served as Project Manager, Mr. Jon Gregory, P.E. served as Project Officer, and Ms. Karen Gracey, P.E. provided technical reviews.

We trust that the enclosed information meets your approval. Should you have any questions regarding this project, please do not hesitate to call.

Sincerely,

TATA & HOWARD, INC.

Jon W. Gregory, P.E.
Vice President

Enclosure

Tata & Howard
67 Forest Street | Marlborough, MA 01752
T: 508-303-9400 | F: 508-449-9400
www.tataandhoward.com

Other Offices
MA | NH | CT | AZ

TABLE OF CONTENTS

SECTION 1 - INTRODUCTION

1.1 General

Tata & Howard, Inc. was retained by the Leicester Highway Department to create a Green Infrastructure Report in accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit issued by the United States Environmental Protection Agency (EPA). According to the United States Water Infrastructure Improvement Act, green infrastructure is a range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvesting or reuse, and landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or surface waters. By contrast, gray infrastructure, systems of gutters and pipes, transports stormwater to treatment plants or straight to local water bodies. When green infrastructure systems are installed throughout a community, they can provide cleaner water and bring significant value for the community with flood protection, diverse habitat, and beautiful green spaces.

The MS4 General Permit requires permittees to develop a report to assess local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist. The Permit specifies that at a minimum, green roofs, infiltration practices, and water harvesting devices are allowable practices.

1.2 Green Roofs

A green roof system is a system of growing media and vegetation that enables rainfall infiltration and evapotranspiration of stored water that is installed on a roof reducing or eliminating stormwater runoff from the roof. Any building considered for implementation of a green roof must have the structural stability to support the loading of the green roof materials under fully saturated conditions and snow loads. This load typically ranges from 10 to 40 pounds per square foot but is design-specific. Green roofs are commonly installed on large industrial or office buildings where stormwater runoff and impervious area are typically high. Vegetation should be suited for local climatic conditions and can range from sedums, grasses, and wildflowers on extensive green roofs (a thin layer of soil medium up to 5 inches deep) to shrubs and small trees on intensive green roofs (a thicker layer of soil medium). During the first growing season after construction, owners may need to water green roofs periodically if precipitation is insufficient. After the first growing season, property owners may only need to inspect and lightly fertilize extensive green roofs approximately once per year. Property owners need to maintain intensive green roofs like any other landscaped area. If communities implement widespread green roofs, the localized benefits of green roofs can add up. Implementation of green roofs can reduce stormwater discharges, improve quality of local waterways, and can also increase energy efficiency of buildings by moderating the interior temperature thereby reducing air conditioning costs in warmer months and heating costs in colder months.

Green Roof

1.3 Rain Gardens

A rain garden is a small, embedded area of plantings that collect stormwater runoff from roofs, streets, and sidewalks. Landscaping with appropriate plants is vital to the function of a rain garden. Using native plants that also provide wildlife habitat provides multiple benefits and can help boost plant survival, given that these plants must tolerate the local hydrologic regime. It is best to plant a combination of shrubs and herbaceous vegetation where site conditions allow. Rain gardens are designed to mimic the natural means that water flows over and infiltrates into the ground surface to reduce stormwater pollution. In soils with poor infiltration rates, adding underdrains allows stormwater to percolate through the media and move downstream. Rain gardens can be installed in existing parking lot islands, along roads, or in other landscaped areas as part of a retrofit, redevelopment, or new construction. If a rain garden contains appropriate vegetation, landscaping maintenance may require fewer resources than that which is required for traditional landscaped islands in parking areas.

Rain Garden

1.4 Planter Box

A planter box is a type of urban rain garden with vertical walls and either open or closed bases. Like rain gardens, planter gardens collect and infiltrate runoff from streets, sidewalks, and parking lots. Planter boxes are most commonly used in areas with limited space, particularly urban areas, and are typically built within wide sidewalks. Planter boxes can include trees, shrubs, perennials, and annuals. Property owners must maintain the vegetation, which will vary depending upon the chosen vegetation. In many cases, planter boxes may need additional watering during extreme dry weather periods.

Planter Box

1.5 Permeable Pavement

Permeable pavement is a stormwater control that infiltrates rainwater where it falls instead of a more traditional pavement that conveys the water off the road to a stormwater collection system. Porous asphalt and pervious concrete, two types of permeable pavement, are versions of traditional asphalt or concrete with reduced sand and fine materials, which allow for greater porosity and infiltration. Porous asphalt is commonly used for roadways and parking lots. Pervious concrete is commonly used for sidewalks. Another common type of permeable pavement is permeable pavers, which contain small openings between permeable joints or concrete pavers with highly permeable, small aggregates, and are often used for parking lots and sidewalks. The most prevalent maintenance concern for permeable pavements is clogging, which can limit infiltration rates. Vacuum sweeping can maintain permeability. In cases of isolated clogging of porous asphalt and permeable concrete, construction staff can drill ½-inch holes through the pavement surface to allow stormwater to drain. Snow plowing can occur in a similar manner to plowing on conventional pavements. Deicing material use is acceptable in moderation; however, sand should not be used for ice treatment of permeable pavement due to the potential for clogging of the porous material. Stockpiling of snow should not occur on permeable surfaces, as melting snow can increase sediment loads and lead to clogging. With proper installation, including a permeable bedding layer of one to two

inches of uniformly sized aggregate, these permeable pavement options can serve as durable, low-cost alternatives to traditional pavement and greatly reduce impervious area.

Porous Asphalt

Permeable Pavers

1.6 Rainwater Harvesting Systems

Rainwater harvesting systems reduce stormwater pollution by collecting and storing rainfall for future use. Two of the most common water harvesting devices are rain barrels and cisterns. A rain barrel is a storage container connected to a downspout that captures stormwater runoff from the roof. A cistern is similar to a rain barrel in its use but is a much larger receptacle and is occasionally installed underground. The stored water from the rain barrel or cistern can be used for irrigation at a later time. In the winter, rain barrels should be drained and disconnected from the downspout to prevent any water build up from freezing and damaging the rain barrel.

Rain Barrel

SECTION 2 – EXISTING LOCAL REGULATIONS

2.1 Green Roofs

Presently, the Leicester Town Bylaws do not include any existing regulations that allow or forbid the installation of green roofs.

2.2 Infiltration Practices

According to Town Bylaws, rain gardens are permitted by the Town of Leicester. However, infiltration practices such as planter gardens and porous pavement are not documented in the Town Bylaws as allowed or prohibited. Chapter 15 of the Leicester General Bylaws (Stormwater Bylaw) encourages the use of low-impact development practices, such as reducing the amount of impervious area and preserving existing vegetation. Low impact practices allow for the reduction of impervious areas that result in smaller volumes required for stormwater storage. The Town of Leicester Planning Board may adopt criteria for practices that will qualify as low impact designs, as part of the regulations authorized by the Stormwater Bylaw. These criteria will allow applicants the option to use low-impact practices to improve the amount and quality of stormwater runoff. Town Bylaws do not discuss the use of landscaping or structured or augmented soils to manage stormwater.

2.3 Water Harvesting Devices

Water harvesting devices such as rain barrels and cisterns are not discussed in the Town Bylaws, but are allowed. Rain barrels were sold to Town residents for $79 through the Leicester Recycling Center through May 26, 2022. This is a recurring annual program where residents can order rain barrels in the spring to be picked up at a later date. Rain barrels are also advertised on the Town website as part of public education materials. The water collected by the rain barrel or cistern can be used for non-potable water uses, thereby helping conserve the drinking water supply.

SECTION 3 – POLICY UPDATES

3.1 General

The following presents recommended Town policy updates to further implement green infrastructure practices in Town.

The Town of Leicester can encourage developers and homeowners to incorporate low impact development (LID) or green infrastructure practices by offering incentives for both new development and existing developments. Incentives can be used to encourage landowners to retrofit their sites with green infrastructure practices. Incentives also can be used to entice developers to use green infrastructure practices when planning, designing, and constructing new projects. Some of the most common types of incentive mechanisms are fee discounts or credits, development incentives, best management practice installation subsidies, and recognition programs.

Some municipalities charge a stormwater fee based on the amount of impervious surface area on a property. The Town currently does not charge any stormwater fees to developers or property owners. If the Town decides to charge stormwater fees based on impervious surface area or connecting to the municipal stormwater system in the future, the Town should consider waiving or reducing the fee if the property owner decreases the impervious surface at a proposed site or incorporates LID practices at the site to reduce the volume of stormwater runoff that exits the property. Further discussion and analysis is required for the development of a stormwater fee structure if the Town chooses to implement one.

Another useful tool is to offer incentives that are only available to developers that utilize green infrastructure practices. The Town can offer to waive or reduce permit fees, expedite the permit process, allow higher density developments, or provide exemptions from local stormwater permitting requirements for developers that use green infrastructure practices. The Town should also require green infrastructure practices for new development on sites the Town has targeted for redevelopment.

To encourage the use of water harvesting devices by homeowners, the Town should advertise these devices in property tax mailings and consider reducing the charge for rain barrels or eliminate the charge to Town residents.

To highlight successful LID redevelopment, and new developments with green infrastructure, the Town should highlight these projects in local newspapers and on the Town website. The recognition can be used to encourage developers or homeowners to install green infrastructure.

3.2 Schedule of Implementation

Recommended policy updates discussed in Section 3.1 should be approved by the Town of Leicester Planning Board and other applicable Town Boards for implementation into the Leicester Town Bylaws. It is recommended that the Town incorporate these

recommendations by June 30, 2024. Updates to green infrastructure regulations or standards shall be included in each MS4 General Permit Annual Report.

SECTION 4 – REFERENCES

The following reference material from the EPA provides additional information defining green infrastructure and detailing common examples of green infrastructure.

https://www.epa.gov/green-infrastructure/what-green-infrastructure

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | ME | VT | AZ

800-366-5760
www.tataandhoward.com

ATTACHMENT T

MUNICIPAL RETROFIT REPORT

MUNICIPAL RETROFIT REPORT

JUNE 2022

UPDATED JUNE 2023

Leicester, Massachusetts

TATA & HOWARD

TATA & HOWARD

June 29, 2023

Mr. Kris Lauzon, Department of Public Works Director
Leicester Department of Public Works
59 Peter Salem Road
Leicester, MA 01524

Subject: Municipal Retrofit Report Update
Leicester, Massachusetts
T&H No. 7014

Dear Mr. Lauzon:

Tata & Howard is pleased to provide an electronic copy of the Municipal Retrofit Report Update. The original report was completed in June 2022. In accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit requirements, the report provides detail to the existing conditions of five Town-owned properties and recommendations for Best Management Practices to be installed for the purpose of reducing the volume and pollutant loads of stormwater runoff.

During the course of this project, Mr. Justin Waters, P.E. served as Senior Project Designer, Mr. Steven Daunais, P.E. served as Project Manager, Mr. Jon Gregory, P.E. served as Project Officer, and Ms. Karen Gracey, P.E. provided technical reviews.

We trust that the enclosed information meets your approval. Should you have any questions regarding this project, please do not hesitate to call.

Sincerely,

TATA & HOWARD, INC.

Jon W. Gregory, P.E.
Vice President

Enclosure

Tata & Howard
67 Forest Street | Marlborough, MA 01752
T: 508-303-9400 | F: 508-449-9400
www.tataandhoward.com

Other Offices
MA | NH | CT | AZ

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

SECTION 1 - INTRODUCTION

1.1 General

Tata & Howard, Inc. was retained by the Town of Leicester Department of Public Works (DPW) – Highway Division to prepare a Municipal Retrofit Report in accordance with the 2016 Massachusetts Separate Storm Sewer System (MS4) General Permit (Permit) by the United States Environmental Protection Agency (USEPA). Section 2.3.6.d of the Permit requires permittees to identify a minimum of five permittee-owned properties that could potentially be modified or retrofitted with Best Management Practices (BMPs) that help reduce the volume, frequency, and pollutant loads of stormwater discharges entering the storm sewer system within four years of the effective date of the Permit (June 30, 2022). According to the Permit, properties with significant impervious cover (parking lots, buildings, sidewalks, and maintenance yards) should be considered for potential retrofit. Beginning with the fifth-year annual report and in each subsequent annual report, the permittee shall identify additional permittee-owned sites that could be retrofitted such that the permittee maintains a minimum of five sites in their inventory. The permittee must also report on all properties that have been modified or retrofitted with BMPs to mitigate impervious area in the Stormwater Management Program and Annual Report. Within five years of the permit effective date, permittees must generate a more detailed assessment for each property, including next planned infrastructure or planned retrofit date, estimated costs for retrofit BMPs, and engineering feasibility of retrofit BMPs. Within six years of the permit effective date, the permittee must install at least one structural BMP as a demonstration project to target phosphorus loads.

This report includes an assessment of the following five Town-owned properties selected by the Town of Leicester.

- Leicester Highway Department Garage
- Leicester Town Hall
- Leicester Senior Center
- Leicester Elementary School
- Leicester High School

These properties were chosen due to their large impervious area, which is primarily paved parking lots. Site visits at the properties occurred on May 5, 2022. During the site visits, the area of the impervious surface was measured and the location of nearby stormwater drains, septic systems, water bodies, and topography were noted. Each property was then evaluated to determine means to improve the water quality of stormwater discharges within and exiting the property. Recommendations from this report include potential structural BMPs that can be incorporated on each property to improve the water quality of the stormwater runoff and discharges. The following structural BMPs were considered during site visits as BMP options for the Town of Leicester.

- Bioswales
- Rain Gardens
- Porous Pavement
- Permeable Pavers
- Green Roofs
- Subsurface Infiltration
- Vegetated Filter Strips

SECTION 2 – STRUCTURAL BEST MANAGEMENT PRACTICES

2.1 General

According to the Permit, BMPs are schedules of activities, practices, structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waterbodies. Structural BMPs are devices that are constructed to mitigate or manage stormwater runoff. This section reviews the structural BMPs that were considered during site visits.

2.2 Bioswale

A bioswale is a linear wetland tolerant vegetated swale that channels stormwater. The stormwater is filtered by the vegetation and soils as it infiltrates through the swale. Excess stormwater flows can travel to the storm sewer system through a perforated pipe. This type of BMP is optimal along roads or in linear and uninterrupted channels. The ground slope must be six percent or less to be effective in infiltrating stormwater.

Bioswale

2.3 Rain Garden

A rain garden is a moderately depressed, wetland tolerant vegetated area designed to capture, pond, and gradually infiltrate stormwater. This BMP is different from most other green infrastructure devices because it is not connected to the stormwater system and requires less excavation. A rain garden can replace traditional landscaping in residential and school settings. A potential consideration is that a rain garden must either be located where soils can drain within a short period of time, or the nearby soil must be replaced with a more appropriate planting soil.

Rain Garden

2.4 Porous Pavement

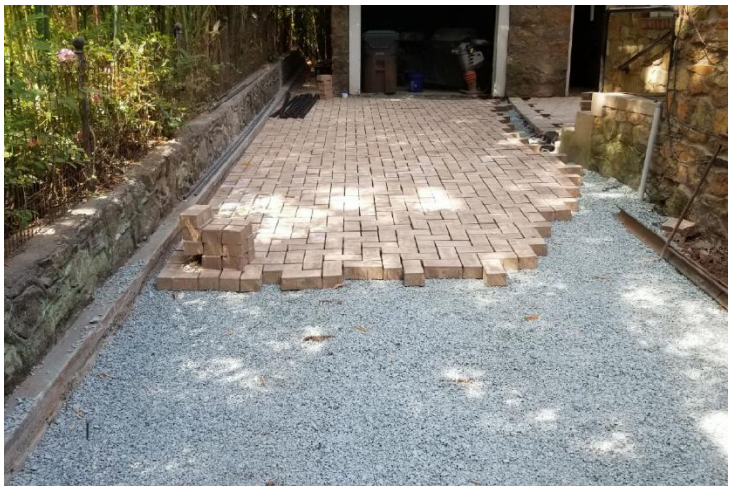
Porous pavement is a type of asphalt that allows water to infiltrate through impervious hardscape, increasing infiltration and temporary storage of stormwater during peak flows. Porous pavement can be utilized in sidewalks, local streets, and parking lots. This type of BMP is optimal for surfaces with a slope of less than five percent. Porous pavement requires periodic vacuuming of the surface to remove any sediment that builds up in the pavement pours. Failure to maintain the pavement reduces the permeability of the pavement. The photo below shows an example of porous pavement. The pavement on the right is porous, which allows stormwater to infiltrate into the groundwater while the pavement on the left is traditional, impervious asphalt material.

Porous Pavement

2.5 Permeable Pavers

Permeable pavers are any type of paver installed on sand and gravel that allows runoff to flow through the gaps between the individual pavers into an infiltration area below. Permeable pavers are utilized in sidewalks, local streets, and parking lots. This type of

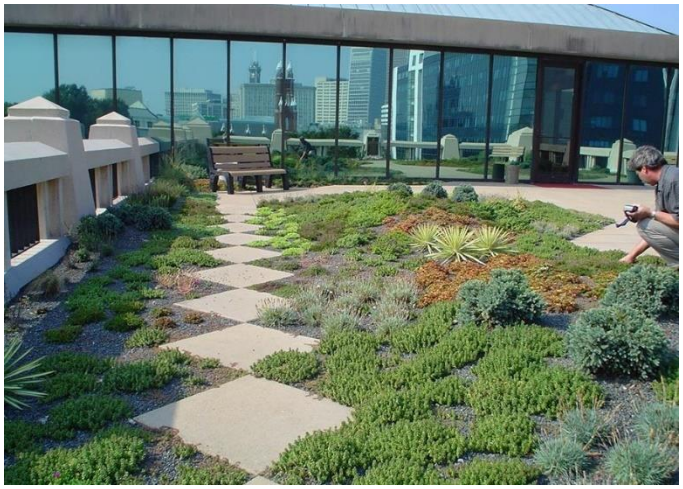
BMP is optimal for surfaces with a slope of less than five percent. Permeable pavers help reduce ice accumulation and the need to salt the surface during winter by allowing water to infiltrate and not pool on the surface. This type of BMP requires periodic vacuuming of the surface to prevent loss of permeability. Other considerations include sensitivity to snow plowing regime due to the possibility of inadvertent removal of pavers during snow plowing. If used within a sidewalk, construction must meet Americans with Disabilities Act (ADA) accessibility requirements.



Permeable Pavers

2.6 Green Roof

A green roof is a green infrastructure strategy that is placed on a structurally sound, often flat roof to intercept and retain stormwater before it reaches the street. This BMP provides the additional benefits of helping to regulate building temperatures, reducing energy demand for heating and cooling, and increasing the useful life of the roofing material. Potential green roofs must have a slope of less than 30 degrees and be able to bear the additional weight of the green roof.



Green Roof

2.7 Subsurface Infiltration Structures

Subsurface infiltration structures are underground systems that capture and infiltrate runoff into groundwater through highly permeable rock and gravel, promoting groundwater recharge. These structures typically include both storage and drainage components. Subsurface infiltration is common in urban areas adjacent to buildings and promotes sediment removal. Potential considerations include a high potential for clogging and potential structural damage to nearby buildings due to water seepage. Inlets should be inspected at least twice a year and any debris should be removed promptly.

Subsurface Infiltration

2.8 Vegetated Filter Strips

Vegetated filter strips are uniformly graded, vegetated, pretreatment practices designed to treat low volume concentrated flows from adjacent roads, small parking lots, and residential driveways. Filter strips can reduce the peak flow, volume, and runoff velocity, and can capture sediment. A slope of less than six percent and proper grading are required to maximize removal efficiency.

Vegetated Filter Strip

SECTION 3 – SITE VISITS AND RECOMMENDATIONS

3.1 General

Site visits were conducted at five Town-owned sites on May 5, 2022, in the presence of Mr. Dennis Griffin, Leicester Highway Department Superintendent. During the site visits, the area of the impervious surface was measured and the location of nearby stormwater drains, septic systems, water bodies, and topography were noted. Structural BMPs were then recommended based on the existing conditions of each site. The following sections summarize the findings and recommendations resulting from the site visits.

3.2 Leicester Highway Department Garage

The Leicester Highway Department Garage is located at 59 Peter Salem Road. The site includes approximately 43,800 square feet (ft^2) of impervious area (10,800 ft^2 for the buildings and 33,000 ft^2 for the parking lots and driveways). There is a marsh located northwest of the property. Two catch basins are located on Peter Salem Road off the main parking lot that are connected to individual stormwater outfalls. One catch basin is located in the storage building and one in the main building. The septic tank at the site is located northwest of the storage building and includes a sewer manhole for pumping access. The septic tank is pumped three times per year. The site also includes an oil water separator that is cleaned every other year. An existing grassed swale with overgrown brush is located in the northeast portion of the site.

Approximately 45,000 ft^2 of the site was previously paved and has been milled by the DPW – Highway Division to reduce impervious area. A salt shed is located on the northwest end of the paved maintenance area on site. The DPW – Highway Division has created containment systems around the site for staging of organic materials. A barrier pile is located in the northwest portion of the property made from wood chips that prevents stormwater from entering the marsh behind it. The DPW – Highway Division plans to renovate the fuel island on site, including installation of new fill tubs and raising the island two inches. The pipe connecting the oil water separator and the main building catch basin currently contains sludge and can back up. The Town also indicated that the catch basin inside the storage building does not serve a purpose as there is no water supply for that building.

It is recommended that the Town replace the existing grassed swale at the site with a new bioswale for more efficient filtering of stormwater runoff. A second bioswale should be constructed at the northern edge of the property adjacent to the wetlands. This bioswale will promote runoff if the Town uses the wood chips from the barrier pile that are currently preventing stormwater runoff to the marsh. It is also recommended that the Town have the pipe located between the oil water separator and the main building catch basin cleaned. If the sludge cannot be adequately removed from the pipe, the pipe should be replaced. The catch basin inside the storage building should be removed and the connected drain pipe should be cut and capped to prevent any illicit discharges from entering the onsite stormwater system. Installation of permeable pavers is recommended to replace the

existing asphalt walkway at the main building when the DPW – Highway Division deems it necessary to replace the existing walkway. Figure No. 1 in Appendix A provides an aerial view of the site and locations for the recommended structural BMPs.

3.3 Leicester Town Hall

The Leicester Town Hall is located at 3 Washburn Square. The site includes approximately 55,600 ft^2 of impervious area (13,100 ft^2 for the building and 42,500 ft^2 for the parking lots and driveways). The site includes parking lots on the west and east sides of the Town Hall building that connect north of the building. A 15' x 20' CULTEC subsurface infiltration system was installed in June 2019 and is connected to several downspouts on the west side of the building. Other downspouts on the west side of the building and the downspouts on the east side of the building release stormwater to two catch basins on Paxton Street, which lead to an outfall at Sargent Pond. The municipal sewer service line from the Town Hall building exits the site from the west entrance and ties into the sewer main at Paxton Street. The site also includes a 10,000-gallon capacity underground oil storage tank in the east parking lot.

The parking lot on the west side of the building was recently paved. The Town stated that there have been issues regarding stormwater runoff on the west side of the parking lot. The parking lot on the west side of the building slopes toward Paxton Street. The grassed area between the parking lot and Paxton Street has a steep slope towards Paxton Street. Stormwater has eroded parts of the grassed area, especially the area northwest of the parking lot. The Town installed a small retention basin to pool stormwater prior to entering the storm drain in Paxton Street as a temporary measure; however, this was not successful.

Implementation of BMPs for the parking lots is recommended to reduce the volume of stormwater flowing directly onto Paxton Street. Options include installing curbing along the west side of the parking lot to channel the stormwater to one location, installing a subsurface infiltration system, installing a retention pond, or installing a bioswale north of the parking areas to decrease the volume of stormwater reaching Paxton Street. Further study and design are required to determine the most viable options for the Town. Figure No. 2 in Appendix A provides an aerial view of the site and locations for the recommended structural BMPs.

3.4 Leicester Senior Center

The Leicester Senior Center is located at 40 Winslow Avenue. The site includes approximately 43,600 ft^2 of impervious area (7,000 ft^2 for the building and 36,600 ft^2 for the parking lots and driveways). A wetland area is located on the west side of the property. The municipal sewer service line exits the west side of the building. Eight catch basins are located on the property. One catch basin located near the middle of the parking lot is connected to an underground cistern. The remaining catch basins are located on the east and south sides of the parking lot and connect to two dry wells. Reportedly, no stormwater flows into the catch basin connected to the cistern due to its location at a high point in the parking lot and the downward slope of the lot away from this location. Consequently, all

of the stormwater runoff to the catch basins flows to the two dry wells, which overflow during high rainfall events with the excess water flowing south onto Winslow Street. Nearby properties have also flooded in the past.

The drywells should be replaced with a subsurface infiltration or CULTEC system located under the south portion of the parking lot as subsurface infiltration systems are designed to capture larger volumes of stormwater. Installation of a bioswale is recommended from the Senior Center parking lot to Winslow Avenue to contain stormwater that does not flow into the catch basins during heavier rainfall events. In addition, a perforated pipe connecting the subsurface infiltration system should be installed underneath the recommended bioswale to allow any excess stormwater during heavy rainfall events to flow into the stormwater system on Winslow Avenue instead of backing up and overflowing the onsite catch basins and recommended subsurface infiltration system. Figure No. 3 in Appendix A provides an aerial view of the site and locations for each recommended structural BMP.

3.5 Leicester Elementary School

Leicester Elementary School is located at 170 Paxton Street. The site includes approximately 87,200 ft^2 of impervious area (36,000 ft^2 for the building and 51,200 ft^2 for the parking lots, driveway, and asphalt playground). The parking lot for the Elementary School includes a vegetated filter strip and slopes west towards two catch basins on Paxton Street that outfall to Sargent Pond. Two other catch basins are located behind the school in a grassy area. The entrance to the Leicester High School is located behind the elementary school and the ground slopes towards the school, channeling runoff towards the school. There are no waterbodies near the property; however, there are wetlands south of the property. The municipal water and sewer service lines connected to the school run southeast between the Leicester Middle School and the tennis courts to Winslow Avenue.

Installation of a bioswale is recommended behind the school to contain and minimize flooding behind the school. In addition, the existing asphalt sidewalk at the front of the Elementary School should be replaced with permeable pavers to decrease the amount of impervious area. Figure No. 4 in Appendix A provides an aerial view of the site and locations for each recommended structural BMP.

3.6 Leicester High School

Leicester High School is located at 174 Paxton Street. There is approximately 187,200 ft^2 of impervious area (56,000 ft^2 for the building and 131,200 ft^2 for the parking lots and driveways). An asphalt driveway is located around the perimeter of the school and connects parking lots north and west of the school building. The north parking lot is the larger parking lot and is located at the highest elevation of the site. Several catch basins are located along the driveway and utilize a common pipe to discharge stormwater at a detention pond near Winslow Avenue. The municipal water and sewer service lines connected to the school run southeast between Leicester Middle School and the baseball field to Winslow Avenue.

Due to the amount of impervious area on this site, new stormwater BMPs are recommended to decrease the volume of runoff at this site. Multiple catch basins connected to a subsurface infiltration or CULTEC system at the north parking lot are recommended. This would greatly reduce the volume of stormwater runoff entering the nearby detention pond. Based on the existing slope of the north parking lot, a bioswale is recommended along the east side of the parking lot. Currently, there is an asphalt channel on the west side of the parking lot that conveys all the stormwater to a catch basin that leads to the detention pond. The asphalt pathway east of the High School and north of the school track should be removed and grass planted. Reportedly, this pathway currently serves no purpose and channels additional stormwater runoff towards the driveway. Figure No. 5 in Appendix A provides an aerial view and locations for the recommended structural BMPs.

3.7 Summary of Structural BMP Recommendations

Table No. 3-1 includes a summary of the recommended BMPs for each location.

Table No. 3-1
Town-Owned Property Structural BMP Recommendations

Location	BMP
Highway Garage	Bioswale (two locations)
	Permeable Pavers
	Cut and Cap Drain Pipe
	Clean Oil Water Separator Pipe
Town Hall	Subsurface Infiltration
	Bioswale
	Retention Pond
Senior Center	Subsurface Infiltration
	Bioswale
Elementary School	Bioswale
	Permeable Pavers
High School	Subsurface Infiltration
	Bioswale
	Remove Asphalt Pathway

SECTION 4 – POTENTIAL STRUCTURAL BMPs

4.1 Demonstration Project

Within six years of the Permit effective date (June 30, 2024), the Town of Leicester shall plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries. The demonstration project shall be installed targeting a catchment with high phosphorus loading potential and high nitrogen loading potential.

The Town has chosen the installation of a bioswale to the right of the north parking lot at Leicester High School as the demonstration project, expected to be completed by June 30, 2024. The north parking lot is an asphalt lot with an area of approximately 60,000 ft^2. The majority of the lot slopes east towards the proposed location of the swale. Currently, stormwater from the parking lot flows into catch basins southeast of the lot and discharges untreated into wetlands south of the High School, between the former Leicester Middle School and the Leicester Senior Center. The installation of a bioswale will help reduce nutrient and sediment loading of the storm drain system.

Based on area limitations, the bioswale would have proposed dimensions of 230’ x 10’, or 2,300 ft^2. Based on these dimensions, the bioswale would provide the Town with a phosphorus load reduction credit of approximately 0.44 lb/yr based on Permit phosphorus credit criteria. The bioswale would also provide the Town with a nitrogen load reduction credit of approximately 2.37 lb/yr and a sediment load reduction credit of approximately 231 lb/yr. Credits were calculated using the BMP Accounting and Tracking Tool (BATT). BATT is a customized spreadsheet-based tool recommended by the EPA that provides accounting, tracking, and reporting for pollutant and sediment load reduction.

4.2 Structural BMP Costs

Rain gardens require a soil test to evaluate the soil quality and help determine what plants can grow at the site. These tests typically cost approximately $100 each. Percolation tests, to determine how well liquid is absorbed into the soil, are also recommended. These tests cost approximately $150 each. It is assumed that the Leicester DPW – Highway Division can complete the construction of a rain garden without the assistance of an outside contractor and that only materials costs would be required for each rain garden installation. Materials cost for installation of a rain garden are approximately $5 per square foot (/sq ft) but can increase depending on the complexity of the design and the amount and variety of the landscaping. This cost does not include Town labor, equipment, and fuel costs. Installing underground drainage and overflow piping systems may be necessary if the soil is incapable of infiltrating the anticipated volume of stormwater runoff, which would increase installation costs. A perforated drainage pipe from a rain garden would likely connect to site drainage pipes. Annual maintenance costs for a rain garden are approximately $4/sq ft and include mulching and weeding. The planned area of a rain garden should be approximately 20 percent of the area of the impervious area draining into it and the depth should be 3-8 inches to fully treat stormwater.

Similar to a rain garden, it is assumed that the Leicester DPW – Highway Division would complete construction of new bioswales without the assistance of an outside contractor and that only materials would need to be purchased for each project. Material costs for a bioswale are approximately $5/sq ft. This cost does not include Town labor, equipment, and fuel costs. Annual maintenance is approximately $4 per linear foot, which includes mowing and cleanup.

Permeable pavers are a type of permeable pavement and are available in all shapes and sizes. Permeable pavers are installed with gaps between the pavers and crushed stone underneath to allow for infiltration of stormwater. The material cost for permeable pavers is approximately $4/sq ft. Permeable pavers would typically be installed by an outside contractor. Installation costs on larger projects (2,000+ square feet) are approximately $6/sq ft while on smaller projects (1,000-2,000 square feet) installation costs are approximately $10/sq ft. Maintenance work includes periodic street sweeping.

4.3 Permittee-Owned Property BMP Costs

Several projects at permittee-owned properties are recommended to reduce the volume of stormwater runoff and to increase the water quality of the stormwater that exits each property.

It is recommended that two bioswales and permeable pavers be installed at the Leicester Highway Garage. The proposed bioswales would be installed on the northeast and northwest sides of the site, where sediment is deposited after large storm events. The bioswales would convey stormwater and limit sediment from entering nearby wetlands. The northeast bioswale would replace an existing unmaintained swale. The northeast bioswale would measure approximately 220’ long by 10’ wide and the northwest bioswale would measure approximately 100’ long by 10’ wide, with a total cost of approximately $16,000 to install both swales, assuming installation by Town personnel, and $1,280 per year in maintenance costs. This work is anticipated to be completed in 2026. Permeable pavers are recommended to replace the asphalt sidewalk on the front of the main garage building to reduce runoff on that side of the property. The existing asphalt sidewalk is approximately 6 feet wide and 140 feet long. The cost of this permeable paver installation project would be approximately $11,800.

A subsurface infiltration system and a bioswale are recommended at Leicester Town Hall. A subsurface infiltration system cost varies greatly based on anticipated runoff volume, desired storage volume, and site conditions. It is recommended that a full design be executed to properly determine cost of construction. The Town also recently paved the Town Hall parking lot, making this BMP a lower priority project. The recommended area of the bioswale is approximately 120’ x 10’ and located north of the Town Hall parking lot. The estimated cost of this BMP is approximately $6,000, assuming installation by Town personnel, and $480 per year in maintenance costs.

A subsurface infiltration system and a bioswale are recommended at the Leicester Senior Center. The subsurface infiltration system would replace the poor-performing drywells on the southeast side of the parking lot. It is recommended that a full design be executed for the proposed subsurface infiltration system to properly determine cost of construction. A bioswale is recommended south of the parking lot towards Winslow Avenue with proposed dimensions of approximately 100' x 12'. The estimated cost of this BMP is approximately $6,000, assuming installation by Town personnel, and $400 per year in maintenance costs.

It is recommended that a bioswale and permeable pavers be installed at the Leicester Elementary School. The bioswale would collect runoff north of the School and allow it to flow east of the property for infiltration. The proposed bioswale area is approximately 150' x 10' with an estimated cost of $7,500, assuming installation by Town personnel, and $600 per year in maintenance. Installation of permeable pavers is recommended to replace the asphalt sidewalk at the front of the School measuring approximately 300' x 5.5'. The estimated cost for this BMP is $23,100.

A subsurface infiltration system and a bioswale are recommended at the Leicester High School. A subsurface infiltration system cost varies greatly based on anticipated runoff volume, desired storage volume, and site conditions. It is recommended that a full design be executed to properly determine cost of construction. The Town would likely need to install new catch basins to properly implement the BMP as there are no catch basins in the north parking lot. The bioswale demonstration project BMP would be installed east of the north parking lot. The proposed bioswale area is approximately 230' x 10' with an estimated cost of $11,500, assuming installation by Town personnel, and $920 per year in maintenance costs. Table No. 4-1 below provides the estimated costs for each BMP.

Table No. 4-1
Proposed BMP Costs

Location	BMP Type	Estimated Area (ft^2)	Estimated Installation Cost	Estimated Annual Maintenance Cost
Highway Garage	Bioswale (two total)	3,200	$16,000	$1,280
Highway Garage	Permeable Pavers	840	$11,800	N/A* (Sweeping)
Town Hall	Bioswale	1,200	$6,000	$480
Senior Center	Bioswale	1,200	$6,000	$400
Elementary School	Bioswale	1,500	$7,500	$600
Elementary School	Permeable Pavers	1,650	$23,100	N/A (Sweeping)
High School	Bioswale	2,300	$11,500	$920

*N/A = Not Applicable

4.4 Regulatory Feasibility

The permittee-owned properties in this report are not located within any wetlands, Natural Heritage & Endangered Species Program (NHESP) priority or estimated habitats, areas of critical environmental concern (ACEC), or vernal pools. The Town Hall and First Congregational Church of Leicester next to Town Hall are considered historic buildings. No potential BMP installations would involve work on or in these buildings.

4.5 Engineering Feasibility

Installing or replacing a structural BMP requires the Town to have proper understanding of site conditions, including contours, groundwater table, existing utilities, expected precipitation, and soil characteristics. Soils with higher infiltration rates are best suited when installing a new BMP that is designed to allow water to infiltrate into the ground, increasing its effectiveness.

Hydrologic Soil Groups (HSGs) are a soil classification based on estimates of runoff potential. Soils are assigned to one of four groups or a dual class according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. Soils in Group A have the lowest runoff potential and soils in Group D have the highest runoff potential.

Group A consists of sand, loamy sand, or sandy loam types of soils. It has low runoff potential and high infiltration rates even when thoroughly wetted. They consist mostly of deep, well to excessively drained sands or gravels and have a high rate of water transmission.

Group B consists of silt loam or loam. It has a moderate infiltration rate when thoroughly wetted and consists mostly or moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.

Group C soils are sandy clay loam. They have low infiltration rates when thoroughly wetted and consist mostly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure.

Group D soils are clay loam, silty clay loam, sandy clay, silty clay or clay. This HSG has the highest runoff potential. They have very low infiltration rates when thoroughly wetted and consist mostly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material.

The HSGs for soils within each permittee-owned property were determined using the MassGIS Massachusetts Top-20 SSURGO Soils data layer. The soils at the Town Highway Garage are within Soil Group A. Due to the high infiltration rates of HSG A,

structural BMPs installed at this permittee-owned property should be effective at infiltrating to groundwater, unless the top layer of soils on site was changed prior to construction activities. The soils at the other four permittee-owned properties analyzed in this report are within Soil Group C. The lower infiltration rates of the soils at these properties should be considered when designing structural BMPs.

Design of a BMP should also take into account previous BMP installations to properly determine potential stormwater volume intake. If an existing BMP is not functioning as expected or is overtaxed by intake volume, a designer should determine the reasons behind the flaws of the current system and adjust the design accordingly.

4.6 Becker College

In the Spring of 2021, Becker College announced it would be permanently closing its Worcester and Leicester campuses. In June 2021, the Town of Leicester entered into a license agreement with Becker College to explore the possibility of acquiring its Leicester holdings. The proposed acquisition was passed at the September 14, 2021, Special Town Meeting and at the September 21, 2021, Special Election. The Town of Leicester took full ownership of the Becker Leicester Campus on December 29, 2021.

The Town is currently engaged in a Leicester High School Campus Project, designed to convert the former college campus to an asset for the community. The Town is actively making improvements to the campus and facilitating its future reuse. As the Town makes improvements, the DPW – Highway Division will note areas where structural BMPs are installed and record for Permit compliance.

Appendix A

TATA & HOWARD

Map Reference:
MassGIS Ortho Imagery 2021

TATA & HOWARD

Date: June 2023
Approximate Scale: 1" = 150'

Highway Department Garage

Municipal Retrofit Opportunity
Massachusetts MS4 Permit General Compliance

Leicester DPW - Highway Division
Leicester, Massachusetts

Figure No.

1

Map Reference:
MassGIS Ortho Imagery 2021

TATA & HOWARD

Date: June 2023
Approximate Scale: 1" = 100'

Town Hall

Municipal Retrofit Opportunity
Massachusetts MS4 Permit General Compliance

Leicester DPW - Highway Division
Leicester, Massachusetts

Figure No.

2

Map Reference:
MassGIS Ortho Imagery 2021

TATA & HOWARD

Date: June 2023
Approximate Scale: 1" = 100'

Senior Center

Municipal Retrofit Opportunity
Massachusetts MS4 Permit General Compliance

Leicester DPW - Highway Division
Leicester, Massachusetts

Figure No.

3

Map Reference:
MassGIS Ortho Imagery 2021

TATA & HOWARD

Date: June 2023
Approximate Scale: 1" = 100'

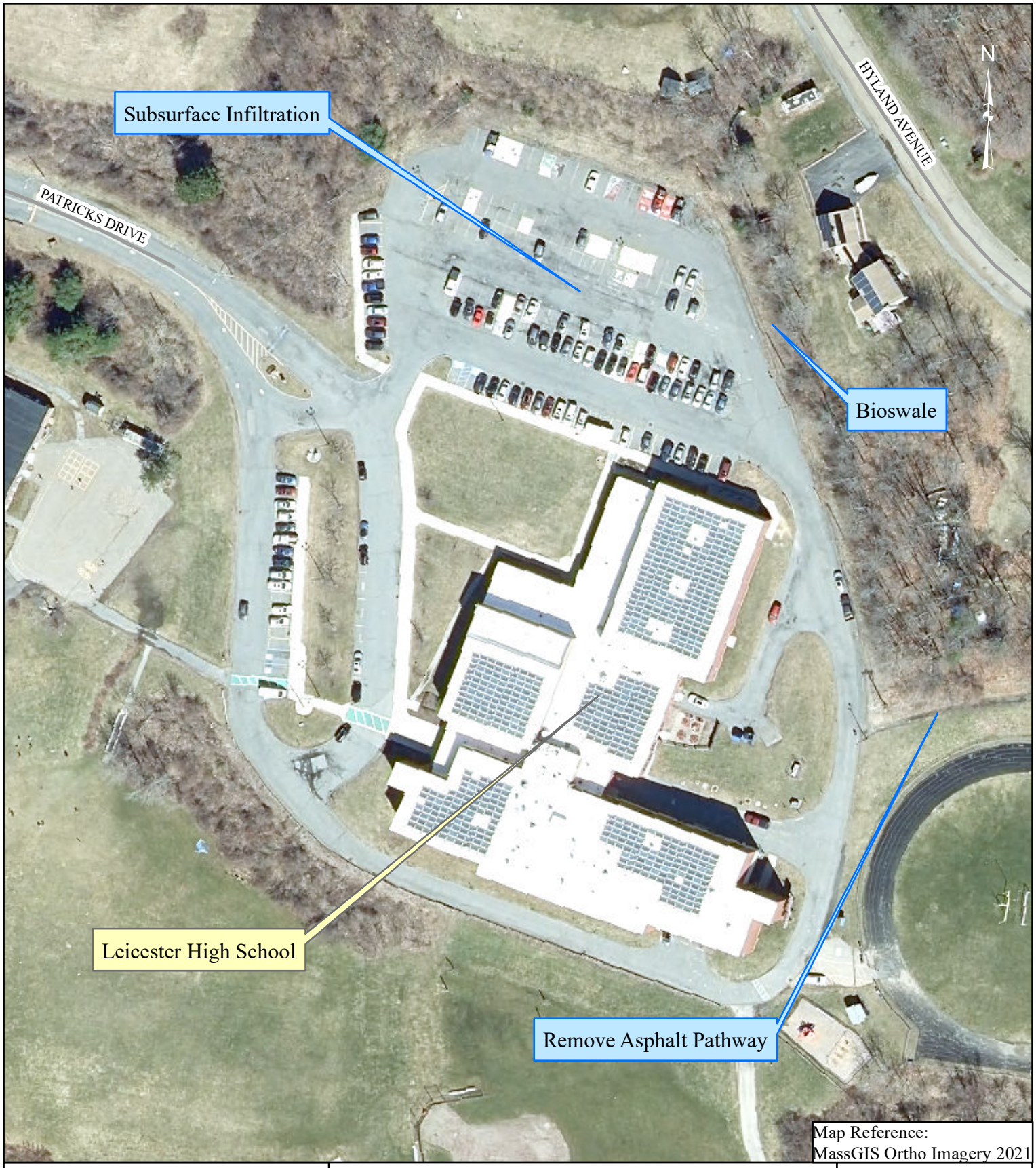
Elementary School

Municipal Retrofit Opportunity
Massachusetts MS4 Permit General Compliance

Leicester DPW - Highway Division
Leicester, Massachusetts

Figure No.

4



Map Reference:
MassGIS Ortho Imagery 2021

TATA & HOWARD

Date: June 2023
Approximate Scale: 1" = 100'

High School

Municipal Retrofit Opportunity
Massachusetts MS4 Permit General Compliance

Leicester DPW - Highway Division
Leicester, Massachusetts

Figure No.

5

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | ME | VT | AZ

800-366-5760
www.tataandhoward.com