Stormwater Management Program (SWMP) Plan

Town of Westminster, Massachusetts

Prepared June 30, 2019
Revised June 30, 2022

Prepared For:

Town of Westminster
11 South Street
Westminster MA 01473

Prepared By:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

Stormwater Management Program (SWMP) Plan Revision Log

Revision Date	Section(s) Revised	Revisions Made	Revisions Made by
June 30, 2019	All	Original SWMP Plan prepared.	Comprehensive Environmental Inc.
June 30, 2021	All	SWMP Plan amended to document work completed during Permit Year 2 and Permit Year 3.	Comprehensive Environmental Inc.
June 30, 2022	2.4, 3.1.2, 7.3.4, 7.3.5, 9.0, and appendices	TMDL and impaired waterbodies/status, priority waterbodies, regulatory LID, GI, and impervious cover update, municipal BMP retrofit inventory	Comprehensive Environmental Inc.

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Stormwater Management Program (SWMP) Plan 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 best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

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1 Introduction

Westminster is one of many Massachusetts communities regulated under the Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II rule (40 CFR 122). The rule requires regulated operators of municipal separate storm sewer systems (MS4) to develop a Stormwater Management Program (SWMP) and Best Management Practices (BMPs) to reduce the impacts of stormwater discharges. The requirements are outlined in the NPDES General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts, which was signed on April 4, 2016, with an effective date of July 1, 2018, hereinafter referred to as the 2016 MS4 Permit.

This SWMP Plan describes and details the activities and measures that are being implemented to meet the terms and conditions of the permit.

1.1 Regulatory Background

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in the United States Environmental Protection Agency's (USEPA'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 operators of Small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas, through the use of National Pollutant Discharge Elimination System (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.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 MS4 Permit) consistent with the Phase II rule. The 2003 MS4 Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., certain Federal and state agencies and/or facilities) 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 USEPA's 2016 NPDES General Permit for Stormwater Discharges from MS4 in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit", "2016 Permit", "MS4 Permit, and/or "2016 MS4 Permit" which replaces the 2003 MS4 Permit.

The 2016 Massachusetts MS4 Permit was signed on April 4, 2016 with an original effective date of July 1, 2017, however was postponed by1year to a new effective date of July 1, 2018. The permit was cosigned by the Massachusetts Department of Environmental Protection (MassDEP) and thus is jointly regulated by EPA and MassDEP for Massachusetts permittees. After several years of litigation, the permit was updated in December 2020 with a revised effective date of January 6, 2021. Authorization to discharge was set to expire on

July 1, 2022, however, was administratively continued by EPA. The 2016 Permit remains in force and effect until a general permit is reissued at a future time.

The following sections outline how the Town of Westminster is meeting Phase II regulatory and schedule requirements.

1.2 MS4 Program

As required by the 2016 MS4 Permit, The Town of Westminster submitted a Notice of Intent (NOI) and required accompanying information, including endangered species, historic preservation, and an outfall map to EPA Region 1 by the September 28, 2018 deadline (**Appendix A**) requesting authorization to discharge under the new permit. Westminster received official authorization to discharge stormwater from its MS4 on April 5, 2019. Authorization to discharge expires at June 30, 2022.

This Stormwater Management Program (SWMP) Plan has been developed by the Town of Westminster to address the requirements of the 2016 MS4 Permit as a follow-up to the NOI. This SWMP Plan documents the Town of Westminster's program, including Best Management Practices (BMPs), plans, activities, and measures that have been implemented to date, those that are ongoing, and those proposed for the future to comply with the 2016 MA MS4 Permit. This is a "living" document and should be updated and/or modified as required during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions during the permit term.

This permit in part requires that each permittee, or regulated community, address 6 Minimum Control Measures (MCMs). 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.

In addition to the 6 MCMs above, permittees must also address water quality impacts from waterbodies with approved Total Maximum Daily Loads (TMDLs) and certain impairments, generally known as water quality limited waterbodies.

1.3 Regulated Area

Requirements of the 2016 MS4 Permit are limited to a regulated area, defined as the Town's Urbanized Areas (UAs) which generally constitute the largest and most dense areas of settlement in a region. The Bureau of the Census determines UAs by applying a detailed set of published UA criteria to the latest decennial census data. Although the full UA definition is complex, the Bureau of the Census' general definition of a UA, based on population and population density, is provided below:

"An urbanized area (UA) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas."

The most recent UA maps are based on the 2010 Census. **Figure 1-1** shows the UA in the Town of Westminster, which covers the more developed central area of the Town, generally following the paths of Massachusetts Routes 2 and 140 as they pass through Westminster, and excludes the more forested northern and southern portions of the Town. Per the most recent census data, the UA covers 3,379 people out of the total Town population of 7,277, or approximately 46% of the population. The UA area more than doubled since the 2000 Census, generally expanding in the north. The UA is subject to change every ten years based on the application of the Census definition, thus a larger area may be covered in the future.

1.4 How to Use this Plan

For the purposes of the 2016 MS4 Permit and ease of use, the Town's SWMP encompasses five separate written documents:

1. SWMP Plan (this document);
2. Illicit Discharge Detection and Elimination (IDDE) Plan (standalone document);
3. Operation and Maintenance (O&M) Plan (standalone document);
4. Stormwater Pollution Prevention Plan (SWPPP) (standalone document); and
5. Nutrient Impairment Plan (standalone document).

This SWMP Plan is divided into several sections and includes the following components:

Section 2 **Town Characteristics** – Section 2 provides an overview of relevant characteristics, focusing on those aspects related to stormwater runoff and the water quality of surface waters.

Section 3 **MCM 1: Public Education and Outreach** – regulated operators of MS4s are required to implement a public education program. Section 3 discusses activities to comply with this measure.

Section 4 **MCM 2: Public Participation and Involvement** – regulated MS4s are required to obtain public participation throughout the stormwater management program. Section 4 discusses activities to comply with this measure.

Section 5 **MCM 3: Illicit Discharge, Detection, and Elimination** – regulated MS4s must develop and implement an illicit discharge detection and elimination program and develop a regulation to prohibit illicit discharges

to the storm drain system. Section 5 discusses activities to comply with this measure.

Section 6 **MCM 4: Construction Site Stormwater Runoff Control** – regulated MS4s are required to implement and enforce a program to reduce pollutants in stormwater runoff from construction activities that disturb 1 or more acres. This requires the development of a local regulation requiring implementation of proper erosion and sediment controls. Permittees are also responsible for inspections and enforcement. Section 6 discusses activities to comply with this measure.

Section 7 **MCM 5: Stormwater Management in New Development and Redevelopment** – regulated MS4s are required to develop and enforce a regulation requiring implementation of post-construction runoff controls at sites where construction activities disturb 1 or more acres. The controls must be designed to treat stormwater runoff from post-development sites and must be maintained over the long-term. Section 7 discusses activities to comply with this measure.

Section 8 **MCM 6: Good Housekeeping and Pollution Prevention** – regulated MS4s must review their operations at specific facilities and those that occur throughout the Town (i.e., catch basin cleaning and street sweeping) and make improvements where needed to minimize pollution to stormwater runoff. Staff involved in these operations must also be trained on appropriate operations and maintenance techniques. Section 8 discusses activities to comply with this measure.

Section 9 **TMDL and Impaired Waters Controls** – regulated MS4s are required to evaluate and address stormwater contributions to impaired waters. Section 9 discusses activities to comply with this measure.

Section 10 **Annual Reporting** – Section 10 provides a summary of annual reporting requirements in order to meet the 2016 MS4 Permit.

Section 11 **Implementation of Best Management Practices** – Section 11 provides a summary of BMPs outlined in Sections 3 through 9 in a concise plan for easy reference.

1.5 Program Responsibilities

This plan is intended to be used by Town of Westminster staff whose job involves administering the MS4 permit and associated requirements. The Town's MS4 program is headed by the following personnel:

Table 1-1. MS4 Responsible Personnel

Name	Title, Department	Contact
Joshua Hall	DPW Director	(978) 874-5572, jhall@westminster-ma.gov

The Town of Westminster has 9 departments responsible for implementing portions of its MS4 program as identified in the NOI. Therefore, due to the extensive number of departments involved as part of the Town's MS4 program, it is not feasible to list names and titles of responsible personnel for each one, as the information within this plan would be frequently out of date. However, **Table 1-1** provides a list of responsible departments and their general responsibilities within the MS4 program. The responsible person is the most senior person (e.g. department head, administrator, senior elected official, etc.) within each department listed below.

Table 1-2. Program Responsibilities

Department / Division	General Responsibilities
Board of Selectmen	Public participation
Building /Zoning Department	Information distribution for public education; bylaw and regulation development; site plan review procedures; site inspections and procedures; as-built submittal; inventory buildings and facilities
Board of Health	Sanitary Sewer Overflow (SSO) inventory; IDDE program implementation; IDDE training; bylaw and regulation development
Conservation Commission	Information distribution for public education; bylaw and regulation development; site plan review procedures; site inspections and procedures; as-built submittal; target properties to reduce impervious areas and for BMP retrofit; TMDL and water quality limited requirements
Department of Public Works	Information distribution for public education; website management; public participation; SSO inventory; system mapping; IDDE program creation and implementation; IDDE training; bylaw and regulation development; as-built submittal; target properties to reduce impervious areas and for BMP retrofit; inventory buildings and facilities; develop operation and maintenance procedures; SWPPP development and implementation; catch basin cleaning and street sweeping; road salt optimization program; BMP inspections and maintenance; TMDL and water quality limited requirements
Information Technology	Social media participation; website management; public participation
Planning Board	Information distribution for public education; bylaw and regulation development; site plan review procedures; site inspections and procedures; as-built submittal; target properties to reduce impervious areas and for BMP retrofit; TMDL and water quality limited requirements
Town Clerk	Information distribution for public education
Zoning Board	Regulation development

2 Town Characteristics

This section provides some background information on the Town of Westminster, Massachusetts, useful in understanding the Town's characteristics and resources to develop a tailored Stormwater Management Plan. Town characteristics are described below.

2.1 Community Information

Westminster is a landlocked community located in central northern Massachusetts within Worcester County, near the border with New Hampshire. It is generally bordered by Ashburnham Massachusetts to the north, Fitchburg Massachusetts to the east, Leominster to the southeast, Princeton to the south, Hubbardston to the southwest, and Gardner to the northwest. It lies within the Chicopee, Millers, Long Island Sound and Nashua watersheds. Select relevant community profile information is provided below:

- Total Area = 37.3 square miles *(source: Wikipedia)*
- 2010 Population = 7,277*(source: EPA maps based on 2010 US Census)*
- Regulated Area Population = 3,379 *(source: EPA maps based on 2010 US Census)*

2.2 Demographics

Demographics play a role in developing a public education program that targets the appropriate audience through the most appropriate means. Information on owner occupancy versus rentals and languages spoken can help shape how information is disseminated. In Westminster, 100% of the population speaks English only or speaks English "very well" *(source: factfinder.census.gov)*. In addition, the vast majority of households in Westminster are owner-occupied, and thus special considerations related to spoken languages and housing for disseminating public education and outreach program messages is not necessary.

2.3 Land Use

The land uses within the regulated area of the Town of Westminster are shown on **Figure 2-1** and provided below. Impervious area is shown on **Figure 2-2**.

- Commercial 11%
- Forest 11%
- Industrial 7%
- Open Land and Agriculture 8%
- Residential 40%
- Transportation and Utilities 6%
- Wetlands 3%
- Water 13%

As per the above, Westminster has substantial forest, open land, and water/wetland area (approximately 35%), with much of the remaining consisting of low-density residential

development (approximately 40%). Remaining land use (approximately 24%) consists largely of roadways and minor commercial/industrial development.

2.4 303(d) Impaired Waterbodies

The ultimate goal of this Stormwater Management Plan is to outline a program to effectively maintain the Town's stormwater infrastructure and to improve the water quality of receiving waters (waters which receive stormwater discharges from the MS4) in compliance with the 2016 MS4 Permit. 303(d) impaired waters are those surface waters identified by the MassDEP as priority waters that do not meet water quality criteria. As part of the 2016 MS4 Permit, communities must implement BMPs to address all 303(d) waters and specifically address those that have a completed TMDL study. **Table 2-1** lists the "impaired waters" partially or wholly located within the boundaries of Westminster's regulated area based on the Final Massachusetts Integrated List of Waters produced by MassDEP every 2 years[1]. These waters are shown in **Figure 2-3**. Westminster reviews changes as new lists are published and update this plan as required.

Table 2-1. Impaired Waters

Waterbody Name	Segment ID and Category		Impairment(s)	Approved TMDL[2]
Upper Reservoir	MA35091	4a	Mercury in Fish Tissue	33880
Crocker Pond	MA81025	4c	(Non-Native Aquatic Plants*)	
Sawmill Pond	MA81118	4c	(Non-Native Aquatic Plants*)	
Wyman Pond	MA81161	4c	(Non-Native Aquatic Plants*)	
Lower Crow Hill Pond	MA81026	5	(Non-Native Aquatic Plants*)	
Millers River	MA35-03	5	PCBs in Fish Tissue	
Phillips Brook	MA81-12	5	Temperature	
Partridge Pond	MA81098	5	(Non-Native Aquatic Plants*)	
			Aquatic Plants (Macrophytes)	
			Turbidity	
Smith Brook	MA81-90	5	Temperature	
Wachusett Lake	MA81146	5	Mercury in Fish Tissue	
Whitman River	MA81-11	5	(Non-Native Aquatic Plants*)	
			Lead	
			Temperature	

Category 4a Waters – impaired waters with a completed TMDL.
Category 4c Waters – impaired waters where the impairment is not caused by a pollutant. No TMDL required.
Category 5 Waters – impaired waters that require a TMDL.
**TMDL not required (Non-pollutant)

[1]Note that at the time of preparation of this report, the 2018/2020 303d List is the most up to date finalized version
[2]"Approved TMDLs" are those that have been approved by EPA as of the date of issuance of the 2016 MS4 Permit.

Westminster is listed in the 2016 MS4 Permit as being subject to the Millers Basin Lakes phosphorus TMDL requirements for the following waterbodies:

- Greenwood Pond (MA35025);
- Minott Pond South (MA35045);
- Minott Pond (MA35046); and
- Wrights Reservoir (MA35104).

Per correspondence with EPA in August 2021, the above waterbodies have a 0% reduction and no further action for these waterbodies was required. However, Westminster was informed in March 2022 that Bents Pond and Ramsdall Pond are now subject to phosphorus reduction requirements which must be addressed under a Lakes and Ponds Phosphorus Control Plan (LPCP). Westminster is also subject to the Long Island Sound nitrogen TMDL requirements and is preparing a Nitrogen Source Identification Report to address applicable requirements. Both the LPCP and Nitrogen Source Identification Report are being addressed under a single standalone Nutrient Impairment Plan as outlined further in Section 9.

Note that although Westminster has waterbodies listed as impaired for Mercury in Fish Tissue, the 2016 MS4 Permit does not specific a wasteload allocation or other requirements for MS4 discharges. Thus, there are no requirements related to mercury reduction.

2.5 Measures to Protect Surface Drinking Water Supplies

Westminster in part receives treated public drinking water from the City of Fitchburg which draws some water from Mare Meadow Reservoir and Meetinghouse Pond, both located within Westminster. Contributing watershed areas to both ponds are largely forested with small amounts of low density residential areas. Mare Meadow Reservoir and its entire contributing watershed are located outside of the regulated urbanized area, and no drainage infrastructure has been mapped in this area. Meetinghouse Pond is located outside of the regulated urbanized area, however, a small portion of the contributing watershed includes portions of the UA, mostly along Carter Road. This roadway is a narrow (approximately 20-feet wide) roadway with no line striping which serves exclusively low density residential land use. Thus, vehicular traffic along this roadway is minimal, largely limited to local homeowners with little heavy truck traffic.

The watershed for an emergency surface drinking water supply associated with the Wachusett Lake Reservoir is also present within Westminster and is largely centered around Wyman Pond and the Wachusett Lake Reservoir itself. There are approximately forty outfalls within this watershed area, most of which were screened during dry weather conditions for potential illicit discharge indicators, none of which were identified. Outfalls are shown on **Figure 2-4**.

2.6 Endangered Species Act Determination

In order to be eligible to discharge stormwater under the 2016 MS4 Permit, the Town of Westminster must certify that its stormwater system is not impacting federally listed rare or endangered species habitat or other critical environmental locations. This was completed in the summer of 2018 as meeting "Criterion B" on the Notice of Intent with the results documented in **Appendix A**. The Northern Long-eared Bat *(Myotis septentrionalis)*, Red Knot *(Calidris canutus rufa)*, Roseate Tern (*Sterna dougallii dougallii)*, Puritan Tier Beetle *(Cicindela puritana)*, Northeastern Bulrush *(Scirpus ancistrochaetus)*, and Small Whorled Pogonia *(Isotria medeoloides)* were identified as potentially being present within Westminster's regulated area. No critical habitats were identified.

2.7 National Historic Preservation Act Determination

Regulated MS4s must also evaluate whether its discharges have the potential to affect historic properties. The MS4 Permit typically authorizes discharges from existing facilities and requires control of the pollutants discharged from the facility, however, EPA does not anticipate effects on historic properties from the pollutants in the authorized discharges. Thus, to the extent EPA's issuance of the MS4 General Permit authorizes discharges of such constituents, confined to existing channels, outfalls or natural drainage areas, the permitting action does not have the potential to cause effects on historical properties. If there have been no relevant changes in operation of the MS4 since the 2003 MS4 General Permit, the discharge can still be considered to have no potential to have an effect on historic properties. This has been documented as "Criterion A" on the Notice of Intent (**Appendix A**) and thus no additional information is required for documentation.

Where there is disturbance of land through the construction and/or installation of control measures, there is a possibility that artifacts, records, or remains associated with historic properties could be impacted. In these cases, such as during future construction of structural stormwater BMPs, the Town will need to ensure that historic properties will not be impacted by their activities, or that they are in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties. This will be completed as required during a later date(s).

3 MCM 1: Public Education and Outreach

3.1 Summary of Permit Requirements

3.1.1 Core Permit Requirements

Under MCM 1, permittees must develop an educational program, define educational goals, express specific messages, define the targeted audience for each message, and identify responsible parties for program implementation. At a minimum, the program must provide information concerning the impact of stormwater discharges on water bodies within the community, especially those waters that are impaired or identified as priority waters. The program must identify steps and/or activities that the public can take to reduce the pollutants in stormwater runoff and their impacts to the environment.

The Town must address 4 core target audiences, unless 1 of these audiences is not present in the MS4 community:

1. Residents;
2. Businesses, Institutions, and Commercial facilities;
3. Developers and Construction; and
4. Industrial facilities.

At least 2 educational messages must be distributed to audiences over the permit term spaced at least a year apart. See sections below for more information.

3.1.2 TMDL & Impaired Waters Requirements

Public education and outreach programs must also address impaired waterbodies or those identified as priority waters. In Westminster, the only waterbody impairments listed as having specific requirements under the 2016 MS4 Permit are nitrogen, phosphorus, and turbidity. Priority waterbodies and impairments can be found in **Table 3-1**.

Table 3-1. Priority Waterbodies

Waterbody Name	Impairment
Long Island Sound	Nitrogen
Bents Pond	Phosphorus
Ramsdall Pond	Phosphorus
Partridge Pond	Turbidity
Whitman River	Lead

Note that turbidity water quality limited waterbody requirements (Partridge Pond), lead water quality limited waterbody requirements (Whitman River), and Lake and Pond Phosphorus TMDL Requirements (Bents Pond and Ramsdall Pond) as outlined under the permit do not outline specific public education requirements. Relevant public information

on nitrogen (Long Island Sound topics as outlined by the 2016 MS4 Permit is included with each of the 4 applicable target audiences as outlined below.

3.2 Objectives and Goals

The Town of Westminster implements an education program that includes educational goals based on stormwater issues of significance within the MS4 area, increase knowledge, and change behavior of the public so that pollutants in stormwater are reduced.

3.3 Public Education Program

The following sections outline how Westminster is meeting the requirements of the 2016 MS4 Permit by completing targeted outreach to the 4 required audiences. Additionally, since the Town has waterbodies with TMDL and water quality impairments associated with nitrogen, the program includes messages to help minimize contributions of these pollutants, in accordance with the "Enhanced BMPs" requirements in Appendix F and Appendix H of the 2016 MS4 Permit.

3.3.1 Residential

Informational Topics
As required for all communities under the 2016 MS4 Permit, the following topics are addressed under the Residential public education and outreach program:

- Effects of lawn care (use of pesticides, herbicides, and fertilizers) on water quality;
- Benefits of appropriate on-site infiltration of stormwater;
- Effects of automotive work and car washing on water quality;
- Proper disposal of swimming pool water;
- Proper management of pet waste; and
- Maintenance of septic systems.

As required for waterbodies subject to the Long Island Sound nitrogen TMDL, the Town shall supplement its Residential program with the following annual messages encouraging:

- Spring (April-May): proper disposal of grass clippings and use of slow-release fertilizer;
- Summer (June-July): proper management of pet waste; and
- Fall (August-October): proper disposal of leaf litter.

Educational Message and Methods of Distribution
The following table shows the educational messages and methods of distribution for the above topics, along with responsible parties and measurable goals.

Table 3-2. BMP Description – Residential Outreach

BMP Description	Message	Method of Distribution	Responsible Parties	Measurable Goal
BMP 1-1: Residential Education Program	Brochures and pamphlets	Distribute fact sheets or brochures on pet waste pickup with dog licenses	Town Clerk	Provide Information with all applications and renewals
	Brochures and pamphlets	Distribute fact sheets to homeowners in close proximity to water resources	Department of Public Works	Provide informational flyers to residents within environmentally sensitive areas
	Stormwater webpage	Provide relevant information and links for viewing and/or download from Town webpage	Information Technology, Department of Public Works	Continue to update and maintain the websites
	Social media outreach	Provide relevant information to different audiences via various social media platforms	Information Technology	Follow statewide "Think Blue" campaign on social media platforms

The following table lists which of the topics are covered under each message.

Table 3-3. Residential Public Outreach Topics and Message

Topics and Educational Message	Brochures / Handouts	Pet Waste Fact Sheet	Social Media	Stormwater Webpage
Core Program Topics				
Effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers) on water quality	x		x	x
Benefits of appropriate on-site infiltration of stormwater	x		x	x
Effects of automotive work and car washing on water quality	x		x	x
Proper disposal of swimming pool water;	x		x	x
Proper management of pet waste	x	x	x	x
Maintenance of septic systems	x		x	x

Table 3-3 (continued). Residential Public Outreach Topics and Message

Topics and Educational Message	Brochures / Handouts	Pet Waste Fact Sheet	Social Media	Stormwater Webpage
Nitrogen Impairment Topics				
Spring (March/April): encourage proper use and disposal of grass clippings and encourage the proper use of slow-release and phosphorus-free fertilizers	x		x	x
Summer (June/July): encourage proper management of pet waste, including noting any existing bylaws where appropriate	x	x	x	x
Fall (August/September/October): encourage the proper disposal of leaf litter	x		x	x

Schedule
Due to the importance of educating Town residents, many of the above topics are made available continuously via brochures and the website. Information pertaining to the nitrogen seasonal messages is made available on the website continuously with notes provided for the appropriate timeframes for implementing certain topics.

3.3.2 Businesses, Institutions, and Commercial Facilities

Informational Topics
As required for all communities under the 2016 MS4 Permit, the following topics are addressed under the Business, Institutions, and Commercial public education and outreach program:

- Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
- Benefits of appropriate on-site infiltration of stormwater;
- Building maintenance and storage of materials;
- Proper use and storage of salt or other de-icing and anti-icing materials;
- Proper management of waste materials and dumpsters;
- Proper management of parking lot surfaces;
- Proper car care activities; and
- Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.

As required for waterbodies subject to the Long Island Sound nitrogen, the Town shall supplement its Business, Institutions, and Commercial program with the following annual messages encouraging:

- Spring (April-May): proper disposal of grass clippings and fertilizer usage, such as slow-release and phosphorus-free;
- Summer (June-July): proper management of pet waste; and

- Fall (August-October): proper disposal of leaf litter.

Educational Message and Methods of Distribution
The following table shows the educational messages and methods of distribution for the above topics, along with responsible parties and measurable goals. All informational topics are addressed on the Town's website.

Table 3-4. BMP Description – Businesses, Institutions, and Commercial Outreach

BMP Description	Message	Method of Distribution	Responsible Parties	Measurable Goal
BMP 1-2: Businesses, Institutions, and Commercial Education Program	Stormwater webpage	Provide relevant information and links for viewing and/or download from Town webpage	Information Technology, Department of Public Works	Creation of website with periodic updates
	Social media outreach	Provide relevant information to different audiences via various social media platforms	Information Technology	Follow statewide "Think Blue" campaign on social media platforms

Schedule
Information pertaining to the Business, Institutions, and Commercial public education and outreach program is made available continuously on the website and via social media.

3.3.3 Developers and Construction

Informational Topics
As required for all communities under the 2016 MS4 Permit, the following topics are addressed under the Developers and Construction public education and outreach program:

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

Educational Message and Methods of Distribution
The following table shows the educational messages and methods of distribution for the above topics, along with responsible parties and measurable goals. All informational topics are addressed on the Town's website and via erosion control and fact sheets provided to developers when applying for applicable permits.

Table 3-5. BMP Description – Developers and Construction Outreach

BMP Description	Message	Method of Distribution	Responsible Parties	Measurable Goal
BMP 1-3: Developers and Construction Education Program	Brochures and pamphlets	Distribute fact sheets or brochures on erosion and sediment control with permit applications.	Planning Board, Conservation Commission, Building Department	Provide information with all applications.
	Stormwater webpage	Provide relevant information and links for viewing and/or download from Town webpage	Information Technology, Department of Public Works	Creation of website with periodic updates
	Social Media	Provide relevant information to different audiences via various social media platforms	Information Technology	Follow statewide "Think Blue" campaign on social media platforms

Schedule
Information pertaining to the Developers and Construction are made available continuously on the website and via social media.

3.3.4 Industrial

Informational Topics
As required for all communities under the 2016 MS4 Permit, the following topics are addressed under the Industrial public education and outreach program:

- Equipment inspection and maintenance;
- Proper storage of industrial materials and dumpster management;
- Proper management and disposal of wastes;
- Minimization of use and proper storage of salt or other de-icing/anti-icing materials;
- Benefits of on-site stormwater from areas with low exposure to industrial materials;
- Proper maintenance of parking lot surfaces; and
- Information about EPA's CGP.

Educational Message and Methods of Distribution
The following table shows the educational messages and methods of distribution for the above topics, along with responsible parties and measurable goals. All informational topics are addressed on the Town's website.

Table 3-6. BMP Description – Industrial Outreach

BMP Description	Message	Method of Distribution	Responsible Parties	Measurable Goal
BMP 1-4: Industrial Education Program	Stormwater webpage	Provide relevant information and links for viewing and/or download from Town webpage	Information Technology, Department of Public Works	Creation of website with periodic updates
	Social Media	Provide relevant information to different audiences via various social media platforms	Information Technology	Follow statewide "Think Blue" campaign on social media platforms

Schedule
Information pertaining to the Industrial public education and outreach program are made available on the website continuously on the website and via social media.

3.4 Measuring Public Education Program Effectiveness

During completion of the Town's annual report as detailed further under Section 10, Westminster reviews the effectiveness of each message and the Town's overall education program. Effectiveness is expected to vary by message, however is generally measured based on quantities of materials distributed and feedback from town employees based on observations in their area of work. Educational messages and/or distribution techniques are modified as needed, should program managers determine that they are ineffective.

4 MCM 2: Public Participation & Involvement

4.1 Summary of Permit Requirements

Under MCM 2, permittees must provide annual opportunities for public participation in the review and implementation of the Town's SWMP as part of a public education and involvement program. All public involvement activities must comply with state public notice requirements. The SWMP and annual reports must also be made available so that the public has opportunities to review and comment.

4.2 Objectives and Goals

Westminster implements a public participation and involvement program that provides opportunities for review and implementation of the Town's SWMP. This helps support public education and outreach items under MCM 1.

4.3 Public Participation and Involvement Opportunities

The following outlines how Westminster is meeting permit requirements to provide the public with opportunities to participate in reviewing and implementing the SWMP.

4.3.1 Make Documents Publicly Available for Comment

Westminster makes this written SWMP Plan and annual reports available for review and comment via the Town's website, along with the name, email address and/or phone number of a contact person from the Town government to request additional information or submit comments. This allows the public to comment on the program at least once per year. An updated SWMP Plan is posted to the website annually as additional tasks are completed. The following table shows the BMP, responsible parties and measurable goals.

Table 4-1. BMP Description – Make Documents Publicly Available for Comment

BMP Description	Responsible Parties	Measurable Goal
BMP 2-1: Make SWMP Plan Publicly Available	Information Technology, Department of Public Works	Annual review of stormwater management plan and posting on website. Allow public to comment on the plan at least annually

4.3.2 Household Hazardous Waste Collection

The Town sponsors at least 1 event annually during which residents can drop off household hazardous waste for proper disposal. The following table shows the BMP, responsible parties and measurable goals.

Table 4-2. BMP Description – Household Hazardous Waste Collection

BMP Description	Responsible Parties	Measurable Goal
BMP 2-2: Household Hazardous Waste Collection Event	Department of Public Works, Board of Selectmen	Allow public to annually drop off household hazardous waste

4.3.3 Cleanup Events

The Town supports an annual cleanup event typically held as part of Earth Day events and focusing on roadside waste. The following table shows the BMP, responsible parties and measurable goals.

Table 4-3. BMP Description – Hold Annual Cleanup Event

BMP Description	Responsible Parties	Measurable Goal
BMP 2-3: Annual Roadside Cleanup	Department of Public Works, Board of Selectmen	Allow annual participation in Town Earth Day event.

5 MCM 3: Illicit Discharge, Detection, and Elimination

5.1 Summary of Permit Requirements

Under MCM 3, permittees must implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. A summary of the required IDDE activities and timelines are provided below. See sections below for more information.

5.1.1 Legal Authority

The IDDE program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to prohibit, investigate, and eliminate illicit discharges. For permittees authorized by the MS4-2003 permit such as Westminster, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.

5.1.2 Sanitary Sewer Overflow

Regulated communities must identify all known locations where SSOs have discharged to the MS4 during the previous 5-years and update it annually. Upon detection of an SSO, the permittee must eliminate it as quickly as possible and take interim mitigation measures to minimize or eliminate the discharge of pollutants until remediation work is complete.

5.1.3 System Mapping

Regulated communities must complete a comprehensive map of their stormwater system in 2 phases. Phase 1 must be completed within 2 years and include infrastructure such as outfalls and preliminary catchment delineations, waterbodies, open channel conveyances, interconnections with other MS4s, and structural stormwater BMPs. Phase 2 must be completed within 10 years and include information such as outfalls with high accuracy GPS location and refined catchment delineations, catch basins, manholes, pipe connectivity, and sanitary or combined sewer systems as available/applicable.

5.1.4 Illicit Discharge, Detection, and Elimination Program

The 2016 MS4 Permit requires preparation of a comprehensive written IDDE Program or IDDE Plan that provides detailed procedures for assessment and priority ranking of outfalls and interconnections, dry and wet weather outfall sampling, catchment investigation procedures, system vulnerability factor (SVF) assessment, identification of an illicit discharge, illicit discharge removal, and ongoing screening requirements. The written IDDE Program must be prepared as a standalone IDDE Plan separate from this SWMP Plan.

5.1.5 Annual IDDE Training

The 2016 MS4 Permit requires annual IDDE training to be provided to all employees involved in the IDDE program. Training must, 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.

5.2 Objectives and Goals

The Town of Westminster implements an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. The ultimate goal is to remove sources of pollution and improve water quality in receiving waterbodies.

5.3 IDDE Program

The following sections outline how Westminster is meeting the requirements of the 2016 MS4 Permit to implement an IDDE program to locate, eliminate, and prohibit illicit discharges.

5.3.1 Establish Legal Authority

Requirements
Permittees must develop an ordinance, bylaw or regulatory mechanism 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; and
- Implement appropriate enforcement procedures and actions.

Work to be Performed
The Town of Westminster has adopted an Illicit Discharges and Connections bylaw under Chapter 123, Sections 123-1 to 123-11 dated May 2, 2006 which addresses all of the legal above requirements in order to create an IDDE program to satisfy the 2016 MS4 Permit, and is provided under **Appendix B**. The following table shows the BMP, responsible parties and measurable goals.

Table 5-1. BMP Description – Establish IDDE Legal Authority

BMP Description	Responsible Parties	Measurable Goal
BMP 3-1: Enact and Enforce IDDE Bylaw	Department of Public Works, Board of Health	Continue enforcing existing IDDE bylaw, dated May 2, 2006

5.3.2 Complete System Mapping

Requirements
The 2016 MS4 Permit requires the storm system map to be updated in 2 phases. Phase I mapping must be completed within 2 years of the effective date of the permit (July 1, 2020) and include the following information:

- Outfalls and receiving waters (previously required by the MS4-2003 permit);
- Open channel conveyances (swales, ditches, etc.);
- Interconnections with other MS4s and other storm sewer systems;
- Municipally owned stormwater treatment structures;
- Waterbodies identified by name with a list of impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report; and
- Initial catchment delineations based on topography or contributing structures.

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 locations (latitude and longitude with a minimum accuracy of +/-30 feet);
- Pipe connectivity;
- Manholes;
- Catch basins;
- Refined catchment delineations based on updated mapping information;
- Municipal sanitary sewer system; and
- Municipal combined sewer system.

Work to be Performed
The Town of Westminster has mapped much of its stormwater system and current mapping status is provided in **Appendix C**. All information is incorporated into its GIS library and where applicable, GIS information can be exported into other formats. The Town of Westminster will continue to update its stormwater mapping by the required deadlines to include the above information. The following table shows the BMPs, responsible parties and measurable goals.

Table 5-2. BMP Description – Complete System Mapping

BMP Description	Responsible Parties	Measurable Goal
BMP 3-2: Phase I Storm Sewer System Map	Department of Public Works	Complete preliminary system map within 2 years of effective date of permit
BMP 3-2: Phase II Storm Sewer System Map	Department of Public Works	Complete full system map 10 years after effective date of permit

5.3.3 Complete Sanitary Sewer Overflow Inventory

Requirements

The 2016 MS4 Permit requires municipalities to prohibit illicit discharges, including 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/or vandalism.

Work to be Performed

The Town of Westminster completed an inventory of SSOs that have discharged to the MS4 within the 5 years prior to submitting the Year 1 Annual Report to EPA. According to the results of that inventory, there were no known SSOs to surface water or into the MS4 during those 5 years. The inventory is also included in the IDDE Plan, including the status of mitigation and corrective measures to address each identified SSO. The inventory is updated annually as part of the Town's annual report submittal to EPA in September of each year. The following table shows the BMP, responsible parties and measurable goals.

Table 5-3. BMP Description – Generate SSO Inventory

BMP Description	Responsible Parties	Measurable Goal
BMP 3-4: Complete SSO Inventory	Department of Public Works, Board of Health	Develop SSO inventory and complete within 1 year of effective date of permit

In the event a SSO occurs, the town tracks and reports 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. The SSO inventory is updated as needed.

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:

- MassDEP Central Region, 8 New Bond St., Worcester MA 01606; (508) 792-7650

The EPA contacts are:

- EPA New England, 5 Post Office Square, Boston, MA 02109; (617) 918-1510

5.3.4 Develop and Implement Written IDDE Program

Requirements
The Town of Westminster must develop an IDDE Program, the majority of which is contained in a written Illicit Discharge, Detection, and Elimination Plan, a standalone document separate from this SWMP Plan. The IDDE Plan must include a statement of responsibilities and detailed written procedures for the following:

- Assessment and priority ranking of outfalls and interconnections;
- Dry and wet weather outfall sampling;
- Catchment investigation procedures;
- System vulnerability factor (SVF) assessment;
- Identification of an illicit discharge;
- Illicit discharge removal; and
- Ongoing screening requirements.

Work to be Performed
Westminster has developed a written IDDE Plan as a separate standalone document to address the illicit discharge requirements of the 2016 MS4 Permit. Westminster is working towards implementing a comprehensive IDDE Plan and program, according to the schedule set forth in the permit. The following table shows the BMPs, responsible parties and measurable goals.

Table 5-4. BMP Description – Written IDDE Program and Program Implementation

BMP Description	Responsible Parties	Measurable Goal
BMP 3-5: Written IDDE Program	Department of Public Works	Create written IDDE program within 1 year of the effective date of the permit and update periodically
BMP 3-5: Outfall / Interconnection Inventory and Ranking	Department of Public Works	Classify and rank outfalls and interconnections within 1 year of the effective date of the permit.
BMP 3-7: Implement IDDE Program	Department of Public Works, Board of Health	Implement catchment investigations and complete within 10 years of the effective date of the permit

5.3.5 Perform Dry and Wet Weather Outfall Screening

Requirements
Outfalls and contributing catchment areas must be categorized into Problem, High, Low, and Excluded outfalls and then ranked within each category. The 2016 MS4 Permit then

requires all outfalls classified as High and Low to be inspected for the presence of dry conditions within 3 years of the permit effective date. While completing screening, permittees must also document various physical indicators of the outfall and sample flowing outfalls. Additionally, outfalls with at least 1 SVF must also be sampled during wet weather. Depending on the results, additional screening and sampling may be required further up into the contributing catchment. Once dry and wet weather sampling is complete, additional ongoing screening shall be performed once every 5 years in accordance with the catchment prioritization and ranking. Both dry and wet weather outfall screening must be conducted in accordance with screening procedures outlined in the written IDDE Plan. All sampling results shall be reported in the permittee's annual report.

Work to be Performed
Westminster developed an outfall sampling program under the IDDE Plan which is being implemented moving forward according to the schedule outlined in the 2016 MS4 Permit. This includes dry and wet weather screening on Town outfalls, including those with SVFs where applicable. Known outfalls were evaluated during dry weather conditions during 2019 and 2020, and none of the sampling data collected from flowing outfalls met the Permit criteria as being highly likely to contain illicit discharges from sanitary sources. Results are documented in the standalone IDDE Plan.

Wet weather screening on Town outfalls, including those with SVFs, will be completed at a later date where applicable. The program will be performed in accordance with the written procedures and schedules in the IDDE Plan. Ongoing screening will also be performed after the conclusion of the initial sampling rounds. The following table shows the BMPs, responsible parties and measurable goals.

Table 5-5. BMP Description – Perform Dry and Wet Weather Outfall Screening

BMP Description	Responsible Parties	Measurable Goal
BMP 3-8: Dry Weather Screening	Department of Public Works	Complete in accordance with outfall screening procedure within 3 years of the effective permit date
BMP 3-9: Wet Weather Screening	Department of Public Works	Complete in accordance with outfall screening procedure within 10 years of the effective permit date
BMP 3-10: Ongoing Screening	Department of Public Works	Conduct ongoing dry and wet weather outfall screening upon completion of the IDDE program

5.3.6 Perform Annual IDDE Training

The 2016 MS4 Permit requires annual IDDE training to be provided to all employees involved in the IDDE program. Therefore, Westminster provides annual training that at a minimum includes information on how to identify illicit discharges and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program. The Department of Public Works and Board of Health are the sole municipal departments responsible for implementing the IDDE program, and

training focuses on these departments. Frequency and type(s) of training is included in the annual report. The following table shows the BMP, responsible parties and measurable goals.

Table 5-6. BMP Description – Perform Annual IDDE Training

BMP Description	Responsible Parties	Measurable Goal
BMP 3-11: Perform IDDE Training	Department of Public Works, Board of Health	Complete annual training

5.4 Measuring IDDE Program Effectiveness

The success of the IDDE Program is evaluated according to the following parameters:

- Storm system mapping 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 procedures;
- Updated SVF and catchment inventory and ranking;
- Dry weather and wet weather screening and sampling results;
- Estimated volume or quantity of sewage removed; and
- Number of employees successfully trained on IDDE.

The above are tracked throughout the year and reported as part of each annual report submitted to EPA each year by September 28.

6 MCM 4: Construction Site Stormwater Runoff Control

6.1 Summary of Permit Requirements

Under MCM 4, permittees are required to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to 1 acre within the regulated area. This program shall also regulate disturbances less than 1 acre if they are part of a larger common plan of development or sale that would disturb 1 or more acres. A summary of the required Construction Site Stormwater Runoff Control Program activities and timelines are provided below:

6.1.1 Legal Authority

The Construction Site Stormwater Runoff Control Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:

- Require the use of sediment and erosion control practices at construction sites; and
- Include controls for other wastes on construction sites.

For permittees authorized by the MS4-2003 permit such as Westminster, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.

6.1.2 Construction Site Stormwater Runoff Control Program

The 2016 MS4 Permit requires preparation of a written Construction Site Stormwater Runoff Control Program procedures that includes pre-construction site plan review and onsite construction inspections. Permittees must also establish requirements for developers to implement a Sediment and Erosion Control Program as part of its Construction Site Stormwater Runoff Control Program that includes BMPs to reduce pollutant sources from construction sites. This program should also include requirements for controlling other wastes during construction.

6.2 Objectives and Goals

The Town of Westminster implements an effective construction stormwater runoff control program to minimize or eliminate erosion and maintain sediment onsite so that it is not transported in stormwater and allowed to discharge to a water of the U.S through the permittee's MS4.

6.3 Construction Site Stormwater Runoff Control Program

The following sections outline how Westminster meeting the requirements of the 2016 MS4 Permit to establish a Construction Site Stormwater Runoff Control Program.

6.3.1 Establish Legal Authority

Requirements
Permittees must develop an ordinance, bylaw or regulatory mechanism to:

- Require the use of sediment and erosion control practices at construction sites;
- Include controls for other wastes on construction sites.

In addition, the bylaw may require updates to address the requirements of the Long Island Sound and Lake and Pond Phosphorus TMDL Requirements. See Section 9 for more information.

Work to be Performed
The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part require use of soil erosion and sediment controls to stormwater runoff at construction sites, and also includes controls for other wastes at construction sites. The following table shows the BMP, responsible parties and measurable goals.

Table 6-1. BMP Description – Establish Construction Site Legal Authority

BMP Description	Responsible Parties	Measurable Goal
BMP 4-1: Develop and Enforce Construction Bylaw	Planning Board, Conservation Commission, Building / Zoning Department	Complete bylaw within 1 year of the effective date of the permit

6.3.2 Establish Written Procedures for Site Plan Review

Requirements
The 2016 MS4 Permit requires establishing written procedures for pre-construction plan review of the site design, planned operations, planned BMPs during the construction phase, and planned BMPs to manage runoff after development that includes the following:

- Potential water quality impacts;
- Consideration of information submitted by the public; and
- Evaluation of opportunities for use of LID and green infrastructure (GI).

Work to be Performed
The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part provide written procedures for reviewing plan submittals, including plans, calculations, and other items as required by the permit. The following table shows the BMP, responsible parties and measurable goals.

Table 6-2. BMP Description – Establish Site Plan Review Procedures

BMP Description	Responsible Parties	Measurable Goal
BMP 4-2: Develop Written Procedures for Site Plan Review	Planning Board, Conservation Commission, Building / Zoning Department	Establish procedures for site plan review within 1 year of the effective date of the permit

6.3.3 Establish Procedures for Site Inspections and Enforcement

Requirements
The 2016 MS4 Permit requires the development of written procedures for site inspections and enforcement actions to take place both during construction of BMPs and after construction of BMPs is completed to ensure they are working as described in the approved plans. Procedures must define the following:

- Who is responsible for site inspections;
- Qualifications necessary to perform inspections;
- Who has authority to implement enforcement procedures;
- Ability to impose sanctions to ensure program compliance;
- The use of standardized inspection forms (if appropriate); and
- How to track the number inspections and enforcement actions for reporting in the Annual Report.

Work to be Performed
The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part provide written procedures for site inspections, enforcement actions, outlines qualified personnel, and a tracking methodology. The following table shows the BMP, responsible parties and measurable goals.

Table 6-3. BMP Description – Establish Site Inspections and Enforcement Procedures

BMP Description	Responsible Parties	Measurable Goal
BMP 4-3: Develop Written Procedures for Site Inspections and Enforcement	Planning Board, Conservation Commission, Building / Zoning Department	Establish procedures for site inspections and enforcement within 1 year of the effective date of the permit

6.3.4 Establish a Sediment and Erosion Control Program

Requirements

Permittees must establish requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site. Examples of sediment and erosion control measures for construction sites include local requirements to:

1. Minimize the amount of disturbed area and protect natural resources;
2. Stabilize sites when projects are complete or operations have temporarily ceased;
3. Protect slopes on the construction site;
5. Protect all storm drain inlets and armor all newly constructed outlets;
6. Use perimeter controls at the site;
7. Stabilize construction site entrances and exits to prevent off-site tracking;
8. Inspect stormwater controls at consistent intervals.

Work to be Performed

The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part provide written procedures to prohibit illicit discharge of debris, truck wash-out, litter and sanitary waste control on constructions sites. The following table shows the BMPs, responsible parties and measurable goals.

Table 6-4. BMP Description – Develop an Erosion and Sediment Control Program

BMP Description	Responsible Parties	Measurable Goal
BMP 4-4: Establish a Sediment and Erosion Control Program	Planning Board, Conservation Commission, Building Department	Establish procedures for development of an erosion and sediment control program within 1 year of the effective date of the permit
BMP 4-5: Develop Procedures for Waste Control	Planning Board, Conservation Commission, Building Department	Establish requirements to control construction site wastes within 1 year of the effective date of the permit

7 MCM 5: Stormwater Management in New Development and Redevelopment

7.1 Summary of Permit Requirements

Under MCM 5, permittees shall develop, implement, and enforce a program to address post-construction stormwater runoff from new development and redevelopment sites that disturb 1 or more acres and discharge into an MS4 system. This program shall also regulate disturbances less than 1 acre if they are part of a larger common plan of development or sale that would disturb 1 or more acres. A summary of the required Stormwater Management in New Development and Redevelopment, also known as Post Construction Stormwater Management, activities and timelines are provided below:

7.1.1 Legal Authority

The Post Construction Stormwater Management Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:

- Require LID site planning and design strategies;
- Meet many of the requirements of the Massachusetts Stormwater Handbook and associated stormwater standards;
- Incorporate runoff volume storage and/or pollutant removal requirements; and
- Meet additional requirements for TMDL and water quality limited waterbodies.

Updates must be made within 3 years of the effective permit date.

7.1.2 As-Built Submittals

The permittee must require the submission of as-built drawings within 3 years after completion of construction projects and include structural and non-structural controls.

7.1.3 Operation and Maintenance

The program must include procedures to ensure adequate long-term operation and maintenance of BMPs are established after completion of a construction project, along with a dedicated funding source within 3 years of the effective permit date.

7.1.4 Regulatory Assessment

The permittee must complete an assessment of existing regulations that could affect creation of impervious cover to determine if changes are required to support LID. Additionally, the permittee must assess current regulations to ensure that certain green infrastructure is allowable where feasible. Any required changes must be completed within 4 years of the effective permit date.

7.1.5 Inventory of Potential Retrofit Sites

The permittee must complete an inventory within 4 years of the effective permit date to determine at least 5 permittee-owned properties that could be modified or retrofitted with stormwater BMP improvements.

7.2 Objectives and Goals

The Town of Westminster implements and enforces a program to reduce pollutants in stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance greater than or equal to 1 acre within the regulated area.

7.3 Post-Construction Stormwater Management Program

The following sections outline how Westminster is meeting the requirements of the 2016 MS4 Permit to establish a Post-Construction Stormwater Management Program.

7.3.1 Establish Legal Authority

Requirements
Under the 2016 MS4 Permit, permittees shall develop or modify an ordinance, bylaw, or other regulatory mechanism within 3 years of the effective date of the permit to contain provisions that are as least as stringent as the following:

1. Use LID site planning and design strategies unless in feasible;
2. Stormwater management system designs shall be consistent with, or more stringent than, the requirements of the 2008 Massachusetts Stormwater Handbook, as amended;
3. Stormwater management systems on new development shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus related to the total postconstruction impervious surface area on the site as calculated based on the average annual loading and not on the basis of any individual storm event.
    a) Average annual pollutant removal requirements are achieved through one of the following methods:
        1) Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or

2) Retaining the volume of runoff equivalent to, or greater than, one inch multiplied by the total post-construction impervious surface area on the new development site; or
3) Meeting a combination of retention and treatment that achieves the above standards; or
4) Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

4. Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual postconstruction load of TSS related to the total post-construction impervious area on the site AND 50% of the average annual load of Total Phosphorus related to the total post-construction impervious surface area on the site as calculated based on the average annual loading and not on the basis of any individual storm event.
    a) Average annual pollutant removal requirements are achieved through one of the following methods:
        5) Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
        6) Retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site; or
        7) Meeting a combination of retention and treatment that achieves the above standards; or
        8) Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the redevelopment site.
    b) Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways, (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing conditions unless infeasible are exempt from part a) above. Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of part a) above.

The regulatory mechanisms must include requirements for stormwater structural BMPs proposed as part of new or redevelopment to be optimized nitrogen removal for development within the Long Island Sound watershed in order to meet TMDL requirements. In addition, regulatory mechanisms must include provisions requiring stormwater BMP designs that allow for shutdown and containment to isolate the system in the event of an emergency spill or other unexpected event within areas draining to Partridge Pond. Finally,

the bylaw may require updates to address the requirements of the Lake and Pond Phosphorus TMDL Requirements. See Section 9 for more information.

Work to be Performed
The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part requires the use of LID techniques as feasible, as well as establishing stormwater standards for TSS and total phosphorus removal for both new development and redevelopment. Additionally, The Town of Westminster has established a "Low-Impact Development" bylaw under Chapter 136 of the Town's general bylaws that requires LID techniques to be implemented for smaller projects that disturb between 10,000 square feet and 1 acre, The following table shows the BMP, responsible parties and measurable goals.

Table 7-1. BMP Description – Establish Post-Construction Site Legal Authority

BMP Description	Responsible Parties	Measurable Goal
BMP 5-1: Develop and Enforce Post-Construction Bylaw	Planning Board, Conservation Commission, Building Department	Complete bylaw within 2 years of the effective date of the permit

7.3.2 Require Submittal of As-Built Plans

The permittee must require the submission of as-built drawings that include structural and non-structural stormwater controls within 3 years after completion of construction projects. The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part requires the submittal of as-built plans prior to the completion of a project. The following table shows the BMPs, responsible parties and measurable goals.

Table 7-2. BMP Description – Require Submittal of As-Built Plans

BMP Description	Responsible Parties	Measurable Goal
BMP 5-2: Require Stormwater As-Built Plan Submittal	Planning Board, Conservation Commission, Building Department	Require submittal of as-built plans for completed projects within 2 years of completion

7.3.3 Require Long Term Operation and Maintenance

As part of its Post Construction Stormwater Management Program, the Town of Westminster shall develop procedures to ensure that the adequate long-term operation and maintenance of BMPs is accounted for at the conclusion of a construction project, along with a dedicated funding source, within 3 years of the effective permit date. The Town of Westminster has established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) by the Westminster Planning Board which regulate construction projects greater than 1 acre and are provided under **Appendix B**. The bylaw and accompanying regulations in part requires preparation of comprehensive operation and maintenance plans prior to the completion of a project. The following table shows the BMPs, responsible parties and measurable goals.

Table 7-3. BMP Description – Require Long Term Operation and Maintenance Plans

BMP Description	Responsible Parties	Measurable Goal
BMP 5-3: Require Long Term Operation and Maintenance	Planning Board, Conservation Commission, Building / Zoning Department, Department of Public Works	Require submittal of operation and maintenance plans and dedicated funding to ensure long term maintenance within 2 years of the effective date of the permit

7.3.4 Complete Regulatory Assessment

Requirements

The 2016 MS4 permit requires permittees to complete a report that assesses current street design, parking lot guidelines, and other local requirements that could affect creation of impervious cover to determine if changes to existing design standards are required to support LID. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover. Any required changes to reduce mandatory creation of impervious cover in support of LID should be made within 4 years of the effective permit date.

Additionally, the permittee must complete a report that assesses current regulations to determine the feasibility of allowing green roofs, infiltration practices, porous/pervious pavement, and water harvesting/storage devices where feasible. The assessment must indicate if the practices are allowed in the MS4 area and under what circumstances they are allowed. If the practices are not allowed, the permittee shall determine what hinders the use of these practices, what changes in local regulations may be made to make them allowable, and provide a schedule for implementation of recommendations. Any required changes to allow for these BMPs must be completed within 4 years of the effective permit date.

Work to be Performed
The Town of Westminster completed a comprehensive review of its regulations to address the above requirements during Permit Year 4. A report (**Appendix D**) was developed that in part includes an assessment of requirements that affect creation of impervious cover, if design standards for streets and parking lots can be modified to better support LID options, and assesses the feasibility of making green infrastructure allowable when appropriate site conditions exist. Recommendations have been provided to the planning board, although no schedule has been developed to date. A detailed schedule is anticipated to be completed during Year 5 and beyond in cooperation with the Responsible Parties listed in the table below. The following table shows the BMPs, responsible parties and measurable goals.

Table 7-4. BMP Description – Complete LID and GI Regulatory Updates

BMP Description	Responsible Parties	Measurable Goal
BMP 5-4: Allow green infrastructure	Planning Board, Conservation Commission, Building / Zoning Department	Complete regulatory updates within 4 years of the effective date of the permit
BMP 5-5: Street design and parking lot guidelines	Planning Board, Conservation Commission, Zoning Board	Complete regulatory updates within 4 years of the effective date of the permit

7.3.5 Complete Inventory of Potential BMP Retrofit Sites

Requirements
Permittees must complete an inventory of at least 5 existing permittee-owned properties that could be modified or retrofitted with structural stormwater BMP improvements to reduce the frequency, volume, and pollutant loads within 4 years of the effective permit date. The inventory provided in **Appendix E** should include municipal properties with significant impervious cover such as parking lots, buildings, and maintenance yards, along with infrastructure such as existing rights-of-way, outfalls and stormwater conveyances such as swales or detention practices. The permittee should address potential site constraints that could hinder BMP construction, such as subsurface conditions, depth to water table, and utility impacts, and should ideally allow opportunities for public education.

Beginning with the fifth annual report, should BMPs at 1 or more sites be constructed, the inventory should be updated so that it always contains at least 5 sites in the inventory for potential improvement. The permittee must report on all properties that have been modified or retrofitted to mitigate impervious area.

Additionally, the Town of Westminster must identify stormwater retrofit opportunities for nitrogen reduction for properties within the Long Island Sound watershed and phosphorus reductions to various phosphorus-impaired lakes in order to meet TMDL and water quality limited requirements. See Section 9 for more information.

Work to be Performed

The Town of Westminster developed a comprehensive inventory and ranking (**Appendix E**) of all town-owned parcels within the regulated urbanized area that had impervious cover such as parking lots or buildings, or were located along/adjacent to roadways. This largely included all town-owned parcels present within the urbanized area with the exception of vacant conversation areas. The Town then conducted a desktop analysis of all parcels to assess them for potential BMP retrofit opportunities by reviewing relevant information such as available space, localized topography, soil types, opportunities to reroute existing drainage networks, etc. All properties were then evaluated in the field to further refine desktop assessments and were then ranked based on existing conditions and feasibility of retrofitting to improve water quality. The top five sites for potential BMP retrofit were then identified and pre-conceptual designs with costs were prepared for top sites. This inventory will be updated continuously starting in Year 5 as necessary. The following table shows the BMP, responsible parties and measurable goals.

Table 7-5. BMP Description – Complete Inventory of Properties for BMP Retrofit

BMP Description	Responsible Parties	Measurable Goal
BMP 5-6: Target properties to reduce impervious areas	Planning Board, Conservation Commission, Department of Public Works	Complete inventory within 4 years of the effective date of the permit and update annually on retrofitted properties

8 MCM 6: Good Housekeeping and Pollution Prevention

8.1 Summary of Permit Requirements

Under MCM 6, permittees shall develop and implement an operations and maintenance program to reduce stormwater pollution from permittee activities. This includes optimizing existing activities related to parks and open space, buildings and facilities, vehicles and equipment, and stormwater infrastructure maintenance. A summary of the required Good Housekeeping and Pollution Prevention for Permittee Owned Operations activities and timelines is provided below.

8.1.1 Operations and Maintenance Programs

Permittees shall develop written operations and maintenance procedures for parks and open space, buildings and facilities, vehicles and equipment, winter road maintenance, stormwater infrastructure, and structural stormwater BMPs within 2 years of the effective permit date. This program shall also optimize catch basin cleaning and street sweeping, along with establishing proper storage techniques for cleaning residuals. All maintenance activities, inspections, and training shall be logged for annual reporting.

8.1.2 Stormwater Pollution Prevention Plans

Develop and implement Stormwater Pollution Prevention Plans (SWPPPs) for municipally-owned maintenance garages, public works yards, transfer stations within 2 years of the effective permit date.

8.2 Objectives and Goals

The Town of Westminster implements an effective good housekeeping, pollution prevention, and operation and maintenance program with a goal of preventing or reducing pollutant runoff, protecting water quality from municipal operations, and maintain its infrastructure in good working order.

8.3 Good Housekeeping and Pollution Prevention Program

The following sections outline how Westminster is meeting the requirements of the 2016 MS4 Permit to establish a Good Housekeeping and Pollution Prevention Program.

8.3.1 Complete Facilities O&M Procedures

Requirements

The permittee must complete an inventory of all parks and open space, buildings and facilities where pollutants are exposed to stormwater runoff, including those coming from vehicles and equipment, within 2 years of the permit effective date. The inventory must be reviewed annually and updated as necessary. Upon completion, the permittee must establish written procedures as part of an Operation and Maintenance Plan within 2 years of the permit effective date for the following items:

Parks and Open Space

- Proper use, storage, and disposal of pesticides, herbicides, and fertilizers;
- Lawn maintenance and landscaping activities to protect water quality, such as reducing mowing, lawn clippings handling, and use of alternative materials;
- Pet waste handling collection and disposal locations at all locations where pets are permitted, including signage;
- Control of waterfowl in areas where they congregate to reduce waterfowl droppings from entering the MS4s;
- Management of trash containers; and
- Addressing erosion or poor vegetative cover, particularly near a surface waterbody.

Buildings and Facilities

- Use, storage, and disposal of petroleum products and other potential pollutants.
- Materials handling training to applicable employees;
- Ensuring that Spill Prevention, Control, and Countermeasures (SPCC) Plans are in place if needed (aboveground petroleum storage greater than 1,320 gallons or underground petroleum storage greater than 42,000 gallons);
- Dumpsters and other waste management equipment; and
- Sweeping parking lots and keeping facility areas clean to reduce pollutants in runoff.

Vehicles and Equipment

- Storage of vehicles to prevent fluid leaks to stormwater;
- Fueling area evaluation, including feasibility of fueling under cover; and
- Preventing vehicle wash waters from entering surface waters or the MS4.

Work to be Performed

The Town has prepared a comprehensive written O&M Plan, a standalone document separate from this SWMP Plan, that meets the above requirements. This document also includes the inventory of relevant Town-owned properties. In addition, Town's O&M Plan established requirements for use of slow release fertilizers on permittee owned properties and establish procedures to manage grass cuttings and leaf litter on permittee property within areas of town draining to the Long Island Sound, a waterbody impaired for nitrogen. The following table shows the BMP, responsible parties and measurable goals.

Table 8-1. BMP Description – Complete Written Facilities O&M Procedures

BMP Description	Responsible Parties	Measurable Goal
BMP 6-1: Inventory open spaces, buildings and facilities, and vehicles and equipment	Department of Public Works, Building / Zoning Department	Complete inventory of open spaces, buildings and facilities, and vehicles and equipment within 2 years of the effective date of the permit
BMP 6-2: Establish Operation and Maintenance Procedures	Department of Public Works	Create O&M Plan for open spaces, buildings and facilities, and vehicles and equipment within 2 years of the effective date of the permit

8.3.2 Complete Infrastructure O&M Procedures

Requirements

The permittee must establish written procedures as part of an Operation and Maintenance Plan within 2 years of the permit effective date to ensure that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4 for the following items:

Street Sweeping (**Appendix F**)

- Sweeping all streets and permittee-owed parking lots, with the exception of rural uncurbed roads with no catch basins or high-speed limited access highways at least1per year in the spring following winter sanding events;
- More frequent sweeping of targeted areas based on inspections, land use, or known water quality impacts;
- Increasing street sweeping frequency of all municipal owned streets and parking lots to a minimum of 2 times per year; once in the spring (following winter activities such as sanding) and at least once in the fall (Sept 1 – Dec 1; following leaf fall) for areas within the nitrogen-impaired Long Island Sound watershed; and
- For rural uncurbed roadways with no catch basins or limited access highways, either an evaluation to meet the minimum frequencies above or development and implementation of an inspection, documentation, and targeted sweeping plan within 2 years of the effective date and submitted with the Year 1 annual report.

Catch Basin Cleaning (**Appendix G**)

- Prioritization of catch basins located near construction activities for more frequent inspection and maintenance;
- Establishing a schedule with a goal that at the time of maintenance, no catch basin is more than 50% full;
- For catch basins that are more than 50% full during 2 consecutive inspections or cleaning events, methods for investigating the contributing drainage area for sources of excessive sediment loads; and
- Establishing a plan for optimizing catch basin cleaning, inspections, and documentation.

Catch Basin and Street Sweeping Residuals Management

- Ensure proper storage of catch basins cleanings and street sweepings prior to disposal or reuse such that they will not be discharged to receiving waters based on available MassDEP policies.

Winter Operation and Maintenance

- Establish and implement procedures for winter road maintenance including the use and storage of salt and sand
- Minimizing use of sodium chloride and other salts and evaluation of opportunities to use alternative materials; and
- Ensuring that snow disposal activities do not result in disposal of snow into waters of the United States.

Work to be Performed

The Town recently updated its existing street sweeping, catch basin cleaning, and winter O&M procedures in order to meet permit requirements. Street sweeping will continue under the existing Street Sweeping Prioritization Plan provided in **Appendix F** for at least several years, possibly expanded in Year 4 and beyond as a response to LPCP TMDL requirements as outlined further in Section 9.

Westminster also undertook a comprehensive catch basin inspection program in 2021 where approximately 680 catch basins were inspected before and after cleaning to determine sediment accumulations over an approximate one-year period. Recommendations are documented in **Appendix G**. The following table shows the BMP, responsible parties and measurable goals

Table 8-2. BMP Description – Complete Written Infrastructure O&M Procedures

BMP Description	Responsible Parties	Measurable Goal
BMP 6-3: Review Infrastructure O&M Procedures	Department of Public Works	Create written O&M Plan for stormwater infrastructure within 2 years of the effective date of the permit
BMP 6-4: Catch Basin Cleaning	Department of Public Works	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually
BMP 6-5: Street Sweeping	Department of Public Works	Sweep all streets and parking lots at least annually and sweep all streets within the Long Island Sound watershed twice per year.
BMP 6-6: Road salt optimization program	Department of Public Works	Implement salt use optimization during winter maintenance operations

8.3.3 Stormwater Pollution Prevention Plans

Requirements
The permittee must establish written Stormwater Pollution Prevention Plans for the following permittee-owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater as determined by the permittee. SWPPPs must address a number of components, including the following:

- Pollution Prevention Team;
- Facility description, identification of potential pollutant sources, and identification of stormwater controls;
- Stormwater management practices, including measures to minimize or prevent exposure, good housekeeping and preventative maintenance, spill prevention and response, erosion and sediment control, management of runoff, salt storage, employee training, and control measure maintenance; and
- Procedures for site inspections and sampling.

Work to be Performed
The Town of Westminster has determined that one facility meets the above requirements, the Westminster Department of Public Works Garage. A SWPPP has been prepared for this facility as a separate standalone document which should be updated when there is a significant change in design, construction, operation, or maintenance of the facility that affects the discharge or potential discharge of pollutants. This plan is made available in hardcopy at the Westminster Department of Public Works Garage to members of federal, state, or local agencies during normal working hours for review upon request. Copies of the SWPPP are accessible to all persons responsible for implementing and administering it. The following table shows the BMP, responsible parties and measurable goals.

Table 8-3. BMP Description – Prepare SWPPPs for Regulated Facilities

BMP Description	Responsible Parties	Measurable Goal
BMP 6-7: Assess regulated facilities to determine SWPPP eligibility	Department of Public Works	Complete facilities assessment within 2 years of the effective date of permit.
BMP 6-8: Develop SWPPPs for applicable facilities	Department of Public Works	Complete and implement within 2 years of the effective date of the permit

8.3.4 Structural Stormwater BMP Inspections

Requirements
The permittee must establish and implement written inspection and maintenance procedures and frequencies for all stormwater treatment structures, such as infiltration and detention basins, proprietary stormwater treatment structures, gravel wetlands, etc. at least annually.

Work to be Performed

The Town of Westminster completed an inventory (**Appendix H**) of known structural stormwater BMPs by the end of Year 2 as required by MCM 3, mapping requirements. The Town also developed inspection and maintenance procedures for the various types of BMPs located within the Town's regulated area. BMP inspection Standard Operating Procedures (SOPs) and logs for BMP inspection and maintenance are provided in the standalone O&M Plan. Stormwater BMPs are inspected annually, with results documented in **Appendix H**. The following table shows the BMP, responsible parties and measurable goals.

Table 8-4. BMP Description – Inspect Structural BMPs Annually

BMP Description	Responsible Parties	Measurable Goal
BMP 6-9: Establish BMP O&M Procedures	Department of Public Works	Create written O&M Plan for stormwater BMPs within 2 years of the effective date of the permit
BMP 6-10: Inspect and maintain stormwater BMPs	Department of Public Works	Inspect and maintain treatment structures annually

9 TMDL and Impaired Waters Controls

9.1 Permit Requirements

The 2016 MS4 Permit requires regulated operators of MS4s to determine whether stormwater discharges from their MS4 contribute to any impaired waterbodies, including those subject to an approved TMDL and certain water quality limited waterbodies. Water quality limited waters are any waterbodies that do not meet applicable water quality standards, including waterbodies listed in categories "4a" and "5" on the Massachusetts Integrated List of Waters, also known as the "303(d) List". MassDEP is responsible for preparing TMDLs for many of these listed waters to identify the problem pollutant and establish water quality goals. TMDLs are prepared based on the priority assigned to the waterbody and are completed over the course of several years.

As outlined in Section 2.3, the Town of Westminster is subject to the following TMDL and impaired waters requirements:

Table 9-1. TMDL and Impaired Waters Requirements

Waterbody Name	Impairment	2016 Permit Requirements
Bents Pond	Phosphorus	Appendix F, Part A.II
Ramsdall Pond	Phosphorus	Appendix F, Part A.II
Long Island Sound	Nitrogen	Appendix F, Part B.I
Partridge Pond	Turbidity	Appendix H, Part V
Whitman River	Lead	Appendix H, Part V

The Town of Westminster must implement control measures for discharges to approved TMDL waters and to impaired waters without a TMDL as summarized in the sections below. The Town reviews the most recent approved list of impaired waters as it is released and outlines any additional requirements associated with the most recent list in this SWMP Plan. Progress towards meeting the TMDL and Impaired Waters requirements is documented in the standalone Nutrient Impairment Plan document.

9.2 Lake and Pond Phosphorus TMDL Requirements

The Town of Westminster is subject to the phosphorus water quality limited waterbody requirements for discharges to Bents Pond and Ramsdall Pond and is required to implement the following requirements as outlined under Appendix F, Part A.II of the 2016 Permit. To address the discharge of phosphorus from its MS4, the Town of Westminster is developing a Lake Phosphorus Control Plan (LPCP) designed to reduce the amount of phosphorus in stormwater discharges from its MS4 to the phosphorus-impaired waterbody. This Plan shall be completed and fully implemented as soon as possible but no later than 15 years after the permit effective date.

9.2.1 LPCP Requirements

The following provides a brief summary of permit requirements to be implemented:

Item 1 **Legal Analysis** – Identify regulatory mechanisms that may be necessary to implement the LPCP, complete a legal analysis within 2 years of the permit effective date, and adopt changes by the end of the permit term.

Item 2 **Funding Source Assessment** – Identify funding mechanisms that will be used to fund LPCP implementation, describe the steps to be taken in implementing the funding plan.

Item 3 **Define LPCP Scope, Baseline Load, Reduction Requirement, and Allowable Load** – Determine whether to implement the LPCP town wide or only in the UA and calculate the corresponding Baseline Phosphorus Load, Stormwater Phosphorus Reduction Requirement and Allowable Phosphorus Load corresponding to the LPCP Area. Note that although the UA-Only option has a lower reduction requirement, there are also less options to implement BMPs as the available area of town is smaller. This requirement should be completed within 4 years of permit effective date

Item 4 **Non-Structural Controls** – Determine non-structural stormwater controls to help reduce phosphorus, including planned measures, areas where measures will be implemented, and expected annual phosphorus reductions within 6 years of effective permit date.

Item 5 **Structural Controls** – Priority rank areas and infrastructure where potential structural phosphorus controls could be implemented, including an assessment of site suitability for phosphorus control measures based on soil types and other factors. Determine where structural controls shall be implemented and annual phosphorus reductions provided by each.

Item 6 **Operation and Maintenance Program** – Establish an O&M Program for current and planned structural BMPs, including an inspection and maintenance schedule with program or department responsible.

Item 7 **Written Plan** – Develop a schedule that addresses the above items within 4 years of the effective permit date and prepare a written plan to determine implementation cost estimate within 5 years of the effective permit date. Provide an updated written LPCP within 10 years of the effective permit date.

Item 8 **Implementation and Performance Evaluation** – Evaluate LPCP effectiveness by tracking phosphorus reductions due to implementing structural BMPs annually, beginning 6 years after the effective date.

9.2.2 Reporting

The Town of Westminster shall include a progress report in each Annual Report on the planning and implementation of the LPCP. Once the LPCP has started implementation 5 years after the permit effective date, the Annual Report shall also include the following:

- Non-structural control measures implemented during the reporting year along with the calculated phosphorus reduction;
- Structural control measures implemented during the reporting year with location information, calculated phosphorus reduction, and date of last inspection and maintenance;
- Phosphorus load increases due to development; and
- Estimated yearly phosphorus export rate accounting for development and implementation of both non-structural and structural BMPs.

Work to be Performed

Requirements for meeting the Lake and Pond Phosphorus TMDL requirements are being performed according to the schedule in the 2016 Permit. Progress towards meeting the TMDL and Impaired Waters requirements is documented in the standalone Nutrient Impairment Plan document. The following table shows the BMP, responsible parties and measurable goals.

Table 9-2. Lake and Pond Phosphorus TMDL Requirements – Phosphorus

BMP Description	Responsible Parties	Measurable Goal
BMP 7-1: Lake and Pond Phosphorus TMDL Requirements – Phosphorus	Department of Public Works, Conservation Commission, Planning Board	Adhere to requirements in part A.II of Appendix F

9.3 Long Island Sound Nitrogen TMDL Requirements

The Town of Westminster is subject to the Long Island Sound nitrogen TMDL and is required to implement the following requirements as outlined under Appendix F, Part B.I of the 2016 Permit.

9.3.1 Additional or Enhanced BMPs

The Town of Westminster must include the following additional or enhanced BMPs, in addition to the 6 MCMs outlined previously:

- **Public Education** – supplement its Residential and Business/Commercial/Institution programs with additional annual messages as follows:
    - Spring (April-May): Proper use and disposal of grass clippings and use of slow-release fertilizers;

    - Summer (June-July): Proper management of pet waste; and
    - Fall (August-October): Proper disposal of leaf litter.

- **Stormwater Management in New Development and Redevelopment** – supplement standard permit bylaw requirements to also mandate the use of stormwater BMPs optimized for nitrogen removal as part of new development and redevelopment projects. Additionally, retrofit opportunities must also consider the potential to reduce nitrogen discharges for properties within watersheds draining to nitrogen-impaired waterbodies.

- **Good Housekeeping and Pollution Prevention** – establish requirements for reducing fertilizer usage and/or using slow release fertilizers on permittee owned properties, procedures for properly managing grass cuttings and leaf litter on permittee owned property, and prohibit blowing organic waste onto impervious surfaces. Additionally, street sweeping must be increased to at least twice per year, once in the spring and once in the fall.

9.3.2 Nitrogen Source Identification Report

The Town of Westminster must also prepare a Nitrogen Source Identification Report that generally does the following:

- Identifies, delineates, and prioritizes areas of town at the catchment-level that have the highest nitrogen loading potential based on land use and other factors;
- Accounts for the urbanized area that discharges to the Connecticut River watershed;
- Determines impervious area based on catchment delineations;
- Accounts for any screening results performed under MCM 3 when developing conclusions; and
- Identifies potential retrofit opportunities for installing structural BMPs during redevelopment.

This item must be completed by the end of Year 4.

9.3.3 Structural BMPs

Upon completion of the Nitrogen Source Identification Report, the Town must evaluate all properties identified under the report or using the procedures identified under Section 7.4.5 to complete a site-specific evaluation addressing the following:

- Identifies the next planned redevelopment activity or planned retrofit date;
- Determines an estimated cost of redevelopment or retrofit BMPs; and
- Determines the engineering and regulatory feasibility BMP installation.

Upon completion, the Town must provide a list of planned structural BMPs, along with a plan and schedule for implementation by the end of Year 5. At least 1 BMP must be designed and constructed as a demonstration project by the end of Year 6 that targets a catchment with a high nitrogen load potential. Remaining structural BMPs must be

constructed according to the provided plan and schedule. Nitrogen removals must be tracked and reported annually.

Work to be Performed
Requirements for meeting the Long Island Sound nitrogen TMDL requirements are being performed according to the schedule in the 2016 Permit. Progress towards meeting the TMDL and Impaired Waters requirements is documented in the standalone Nutrient Impairment Plan document. The following table shows the BMP, responsible parties and measurable goals.

Table 9-3. TMDL Requirements – Long Island Sound Nitrogen

BMP Description	Responsible Parties	Measurable Goal
BMP 7-2: TMDL Requirements – Long Island Sound Nitrogen	Department of Public Works, Conservation Commission, Planning Board	Adhere to requirements in part B.I of Appendix F

9.4 Turbidity Water Quality Limited Waterbodies Requirements

The Town of Westminster water quality limited waterbodies, Partridge Pond and Whitman River, are listed as impaired for turbidity and lead, respectively. The Town must implement the following requirements as outlined under Appendix H, Part V of the 2016 Permit.

9.4.1 Additional or Enhanced BMPs

The Town of Westminster must include the following additional or enhanced BMPs, in addition to the 6 MCMs outlined previously:

- **Stormwater Management in New Development and Redevelopment** – Stormwater management systems designed on commercial and industrial land use area draining to the water quality limited waterbody 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. Any stormwater management system designed to infiltrate stormwater on commercial or industrial sites must provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.

- **Good Housekeeping and Pollution Prevention** – increase street sweeping frequency of all municipal streets and parking lots to target areas with potential for high pollutant loads. This may include increased sweeping in commercial and high-density residential areas, or largely impervious drainage areas. Prioritize inspection and maintenance for catch basins to ensure that no sump is more than 50 percent full. Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings. Include street sweeping schedule developed to target high pollutant loads in each annual report.

Work to be Performed
Stormwater management requirements for new and redevelopment were addressed as part of the regulatory and other program updates to be completed during Year 2. The Town of Westminster has addressed street sweeping requirements under Section 8.3 and 9.2. The catch basin cleaning program is ongoing as outlined under Section 8.3. The following table shows the BMP, responsible parties and measurable goals.

Table 9-4. Water Quality Limited Waterbody Requirements – Turbidity

BMP Description	Responsible Parties	Measurable Goal
BMP 7-4: Water Quality Limited Waterbody Requirements – Turbidity	Department of Public Works, Conservation Commission, Planning Board	Adhere to requirements in Part V of Appendix H

10 Annual Reporting

The permittee shall submit annual reports each year of the permit term. The reporting period is a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under this permit shall also cover the period from May 1, 2018 to the permit effective date. The annual report is due 90 days from the close of each reporting period, or by September 28 of each year. The annual reports must contain the following relevant information which should be tracked throughout the year, and should be filed within **Appendix I**:

- A self-assessment review of compliance with the permit terms and conditions.
- An assessment of the appropriateness of the selected BMPs.
- The status of any plans or activities, including:
    - Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response;
    - For discharges subject to TMDL or water quality limited waterbody requirements, identification of BMPs used to address the impairment and assessment of the BMPs effectiveness;
    - For discharges to water quality limited waters a description of each BMP and any deliverables required.
- An assessment of the progress towards achieving the measurable goals and objectives of each of the 6 minimum measures:
    - Evaluation of the public education program including a description of the targeted messages for each audience; method and dates of distribution; methods used to evaluate the program; and any changes to the program.
    - Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.
    - Description of IDDE activities including: status of mapping and results of the ranking and assessment; identification of problem catchments; status of all IDDE Plan components; number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located and removed; gallons of flow removed; identification of tracking indicators and measures of progress; and employee training.
    - Evaluation of construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.
    - Evaluation of stormwater management for new and redevelopment including status of bylaw development; review and status of the street design and barriers to green infrastructure assessment; and inventory status.
    - Status of the O&M Programs.
    - Status of SWPPPs, including inspection results.
- All outfall screening and monitoring data during the reporting period and cumulative for the permit term; and a description of any additional monitoring data received by the permittee during the reporting period.
- Description of activities for the next reporting cycle.
- Description of any changes in identified BMPs or measurable goals.
- Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.

11 Implementation of Best Management Practices

The Town of Westminster's Best Management Practices Plan as outlined in the Town's NOI (**Appendix A**) is summarized in **Table 11-1**.

For consistency with the 6 MCMs and impaired water requirements, the BMPs are broken down into 7 categories:

1. Public Education and Outreach;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment;
6. Good Housekeeping and Pollution Prevention; and
7. TMDL and Water Quality Limited Waterbodies Controls

The BMP tables also outline the measurable goals for each BMP to gauge permit compliance, the responsible party(ies) for implementing each BMP, and an implementation schedule to be used throughout the permit period. In addition to the implementation activities outlined in this plan, the Town performs the following activities throughout the duration of the permit:

1. **Program Evaluation** – conduct annual evaluations of the Stormwater Management Program for compliance with permit conditions. The evaluation must include a determination of the appropriateness of the selected BMPs in efforts towards achieving the measurable goals outlined in **Table 11-1**.

2. **Record Keeping** – maintain records that pertain to the Stormwater Management Program for a period of at least 5 years. Records need to be made available to the public and the Town may charge a reasonable fee for copying. Records need not be submitted to EPA or MassDEP unless specifically requested.

3. **Reporting** – submit an annual report to EPA and MassDEP, including the information as noted in Section 10.

Refer to the following link for a copy of the 2016 MA MS4 Permit:
https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
						Year / Schedule						
						1	2	3	4	5	6	
BMP ID	**BMP Description**	**Implementation**	**Responsible Dept./Person**	**Measurable Goal**	**Report Section**	**7/1/18-7/1/19**	**7/1/19-7/1/20**	**7/1/20-7/1/21**	**7/1/21-7/1/22**	**7/1/22-7/1/23**	**7/1/23-7/1/24**	
1. Public Education and Outreach												
1-1	**Residential Education Program**	1. Provide informational brochure/handout to homeowners in close proximity to water resources	Department of Public Works	Provide informational flyers to residents within environmentally sensitive areas	3.4.1	*	*	*	*	*	*	
		2. Provide fact sheets on pet waste management with all dog registrations and renewals	Town Clerk	Provide information with all applications and renewals		*	*	*	*	*	*	
		3. Provide relevant stormwater information to different audiences via social media	Information Technology	Follow statewide "Think Blue" campaign on social media platforms		*	*	*	*	*	*	
		4. Provide comprehensive stormwater information on the Town's website, including effects of outdoor activities such as lawn care on water quality; benefits of appropriate on-site infiltration of stormwater; effects of automotive work and car washing on water quality; proper disposal of swimming pool water; proper management of pet waste; and maintenance of septic systems.	Information Technology, Department of Public Works	Continue to update and maintain the websites		*	*	*	*	*	*	
1-2	**Businesses, Institutions, and Commercial Education Program**	1. Provide comprehensive stormwater information on the Town's website, including effects of outdoor activities such as lawn care on water quality; benefits of appropriate on-site infiltration of stormwater; building maintenance and storage of materials; proper use and storage of salt or other de-icing and anti-icing materials; proper management of waste materials and dumpsters; proper management of parking lot surfaces; proper car care activities; and proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.	Information Technology, Department of Public Works	Continue to update and maintain the websites	3.4.2	*	*	*	*	*	*	
		2. Provide relevant stormwater information to different audiences via social media	Information Technology	Follow statewide "Think Blue" campaign on social media platforms		*	*	*	*	*	*	
1-3	**Developer and Construction Education Program**	1. Distribute fact sheets or brochures on erosion and sediment control with permit applications	Planning Board, Conservation Commission, Building Department	Provide information with all applications	3.4.3	*	*	*	*	*	*	
		2. Provide comprehensive stormwater information on the Town's website, including proper sediment and erosion control management practices; information about Low Impact Development (LID) principles and technologies; and information about EPA's construction general permit (CGP).	Information Technology, Department of Public Works	Continue to update and maintain the websites		*	*	*	*	*	*	
		3. Provide relevant stormwater information to different audiences via social media	Information Technology	Follow statewide "Think Blue" campaign on social media platforms		*	*	*	*	*	*	
1-4	**Industrial Education Program**	1. Provide relevant stormwater information to different audiences via social media	Information Technology	Follow statewide "Think Blue" campaign on social media platforms	3.4.4	*	*	*	*	*	*	
		2. Provide comprehensive stormwater information on the Town's website, including equipment inspection and maintenance; proper storage of industrial materials; proper management and disposal of wastes; proper management of dumpsters; minimization of use and proper storage of salt or other de-icing/anti-icing materials; benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking; proper maintenance of parking lot surfaces; and information about EPA's CGP.	Information Technology, Department of Public Works	Continue to update and maintain the websites		*	*	*	*	*	*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
						Year / Schedule						
						1	2	3	4	5	6	
BMP ID	**BMP Description**	**Implementation**	**Responsible Dept./Person**	**Measurable Goal**	**Report Section**	**7/1/18-7/1/19**	**7/1/19-7/1/20**	**7/1/20-7/1/21**	**7/1/21-7/1/22**	**7/1/22-7/1/23**	**7/1/23-7/1/24**	
2. Public Participation and Involvement												
2-1	**Make SWMP Publicly Available**	1. Post SWMP Plan on Town website, along with contact name, email address and/or phone number of a contact person at the Town to contact for information or submit comments.	Information Technology, Department of Public Works	Annual review of stormwater management plan and posting on website. Allow public to comment on the plan at least annually	4.4.1	*	*	*	*	*	*	
2-2	**Household Hazardous Collection Event**	1. Allow Town residents to drop of household hazardous wastes for proper disposal periodically throughout the year.	Department of Public Works, Board of Selectmen	Allow participation in household hazardous waste collection events.	4.4.2	*	*	*	*	*	*	
2-3	**Annual Roadside Cleanup**	1. Hold annual Town cleanup event as part of Earth Day celebrations	Department of Public Works, Board of Selectmen	Allow annual participation in Town Earth Day event	4.4.3	*	*	*	*	*	*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
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3. Illicit Discharge Detection and Elimination												
3-1	**Enforce Current IDDE Bylaw**	1. Continue enforcing existing "Illicit Discharges and Connections" IDDE bylaw.	Department of Public Works, Board of Health	Continue enforcing existing IDDE bylaw	5.4.1	*	*	*	*	*	*	
3-2	**Phase I Storm Sewer System Map**	1. Delineate catchment areas based on topography for each MS4 outfall and map in GIS.	Department of Public Works	Updated map within 2 years of effective date of permit	5.4.2	*						
		2. Update outfalls, conveyances receiving waters, interconnections, MS4-owned BMPs & initial catchment delineations.				*	*					
3-3	**Phase II Storm Sewer System Map**	1. Update outfall spatial location, pipes, manholes, catch basins, refined catchment delineations as new information becomes available.	Department of Public Works	Updated map within 10 years of effective date of permit	5.4.2	*	*	*	*	*	*	
3-4	**Complete SSO Inventory**	1. Complete an inventory of Sanitary Sewer Overflows (SSOs) that have discharged to the MS4 within the previous 5 years and update annually.	Department of Public Works, Board of Health	Develop SSO inventory and complete within 1 year of effective date of permit and update annually	5.4.3	*	*	*	*	*	*	
3-5	**Written IDDE Program**	1. Prepare written IDDE Plan to include procedures on assessing and priority ranking outfalls and interconnections, dry and wet weather outfall sampling, catchment investigations, system vulnerability factor assessment, identification of an illicit discharge, illicit discharge removal, and ongoing screening requirements.	Department of Public Works	Complete within 1 year of the effective date of permit and update as required	5.4.4	*						
3-6	**Outfall / Interconnection Inventory and Ranking**	1. Develop an outfall and interconnection inventory that identifies each outfall and interconnection discharging from the MS4, records its location and condition and provides a framework for tracking inspections, screenings and other activities under the IDDE program.	Department of Public Works, Board of Health	Identification of outfalls and initial ranking by July 1, 2019	5.4.4	*						
		2. Classify/rank outfalls. Initial ranking by end of Year 1. Update ranking annually with new information.				*	*	*	*	*	*	
3-7	**Implement IDDE Program**	1. Inspect key catchment structures (manholes, catch basins) during dry weather conditions. Where flowing water is observed, collect samples for analysis.	Department of Public Works, Board of Health	Implement catchment investigations according to program and permit conditions (Problem Outfalls by July 1, 2025, all outfalls by July 1, 2028)	5.4.4		*	*	*	*	*	
		2. Inspect key catchment structures (manholes, catch basins) in all catchments during dry weather conditions. Where flowing water is observed, collect samples for analysis.					*	*	*	*	*	
3-8	**Dry Weather Screening**	1. Inspect drainage outfalls classified as High or Low priority during dry weather.	Department of Public Works	Complete in accordance with outfall screening procedure and permit conditions by July 1, 2021	5.4.5	*	*	*				
		2. Investigate potential illicit discharges, if any.				*	*	*	*	*	*	
		3. Enforce removal of illicit discharges, if any.				*	*	*	*	*	*	
3-9	**Wet Weather Screening**	1. Sample select outfalls with System Vulnerability Factors under wet weather conditions. Sampling can be done upon completion of any dry weather investigation, but must be completed before catchment investigation is marked as complete.	Department of Public works	Complete in accordance with outfall screening procedure within 10 years of the effective permit date	5.4.5						*	
3-10	**Ongoing Screening**	1. Upon completion of catchment investigations, reprioritize outfalls for ongoing screening.	Department of Public Works	Conduct ongoing dry and wet weather outfall screening upon completion of the IDDE program	5.4.5						*	
		2. Continue performing dry and wet weather sampling according to the new prioritization at least once every 5 years.									*	
3-11	**Perform IDDE Training**	1. Provide annual training to employees involved in the IDDE program.	Department of Public Works, Board of Health	Train applicable employees annually	5.4.6	*	*	*	*	*	*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
						Year / Schedule						
						1	2	3	4	5	6	
BMP ID	**BMP Description**	**Implementation**	**Responsible Dept./Person**	**Measurable Goal**	**Report Section**	**7/1/18-7/1/19**	**7/1/19-7/1/20**	**7/1/20-7/1/21**	**7/1/21-7/1/22**	**7/1/22-7/1/23**	**7/1/23-7/1/24**	
4. Construction Site Stormwater Runoff Control												
4-1	**Develop and Enforce Construction Bylaw**	1. Perform a regulatory assessment on existing Stormwater Management bylaw and update as necessary for compliance.	Planning Board, Conservation Commission, Building/Zoning Department	Complete bylaw updates within 1 year of the effective date of the permit	6.4.1	*						
4-2	**Develop Written Procedures for Site Plan Review**	1. Review and update existing requirements mandating site plan review and make changes as needed, such as incorporating additional information submitted by the public.	Planning Board, Conservation Commission, Building/Zoning Department	Establish procedures for site plan review within 1 year of the effective date of the permit	6.4.2	*						
4-3	**Develop Written Procedures for Site Inspections and Enforcement**	1. Review and update existing requirements mandating site inspections, enforcement, and requirements for submittal of monthly inspection reports as needed	Planning Board, Conservation Commission, Building/Zoning Department	Establish procedures for site inspections and enforcement within 1 year of the effective date of the permit	6.4.3	*						
4-4	**Establish a Sediment and Erosion Control Program**	1. Review existing requirements for development of an Erosion and Sediment Control Plan to determine if it meets all permit requirements and make changes as needed	Planning Board, Conservation Commission, Building/Zoning Department	Establish procedures for development of an erosion and sediment control program within 1 year of the effective date of the permit	6.4.4	*						
4-5	**Develop Procedures for Waste Control**	1. Establish requirements to control construction site wastes within 1 year of the effective date of the permit	Planning Board, Conservation Commission, Building/Zoning Department	Establish requirements to control construction site wastes within 1 year of the effective date of the permit	6.4.4	*						

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
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5. Stormwater Management in New Development and Redevelopment												
5-1	**Develop and Enforce Post-Construction Bylaw**	1. Review existing Stormwater Management and Low-Impact Development bylaws and incorporate specific design requirements outlined in the final permit regarding new development and redevelopment tied to the Massachusetts Stormwater Handbook. Include a requirement that stormwater management BMPs that ultimately discharge to a nitrogen or phosphorus impaired water body be optimized for nitrogen or phosphorus removal.	Planning Board, Conservation Commission, Building Department	Complete bylaw updates within 2 years of the effective date of the permit	7.4.1	*	*					
5-2	**Require Stormwater As-Built Plan Submittal**	1. Review existing Stormwater Management and Low-Impact Development bylaws and make changes as necessary to require submittal of as-built drawings.	Planning Board, Conservation Commission, Building Department	Require submittal of as-built plans for completed projects within 2 years of completion	7.4.2	*	*					
5-3	**Require Long Term Operation and Maintenance**	1. Review existing Stormwater Management and Low-Impact Development bylaws and make changes as necessary to require long term operation and maintenance, such as addressing funding sources.	Planning Board, Conservation Commission, Building / Zoning Department, Department of Public Works	Require submittal of operation and maintenance plans to ensure long term maintenance within 1 year of the effective date of the permit	7.4.3	*	*					
5-4	**Street Design and Parking Lot Guidelines**	1. Review existing by-laws, regulations and guidance pertaining to current street and parking lot design and all regulations for ability to incorporate LID into designs.	Planning Board, Conservation Commission, Building/Zoning Department	Complete regulatory updates within 4 years of the effective date of the permit	7.4.4		*	*				
		2. Prepare a report assessing whether existing street and parking lot design regulations allow for incorporation of LID practices and recommendations for changes.							*			
5-5	**Allow Green Infrastructure**	1. Review existing by-laws, regulations and guidance to determine the feasibility of making green practices allowable.	Planning Board, Conservation Commission, Zoning Board	Complete regulatory updates within 4 years of the effective date of the permit	7.4.4		*	*				
		2. Prepare a report assessing existing local regulations to determine the feasibility of allowing green roofs, infiltration practices, and water harvesting devices.							*			
5-6	**Target Properties to Reduce Impervious Area**	1. Identify 5 properties for potential retrofits to stormwater impacts, as well as nitrogen impacts to the Long Island Sound and phosphorus impacts to the Millers Basin Lakes.	Planning Board, Conservation Commission, Department of Public Works	Complete inventory within 4 years of the effective date of the permit and update annually on retrofitted properties	7.4.5				*			
		2. Track and report annually properties that have been modified or retrofitted with BMPs.							*	*	*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
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6. Good Housekeeping and Pollution Prevention												
6-1	**Inventory Open Spaces, Buildings and Facilities, and Vehicles and Equipment**	1. Inventory all permittee-owned parks and open spaces, building and facilities (including storm drains), and vehicles and equipment in the regulated area.	Department of Public Works, Building/Zoning Department	Complete inventory of open spaces, buildings and facilities, and vehicles and equipment within 2 years of the permit effective date.	8.3.1		*					
6-2	**Establish Operation and Maintenance Procedures**	1. Evaluate practices at MS4 properties (parks and open spaces, building and facilities, vehicles and equipment) and develop written Facilities O&M Plan.	Department of Public Works	Create written O&M Plan for open spaces, buildings and facilities, and vehicles and equipment within 2 years of the permit effective date.	8.3.1		*					
		2. Distribute written O&M/SOPs as part of employee training.					*					
		3. Update inventory annually.					*	*	*	*	*	
6-3	**Review Infrastructure O&M Procedures**	1. Develop written O&M procedures or SOPs for the storm drain system, roadways and existing Town-owned BMPs (e.g., catch basin cleaning, street sweeping, winter road maintenance, stormwater BMPs).	Department of Public works	Create written O&M Plan for stormwater system within 2 years of the permit effective date.	8.3.1		*					
		2. Distribute written O&M/SOPs as part of employee training.					*					
6-4	**Catch Basin Cleaning**	1. Establish a cleaning schedule with a goal of maintaining catch basins so that they remain less than 50% full of sediment.	Department of Public Works	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually.	8.3.2	*						
		2. Clean catch basins as needed according to schedule.				*	*	*	*	*	*	
		3. Properly manage storage of catch basin residuals.				*	*	*	*	*	*	
6-5	**Street Sweeping**	1. Develop street sweeping prioritization for high priority areas and areas subject to TMDL and/or water quality limited requirements.	Department of Public Works	Sweep all streets and parking lots at least annually and sweep all streets twice a year if within nutrient-impaired waterbody watersheds.	8.3.2	*						
		2. Sweep streets once a year in spring and twice a year where drainage is to a nutrient-impaired water.				*	*	*	*	*	*	
		3. Properly manage storage of street sweeping residuals.				*	*	*	*	*	*	
6-6	**Road Salt Optimization Program**	1. Establish procedures for proper winter road maintenance, including use and storage of salt and sand, and procedures to minimize the use of road salt.	Department of Public Works	Implement salt use optimization during winter maintenance operations.	8.3.2	*						
		2. Implement winter operation and maintenance items.				*	*	*	*	*	*	
6-7	**Assess Regulated Facilities to Determine SWPPP Eligibility**	1. Evaluate the need for SWPPPs for municipal maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater.	Department of Public Works	Document whether a SWPPP is needed and where required.	8.3.2		*					
6-8	**Develop SWPPPs for Applicable Facilities**	1. Complete SWPPP or document No Exposure as applicable.	Department of Public Works	Prepare SWPPP if needed by July 1, 2020.	8.3.3		*					
6-9	**Establish BMP O&M Procedures**	1. Establish written inspection and maintenance procedures and frequencies for inspection of all structural stormwater BMPs.	Department of Public Works	Create written O&M Plan for stormwater BMPs within 2 years of the permit effective date.	8.3.4		*					
6-10	**Inspect and Maintain Stormwater BMPs**	1. Annually inspect MS4-owned stormwater treatment BMPs. Document inspections and maintenance performed.	Department of Public Works	Inspect BMPs annually and maintain as needed.	8.3.4		*	*	*	*	*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities												
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7. TMDL and Impaired Waters Controls												
7-2	**Discharges to Approved TMDL Waterbodies - Lake and Pond Phosphorus (Greenwood Pond, Minott Pond South, Minott Pond, Wrights Reservoir)**	1. Prepare a Lake Phosphorus Control Plan to reduce the amount of phosphorus in stormwater discharges from is MS4 to impaired waterbodies.	Department of Public Works, Conservation Commission, Planning Board	Complete Lake Phosphorus Control Plan no later than 15 years of the effective date of the permit.						*		
		2. Determine appropriate structural and non-structural BMPs to remove phosphorus from stormwater runoff.		Installed demonstration BMP within 6 years of the effective date of the permit.						*	*	
		3. Establish an Operation and Maintenance Program for current and planned structural BMPs		Summary progress table.							*	
		4. Track BMPs installed, including type, location, total area treated, design storage volume and estimated phosphorus removal and report annually to EPA and MassDEP.		Summary progress table.							*	
7-2	**Discharges to Approved TMDL Waterbodies - Nitrogen (Long Island Sound)**	1. Enhanced BMPs - Public Education. Include annual message in the spring (April/May) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizer; an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste; and an annual message in the Fall (August/September/October) timeframe encouraging the proper disposal of leaf litter.	Department of Public Works, Conservation Commission, Planning Board	Distribute materials with Residential education program.	9.3.1	*	*	*	*	*	*	
		2. Enhanced BMPs - Stormwater Management in New Development and Redevelopment. Include a requirement in the regulatory mechanism that new development and redevelopment stormwater management BMPs be optimized for nitrogen removal.		Complete bylaw updates within 2 years of the effective date of the permit		*	*					
		3. Enhanced BMPs - Consider BMPs to reduce nitrogen discharges when identifying MS4 properties for retrofits.		Evaluate stormwater BMPs for nitrogen removal during facility inventory within 2 years of the effective date of the permit					*	*	*	
		4. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Incorporate nitrogen reduction practices into Town good housekeeping practices such as fertilizer use and managing grass cuttings and leaf litter.		Create written O&M Plan for open spaces, buildings and facilities, and vehicles and equipment within 2 years of the effective date of the permit		*	*	*	*	*	*	
		5. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Increase street sweeping to twice per year (spring and fall) for all catchment areas discharging to the Long Island Sound.		Sweep all streets and parking lots within the Long Island Sound watershed twice per year.		*	*	*	*	*	*	
		6. Nitrogen Source Identification Report - Prepare a Nitrogen Source Identification Report to locate and reduce nitrogen loadings within the Town's MS4.		Complete report within 4 years of the effective date of permit.	9.3.2					*	*	
		7. Evaluate municipal properties for potential BMPs to construct one that will treat nitrogen, determine estimated costs, and determines engineering and regulatory feasibility.		Evaluate municipal facilities within5 years of the effective date of the permit to determine candidates for a nitrogen BMP.	9.3.3					*	*	
		8. Design and construct at least one BMP as a public demonstration project.		Installed BMP within 6 years of the effective date of the permit.						*	*	
		9. Track BMPs installed, including type, location, total area treated, design storage volume and estimated phosphorus removal and report annually.		Summary progress table.							*	

Table 11-1. Proposed BMP Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation	Responsible Dept./Person	Measurable Goal	Report Section	Year / Schedule 1 7/1/18-7/1/19	2 7/1/19-7/1/20	3 7/1/20-7/1/21	4 7/1/21-7/1/22	5 7/1/22-7/1/23	6 7/1/23-7/1/24
7 (continued). TMDL and Impaired Waters Controls											
7-3	**Discharges to Water Quality Limited Waterbodies - Phosphorus (Millers River)**	1. Enhanced BMPs - Public Education. Include fertilizer use, disposal of grass clippings and leaf litter, and pet waste management with the Residential and Commercial public education programs.	Department of Public Works, Conservation Commission, Planning Board	Distribute materials with Residential and Commercial education programs.	9.4.1	*	*	*	*	*	*
		2. Enhanced BMPs - Stormwater Management in New Development and Redevelopment. Include a requirement in the regulatory mechanism that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal.		Complete bylaw bylaws within 2 years of the effective date of the permit		*	*				
		3. Enhanced BMPs - Consider BMPs to reduce phosphorus discharges when identifying MS4 properties for retrofits.		Evaluate stormwater BMPs for nitrogen and phosphorus removal during facility inventory within 2 years of the effective date of the permit					*	*	*
		4. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Incorporate phosphorus reduction practices into Town good housekeeping practices such as fertilizer use and managing grass cuttings and leaf litter.		Create written O&M Plan for open spaces, buildings and facilities, and vehicles and equipment within 2 years of the effective date of the permit		*	*	*	*	*	*
		5. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Increase street sweeping to twice per year (spring and fall) for catchment areas that discharge to the Millers River.		Sweep all streets and parking lots within the Millers River watersheds twice per year.		*	*	*	*	*	*
		6. Prepare a Phosphorus Source Identification Report to identify, delineate, and prioritize catchments with high phosphorus loading and identify potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment.		Complete Phosphorus Source Identification Report within 4 years of the effective date of the permit.	9.4.2			*	*		
		7. Evaluate municipal properties for potential BMPs to construct one that will treat phosphorus, determine estimated costs, and determines engineering and regulatory feasibility.		Evaluate municipal facilities within 5 years of the effective date of the permit to determine candidates for a phosphorus BMP.	9.4.3					*	*
		8. Design and install a demonstration BMP to treat phosphorus from stormwater runoff.		Installed demonstration BMP within 6 years of the effective date of the permit.						*	*
		9. Track BMPs installed, including type, total area treated, design storage volume and estimated phosphorus removal and report annually to EPA and MassDEP.		Summary progress table.							*
7-4	**Discharges to Water Quality Limited Waterbodies - Turbidity (Partridge Pond)**	1. Enhanced BMPs - Stormwater Management in New Development and Redevelopment. Mandate that designs of stormwater systems on commercial and industrial land uses allow for spill containment.	Department of Public Works, Conservation Commission, Planning Board	Adopt new design guidelines for commercial and industrial construction.	9.5.1		*	*	*		
		2. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Increase street sweeping for areas with higher pollutant loads.		Increase street sweeping if needed.			*	*	*	*	*
		3. Enhanced BMPs - Good Housekeeping and Pollution Prevention. Increase catch basin cleaning if inspections indicate that more frequent cleaning is necessary.		Increase catch basin cleaning if needed.			*	*	*	*	*

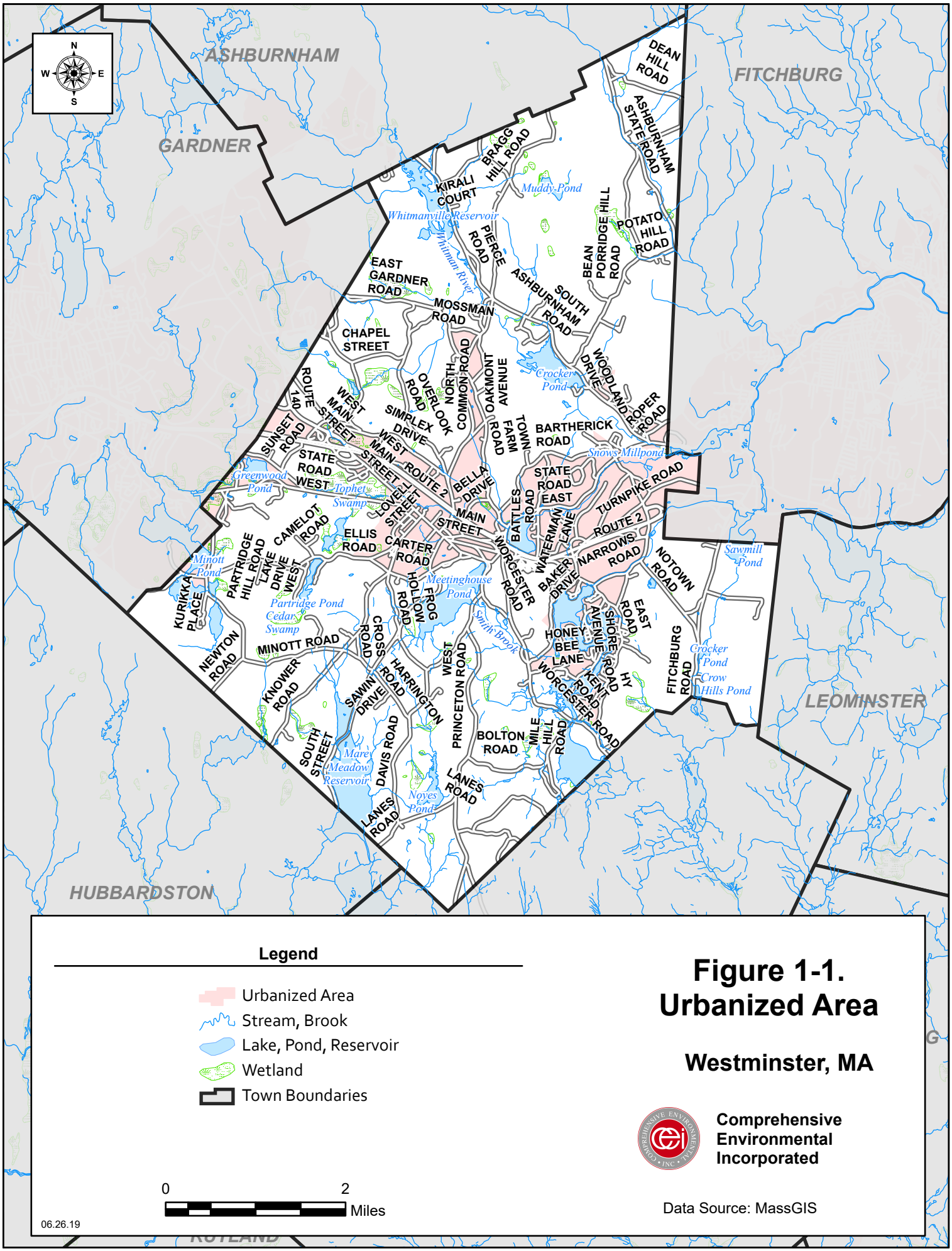
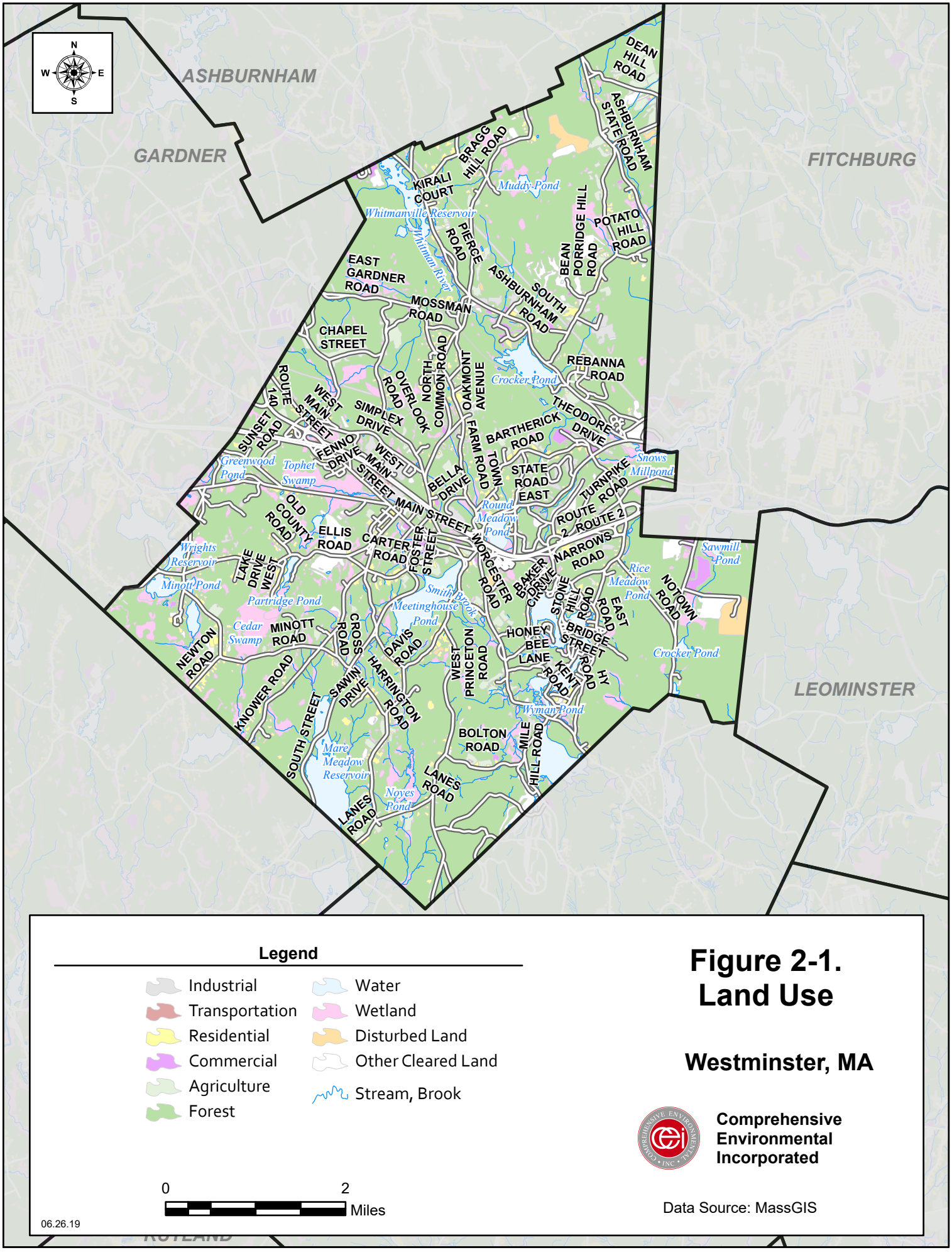


Figure 1-1. Urbanized Area

Westminster, MA

Comprehensive Environmental Incorporated

Data Source: MassGIS


N
W
E
S
ASHBURNHAM
GARDNER
FITCHBURG
LEOMINSTER
DEAN HILL ROAD
ASHBURNHAM STATE ROAD
BRAGG HILL ROAD
KIRALI COURT
Muddy Pond
Whitmanville Reservoir
Whitman River
PIERCE ROAD
POTATO HILL ROAD
BEAN PORRIDGE HILL ROAD
EAST GARDNER ROAD
MOSSMAN ROAD
SOUTH ASHBURNHAM ROAD
CHAPEL STREET
REBANNA ROAD
Crocker Pond
THEODORE DRIVE
BARTHERICK ROAD
ROUTE 140
WEST MAIN STREET
SIMPLEX DRIVE
OVERLOOK ROAD
NORTH COMMON ROAD
OAKMONT AVENUE
FARM ROAD
SUNSET ROAD
FENNO DRIVE
WEST MAIN STREET
Greenwood Pond
Tophet Swamp
BELLA DRIVE
TOWN
STATE ROAD EAST
TURNPIKE ROAD
Snows Millpond
MAIN STREET
Round Meadow Pond
ROUTE 2
OLD COUNTY ROAD
ELLIS ROAD
CARTER ROAD
FOSTER STREET
WORCESTER ROAD
NARROWS ROAD
Sawmill Pond
Wrights Reservoir
LAKE DRIVE WEST
BAKER CIRCLE
Rice Meadow Pond
NOTOWN ROAD
Minott Pond
Partridge Pond
Smith Brook
Meetinghouse Pond
STONE HILL ROAD
EAST BRIDGE STREET
HONEY BEE LANE
MINOTT ROAD
Cedar Swamp
CROSS ROAD
DAVIS ROAD
NEWTON ROAD
WEST PRINCETON ROAD
KENT ROAD
HY
KNOWER ROAD
SAWIN DRIVE
HARRINGTON ROAD
Crocker Pond
Wyman Pond
SOUTH STREET
BOLTON ROAD
MILE HILL ROAD
Mare Meadow Reservoir
LANES ROAD
Noyes Pond
LANES ROAD
Legend
Industrial
Transportation
Residential
Commercial
Agriculture
Forest
Water
Wetland
Disturbed Land
Other Cleared Land
Stream, Brook
0
2
Miles
06.26.19
Figure 2-1.
Land Use
Westminster, MA
Comprehensive Environmental Incorporated
Data Source: MassGIS

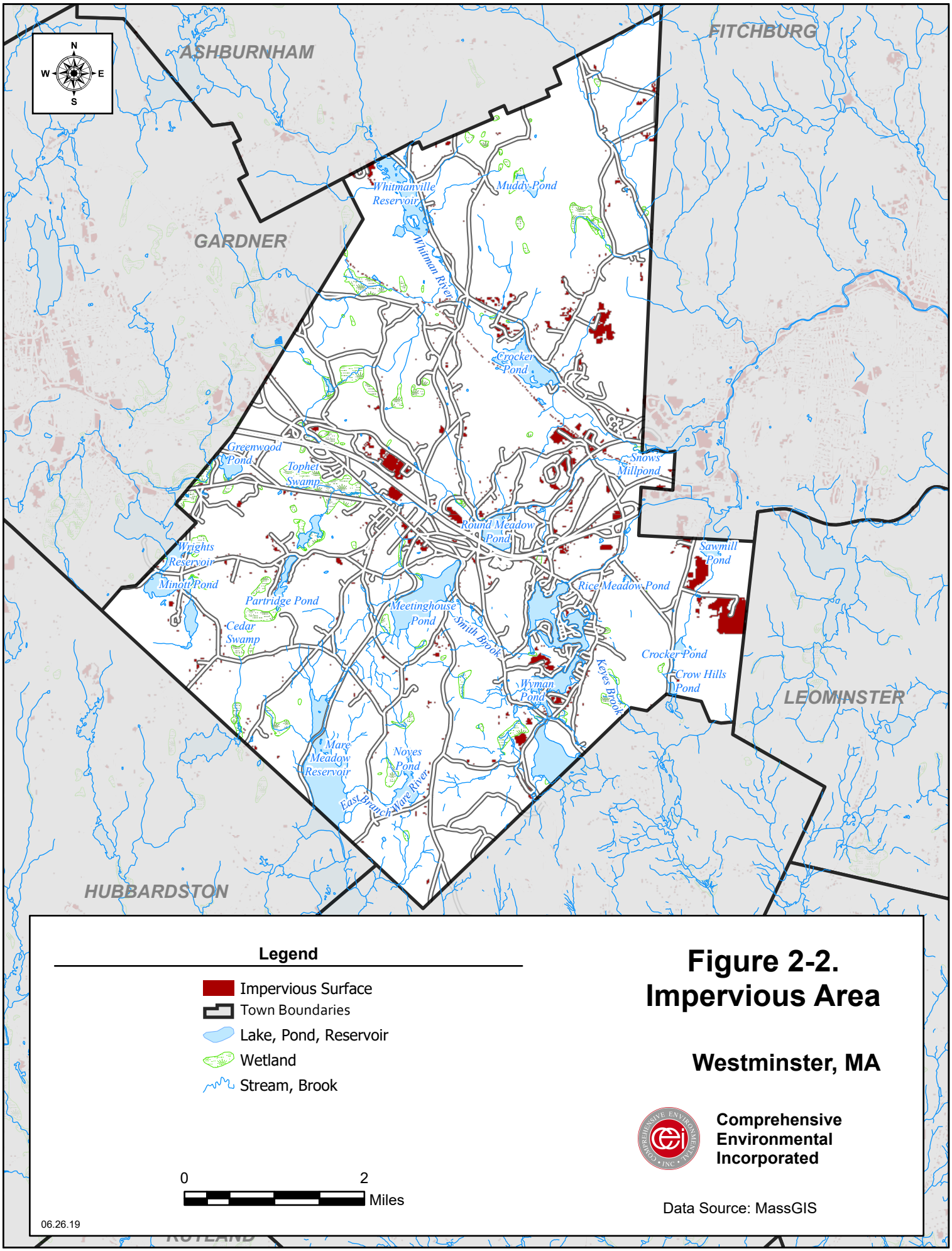


Figure 2-2. Impervious Area

Westminster, MA

Comprehensive Environmental Incorporated

Data Source: MassGIS

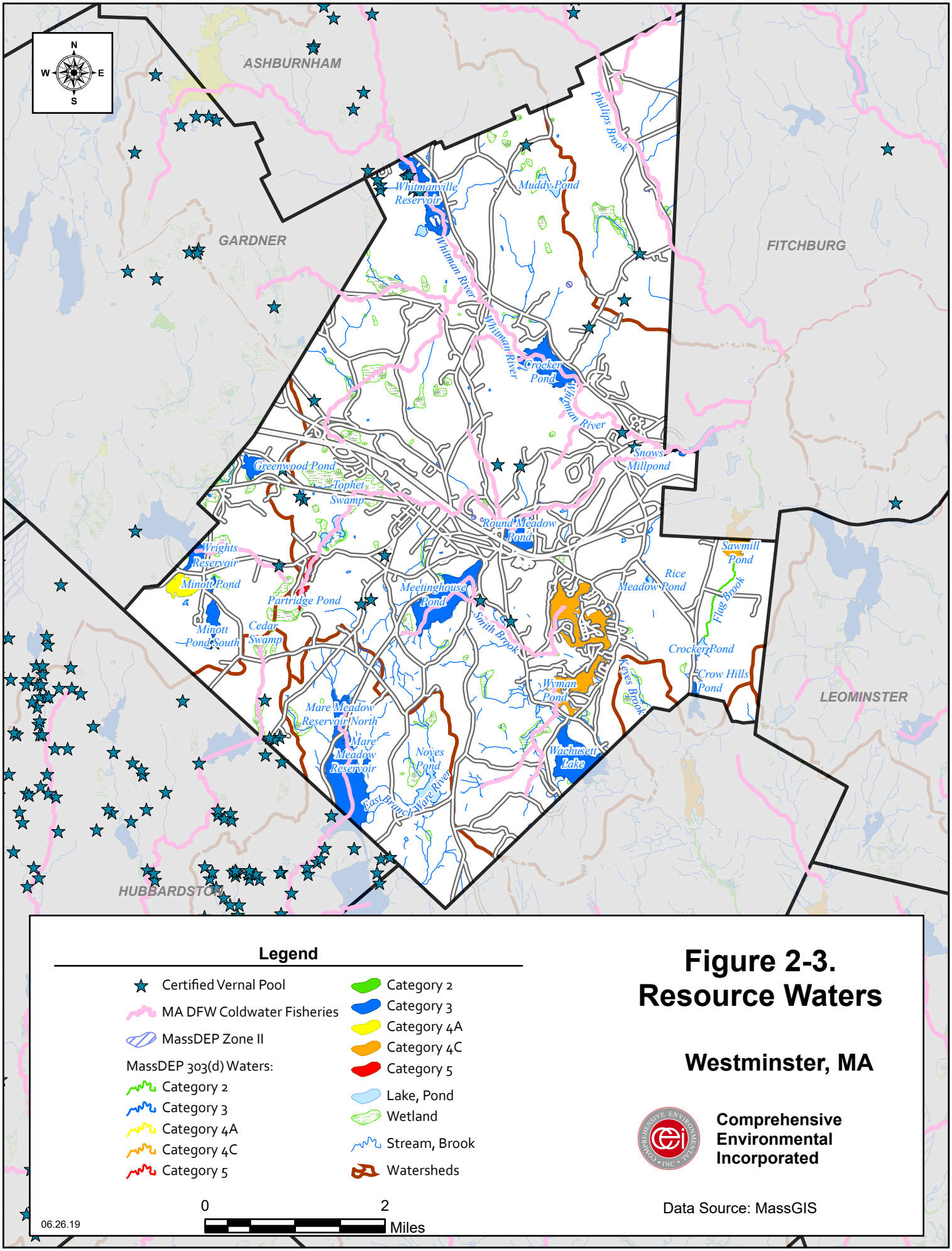


Figure 2-3. Resource Waters

Westminster, MA

Comprehensive Environmental Incorporated

Data Source: MassGIS

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BARREL ROAD
Whitmanville Reservoir
Muddy Pond
BEAN PORRIDGE HILL ROAD
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
EAST GARDNER ROAD
CHAPEL STREET
OAKMONT AVENUE
OVERLOOK ROAD
Crocker Pond
COLONY ROAD
WEST MAIN STREET
ROUTE 2
SIMPLEX DRIVE
TECHNOLOGY DRIVE
NORTH COMMON ROAD
TOWN FARM ROAD
BARTHERICK ROAD
Snows Millpond
Greenwood Pond
STATE ROAD WEST
NEWCOMB ROAD
STATE ROAD EAST
DEPOT ROAD
WILLARD ROAD
TURNPIKE ROAD
Round Meadow Pond
ELLIS ROAD
Sawmill Pond
Minott Pond
Partridge Pond
Cedar Swamp
Meetinghouse Pond
HAGER PARK ROAD
Wyman Pond
NOTOWN ROAD
FITCHBURG ROAD
MINOTT ROAD
KNOWER ROAD
SPRUCE ROAD
HONEY BEE LANE
Crocker Pond
SOUTH STREET
WORCESTER ROAD
EAST ROAD
WEST PRINCETON ROAD
BOLTON ROAD
MILE HILL ROAD
Mare Meadow Reservoir
DAVIS ROAD
Noyes Pond
LANES ROAD

Legend

- Surface Water Intake
- Emergency Surface Water

Surface Water Supply Watershed:

- Meetinghouse Pond
- Notown Reservoir
- Wachusett Lake
- Mare Meadow Rervoir
- Wyman Pond
- Outfalls 2021
- Catch Basin
- Drop Inlet
- Manhole
- Overflow
- Swale
- Culvert
- BMPs
- Drain Pipes
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Urbanized Area

N W E S

0 1

Miles

Figure 2-4
Stormwater Infrastructure in Surface Water Supply Watershed Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

11/15/2021

Appendix A

Notice of Intent and Authorization to Discharge

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

Part I: General Conditions

General Information

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

EPA NPDES Permit Number (if applicable): MAR041233

Primary MS4 Program Manager Contact Information

Name: Joshua W. Hall, PE Title: Director of Public Works

Street Address Line 1: 2 Oakmont Avenue

Street Address Line 2:

City: Westminster State: MA Zip Code: 01473

Email: jhall@westminster-ma.gov Phone Number: (978) 874-5572

Fax Number: (978) 874-0445

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed):

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)

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): 05/02/06

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): 11/19/13

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): 11/14/06

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
MA35025 Greenwood Pond	6	☐	☐	☐	☐	☐	☒	☐	☐	☐	Noxious aquatic plants
MA35104 Wrights Reservoir	2	☐	☐	☐	☐	☐	☒	☐	☐	☐	Noxious aquatic plants
MA81161 Wyman Pond	19	☐	☐	☐	☐	☐	☐	☐	☐	☐	Non-native aquatic plants
MA81-11 Whitman River	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
MA81114 Round Meadow Pond	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed stream from Tophet Swamp to Round Meadow Pond	9	☐	☐	☐	☐	☐	☐	☒	☐	☐	
Unnamed stream between Wyman Pond and Sawmill Pond	9	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed tributary to Meetinghouse Pond	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed tributary to Whitman River	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Mahoney Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed tributary to Snows Millpond	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tophet Swamp	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Unnamed pond behind Westminster Elementary School	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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		☐	☐	☐	☐	☐	☐	☐	☐	☐	

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

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**
Brochures/Pamphlets	Distribute fact sheets or brochures on pet waste pickup with dog licenses.	Residents	Town Clerk	Provide informational flyers with all applications and renewals.	2018
Brochures/Pamphlets	Distribute fact sheets to homeowners in close proximity to water resources.	Residents	Department of Public Works	Provide informational flyers to residents within environmentally sensitive areas.	2018
Brochures/Pamphlets	Distribute fact sheets or brochures on erosion and sediment control with permit applications	Developers (construction)	Planning Board, Conservation Commission, Building Department	Provide information with all applications	2018
Web Page	Provide web information on septic system maintenance, illicit discharges, pet waste disposal, lawn care, pesticide and fertilizer use, grass clippings and leaf litter disposal, car washing, and use of environment-ally friendly products.	Residents	Information Technology, Department of Public Works	Continue to update and maintain the websites.	2018

Web Page	Provide web information on pesticide and fertilizer use, grass clippings and leaf litter disposal, building maintenance, salt usage, storage of materials and wastes, car washing, benefits of infiltration, and use of environmentally friendly products.	Businesses, Institutions, and Commerc	Information Technology, Department of Public Works	Continue to update and maintain the websites.	2018
Web Page	Provide web information on erosion and sediment control, Low Impact Development, and the NPDES Construction General Permit.	Developers (construction)	Information Technology, Department of Public Works	Continue to update and maintain the websites.	2018
Web Page	Provide web information on equipment maintenance and inspection, material storage, solid waste handling, salt usage, benefits of onsite infiltration, management of parking lot surfaces, and EPA's MSGP.	Industrial	Information Technology, Department of Public Works	Continue to update and maintain the websites.	2018
Social Media	Provide relevant stormwater information to different audiences via social media.	Residents, Businesses, Institutions, Commercial Facilities, Developers (construction), Industrial	Information Technology	Follow statewide "Think Blue" campaign on social media platforms.	2019

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	Information Technology, Department of Public Works	Allow annual review of stormwater management plan and posting of stormwater management plan on website.	2018
Public Participation	Develop and upload SWMP to the Town website and provide a link t	Information Technology, Department of Public Works	Allow public to comment on stormwater management plan annually.	2018
Public Participation	Cleanups - Roadside/General	Department of Public Works, Board of Selectmen	Allow annual participation in Town Earth Day event.	2018
Public Participation	Household haz. waste/used oil collection	Department of Public Works, Board of Selectmen	Allow public to annually drop off household hazardous waste	2018

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 of permit conditions	Department of Public Works, Board of Health	Complete within 1 year of effective date of permit	2018
Storm sewer system map	Create map and update during IDDE program completion	Department of Public Works	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2018
Written IDDE program	Create written IDDE program	Department of Public Works	Complete within 1 year of the effective date of permit and update as required	2018
Implement IDDE program	Implement catchment investigations according to program and permit conditions	Department of Public Works, Board of Health	Complete 10 years after effective date of permit	2020
Employee training	Train employees on IDDE implementation	Department of Public Works, Board of Health	Train annually	2018
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	Department of Public Works	Complete 3 years after effective date of permit	2019
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Department of Public Works	Complete 10 years after effective date of permit	2028
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Department of Public Works	Complete ongoing outfall screening upon completion of IDDE program	2024
IDDE Ordinance/Bylaw	Enforce existing IDDE bylaw	Department of Public Works, Board of Health	Continue to enforce IDDE bylaw, created May 2, 2006	2018

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	Complete written procedures of site inspections and enforcement procedures	Planning Board, Conservation Commission, Building / Zoning Department	Complete within 1 year of the effective date of permit	2018
Site plan review	Complete written procedures of site plan review and begin implementation	Planning Board, Conservation Commission, Building / Zoning Department	Complete within 1 year of the effective date of permit	2018
Erosion and Sediment Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	Planning Board, Conservation Commission, Building / Zoning Department	Complete within 1 year of the effective date of permit	2018
Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Planning Board, Conservation Commission, Building / Zoning Department	Complete within 1 year of the effective date of permit	2018
Construction Ordinance/ Bylaw	Enforce existing Earth Removal bylaw	Planning Board, Conservation Commission, Building / Zoning Department	Continue to enforce bylaw, created November 19, 2013	2018

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	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Board, Conservation Commission, Building / Zoning Department, De	Require submission of as-built plans for completed projects	2018
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	Planning Board, Conservation Commission, Department of Public Works	Complete 4 years after effective date of permit and report annually on retrofitted properties	2020
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	Planning Board, Conservation Commission, Building / Zoning Department	Complete 4 years after effective date of permit and implement recommendations of report	2020
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.	Planning Board, Conservation Commission, Zoning Board	Complete 4 years after effective date of permit and implement recommendations of report	2020

Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	Planning Board, Conservation Commission, Building Department	Complete 2 years after effective date of permit	2019

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	Department of Public Works	Complete and implement 2 years after effective date of permit	2019
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	Department of Public Works, Building / Zoning Department	Complete 2 years after effective date of permit and implement annually	2019
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Department of Public Works	Complete 2 years after effective date of permit	2019
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	Department of Public Works	Complete and implement 2 years after effective date of permit	2018
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	Department of Public Works	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2018
Street sweeping program	Sweep all streets and permitee-owned parking lots in accordance with permit conditions	Department of Public Works	Sweep all streets and permitee-owned parking lots once per year in the spring	2018
Road salt use optimization program	Establish and implement a program to minimize the use of road salt	Department of Public Works	Implement salt use optimization during deicing season	2018

Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies	Department of Public Works	Inspect and maintain treatment structures at least annually	2018

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)
Long Island Sound TMDL (Nitrogen)	Adhere to requirements in part B.I of Appendix F	Department of Public Works, Conservation Commission, Planning Bc
	Adhere to requirements in part B.I of Appendix F	Department of Public Works, Conservation Commission, Planning Bc

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	MA35-03 Millers River	Adhere to requirements in part II of Appendix H	Department of Public Works, Conservation Commission, Planning Bc

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.

Click to add text

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

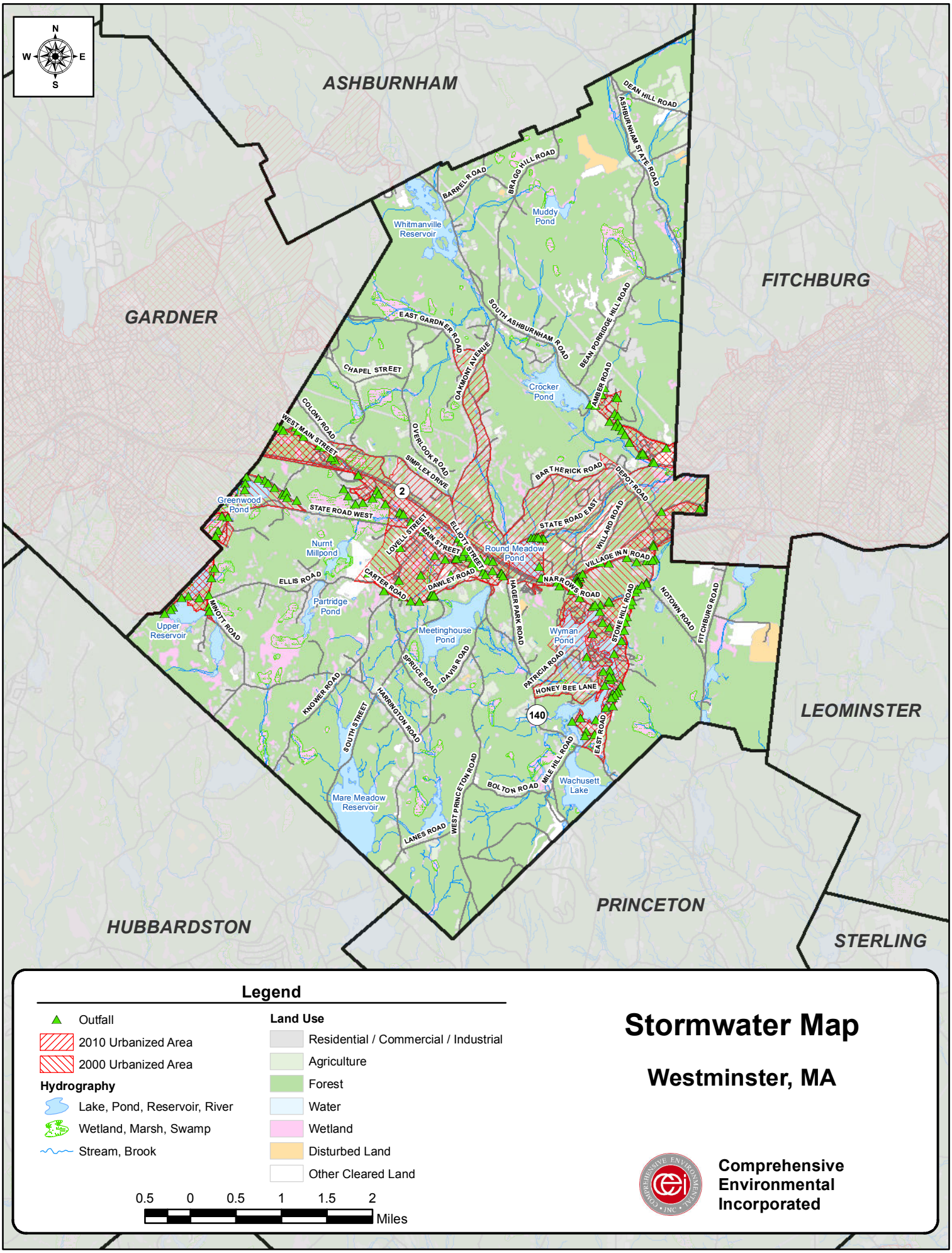
Part V: Certification

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:	James A. DeLisle	Title:	Chairman, Board of Selectmen
Signature:	James A. DeLisle	Date:	09/05/18

[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



Legend

- Outfall
- 2010 Urbanized Area
- 2000 Urbanized Area

Hydrography

- Lake, Pond, Reservoir, River
- Wetland, Marsh, Swamp
- Stream, Brook

Land Use

- Residential / Commercial / Industrial
- Agriculture
- Forest
- Water
- Wetland
- Disturbed Land
- Other Cleared Land

0.5 0 0.5 1 1.5 2 Miles

Stormwater Map

Westminster, MA

Comprehensive Environmental Incorporated

COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

- Engineering
- Design
- Construction
- Inspection

Responsive service, cost-effective solutions, technical excellence

- Drainage & Flooding
- Energy & Sustainability
- Hazardous Waste
- Permitting & NEPA
- Stormwater & LID
- Transportation
- Water & Wastewater
- Watershed Restoration

Wednesday, August 08, 2018

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

RE: Informal Endangered Species Consultation – Westminster, MA

Dear Mr. Simmons,

As required by the federal 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit (2016 MS4 Permit) issued by the Environmental Protection Agency (EPA), communities must meet certain requirements under the Clean Water Act and Endangered Species Act (ESA) to ensure that activities undertaken do not adversely affect endangered and threatened species or critical habitat. This permit requires that applicants applying for permit coverage must assess the impacts of their stormwater discharges and discharge-related activities on federally listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat") to ensure that these goals are met.

The 2016 MS4 Permit provides guidance on how to meet requirements of the ESA which in part requires communities with certain endangered species located within the "action area" (in this case, defined as the entirety of the community's regulated urbanized area) to contact the United States Fish and Wildlife Services (USFWS) for a formal or informal consultation to determine that permit activities will result in either a "no jeopardy" opinion or "not likely to adversely affect" listed species or critical habitat. These procedures are outlined in Appendix C, Criterion B of the 2016 MS4 Permit.

Comprehensive Environmental Inc. (CEI) is working with the Town of Westminster, Massachusetts to complete work under the 2016 MS4 Permit, including preparation of a Notice of Intent (NOI) for submittal to EPA. During preparation of the NOI and using the IPaC system, CEI identified one or more species (listed below) identified under Criterion B, which requires contacting USFWS for a formal or informal consultation. Therefore, the purpose of this letter is to request an informal consultation from USFWS for endangered species listed in Westminster for which we have made a "not likely to adversely affect" determination.

Activities covered under the 2016 MS4 Permit include stormwater discharge and related activities such as inspections, maintenance, and repairs of stormwater infrastructure. There are several reasons why activities proposed will not affect endangered or threatened species:

COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

1. No new construction is proposed under this permit, and any new construction may be required to undergo its own specific permitting process.
2. Any repair work covered by this permit will only affect previously disturbed areas where stormwater controls are already installed. Due to the nature of stormwater systems, this work falls primarily along roads within urbanized areas, where the risk of encountering and adversely impacting endangered species is limited.
3. Repair work that falls within the wetlands or 100-foot buffer zone is regulated by the Massachusetts Wetlands Protection Act, which triggers a project specific endangered species review, providing more specific protection for those species within the wetlands or buffer zone.
4. All stormwater discharges are pre-existing and Westminster was previously permitted under the 2003 MS4 NOI.

The following provides a list of species that were identified using the IPaC system, CEI's determination of "no effect" or "not likely to adversely affect," and a brief rationale regarding the determination. CEI is only seeking concurrence from the USFWS for those species with the determination of "not likely to adversely affect."

<u>Terrestrial Animals</u>

Northern Long-Eared Bat, "no effect" – In warmer months these bats roost and forage in forested areas. As no trees are being removed under this permit, and stormwater discharges are unlikely to affect the forested areas that serve as its habitat, CEI has determined that activities covered by this permit will have "no effect" on the Northern Long-Eared Bat.

Red Knot, "no effect" – This species of shorebird is not present within the town, although stormwater discharges from the town flow down rivers which pass through areas in which they are listed. The primary threat to this species is the overharvesting of horseshoe crab eggs in the Delaware Bay, which border Delaware and New Jersey. Due to their terrestrial nature, stormwater discharges are unlikely to affect them. Because of this, CEI has determined that activities covered by this permit will have "no effect" on the Red Knot.

Roseate Tern, "no effect" – This species of shorebird is not present within the town, although stormwater discharges from the town flow down rivers which pass through areas in which they are listed. The primary threat to them is human disturbance and habitat destruction. Due to their terrestrial nature, stormwater discharges are unlikely to affect them. Because of this, CEI has determined that activities covered by this permit will have "no effect" on the Roseate Tern.

Puritan Tiger Beetle, "not likely to adversely affect" – These beetles inhabit the sandy beaches and silt banks along large rivers, including the Connecticut River. The beetles are not present in the town, but the discharge from the system is eventually received by the Connecticut River. The larva burrow into the sand and can survive temporary flooding. Primary threats to the beetles include permanent flooding due to river damming, recreation, and man-made bank stabilization, such as retaining walls. The pre-existing stormwater discharges will not cause permanent flooding and are thus unlikely to impact the beetle's habitat. Because of this, CEI has determined that activities covered by this permit are "not likely to adversely affect" the Puritan Tiger Beetle.

<u>Plants</u>

Small Whorled Pogonia, "no effect" – Found on forested slopes with laterally draining water and along the slopes of vernal streams. The primary threats to this species are intentional destruction by humans, such as illegal collection, and habitat alteration. As even intermittent streams and their buffer zones are protected by the Massachusetts Wetlands Protection Act, any direct action which may impact this habitat will be subject to further regulatory review. While the species may also occur in upland areas, they are highly sensitive to changes in drainage. As stormwater systems primarily fall within roads and urbanized areas, repair work covered by this permit is unlikely to affect habitat that has not been previously impacted due to highly altered drainage from impervious areas. For these reasons, CEI has determined that activities covered by this permit will have "no effect" on the species.

Northeastern Bulrush, "not likely to adversely affect" – Found in wetlands with organic soils, fluctuating water levels and full sun. The plant is not present in the town, but the discharge from the system is received by areas in which it is listed. The primary threat to the species is loss of fluctuating water levels. Unlike a dam or impoundment, stormwater discharges do not permanently change the water level. For these reasons, CEI has determined that activities covered by this permit are "not likely to adversely affect" the species.

CEI has determined that the stormwater discharges and discharge related activities regulated by this permit will have "no effect" on, or are "not likely to adversely affect" the above listed species within the action areas. We request a written concurrence from you regarding the species we have listed with the "not likely to adversely affect" determination. The Town of Westminster agrees to re-initiate consultation with USFWS if structural Best Management Practices (BMPs) not identified on the NOI are proposed for installation or construction during the course of the permit term.

COMPREHENSIVE

ENVIRONMENTAL

INCORPORATED

- Engineering
- Design
- Construction
- Inspection

Responsive service, cost-effective solutions, technical excellence

- Drainage & Flooding
- Energy & Sustainability
- Hazardous Waste
- Permitting & NEPA
- Stormwater & LID
- Transportation
- Water & Wastewater
- Watershed Restoration

Please review the above list and inform us of your conclusions at your earliest convenience. If you have any questions or would like to discuss, please contact me at 800.725.2550 x381 or tpetersen@ceiengineers.com.

Sincerely,

COMPREHENSIVE ENVIRONMENTAL

Travis Petersen
Project Scientist

Attachments/Enclosures:
Official Species List – US Fish & Wildlife Service

225 Cedar Hill Street, Marlborough, MA 01752 508-281-5160 Fax: 508-281-5136
21 Depot Street, Merrimack, NH 03054 603-424-8444 Fax: 603-424-8441
Gateway Crossings Suite 227 One Hartford Square East New Britain, CT 06052 860-620-3673
www.ceiengineers.com

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: July 27, 2018
Consultation Code: 05E1NE00-2018-SLI-2533
Event Code: 05E1NE00-2018-E-05939
Project Name: Westminster MS4 Endangered Species Review

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(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: 05E1NE00-2018-SLI-2533

Event Code: 05E1NE00-2018-E-05939

Project Name: Westminster MS4 Endangered Species Review

Project Type: LAND - DRAINAGE

Project Description: Determination of impact of stormwater discharges and discharge related activities to threatened and endangered species per Appendix C of the MA MS4 General Permit. Stormwater discharge occurs from pre-existing outfalls within the regulated zone, as shown on the map.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.54422106857467N71.84974755410661W

Counties: Hartford, CT | Middlesex, CT | New London, CT | Essex, MA | Franklin, MA | Hampden, MA | Hampshire, MA | Middlesex, MA | Worcester, MA | Hillsborough, NH

Endangered Species Act Species

There is a total of 6 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.

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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

Birds

NAME	STATUS
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: northeast U.S. nesting pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Insects

NAME	STATUS
Puritan Tiger Beetle *Cicindela puritana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6073	Threatened

Flowering Plants

NAME	STATUS
Northeastern Bulrush *Scirpus ancistrochaetus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6715	Endangered
Small Whorled Pogonia *Isotria medeoloides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

September 24, 2018

To whom it may concern:

The U.S. Fish and Wildlife Service (USFWS) reviewed the stormwater discharge activities associated with the 2016 National Pollutant Discharge and Elimination System (NPDES) Massachusetts (MA) Small Municipal Separate Storm Sewer System (MS4) general permit (MA MS4 General Permit) issued by the Environmental Protection Agency (EPA). We determined those activities may affect, but are not likely to adversely affect, certain species listed under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) when specific conditions are met. When these conditions are met, we do not need to review individual projects. These comments are provided in accordance with section 7 of the ESA and complement existing 2016 MA MS4 General Permit Appendix C Guidance. We understand the applicant is acting as a non-Federal representative of the EPA for the purpose of consultation under section 7. **This letter provides additional guidance for meeting Criterion B and should be submitted as part of your application package to the EPA.**

If the USFWS Information for Planning and Consultation website (https://ecos.fws.gov/ipac/) indicates your MA MS4 General Permit project action area may contain one or more of the following federally listed endangered species: roseate tern (*Sterna dougallii*), northern red-bellied cooter (*Pseudemys rubriventris*), dwarf wedgemussel (*Alasmidonta heterodon*), rusty patched bumble bee (*Bombus affinis*), northeastern bulrush (*Scirpus ancistrochaetus*), or American chaffseed (*Schwalbea americana*); threatened species: piping plover (*Charadrius melodus*), bog turtle (*Glyptemys muhlenbergii*), Puritan tiger beetle (*Cicindela puritana*), northeastern beach tiger beetle (*Cicindela dorsalis*), or red knot (*Calidris canutus rufa*); or their federally designated critical habitat; and the specific conditions listed below are met, you may submit this letter to complete the **MA MS4 General Permit Appendix C: Step 4** in place of a concurrence letter for informal consultation as documentation of ESA eligibility for **USFWS Criterion B.**

In addition, this letter also satisfies the requirement in the **MA MS4 General Permit Appendix C: Step 2 (3)** to contact the USFWS and obtain a concurrence letter, if you have not yet done so. If your project action area includes one or more of the above-listed species *and* one or more of the

species listed under **Criterion C,**[1] you may still use this letter to certify under **Criterion B**. All existing guidance regarding requirements for certifying eligibility according to the USFWS Criterion A, B, or C for coverage by the 2016 MS4 Permit (see MA MS4 General Permit Appendix C – Endangered Species Guidance) remains unchanged.

We have determined that proposed stormwater discharge activities covered under the 2016 MS4 Permit *may affect, but are not likely to adversely affect*, the above-listed species and the species' critical habitat when the following are true:

1. all stormwater discharges are pre-existing or previously permitted by EPA;
2. any planned operations and maintenance work covered by this permit will only affect previously disturbed areas where stormwater controls are already installed. In these situations the chance of encountering any of the subject species is discountable;
3. the project implements EPA MS4 Best Management Practices (BMPs) and meets Clean Water Act and Massachusetts Water Quality Standards. Although permitted discharges may reach the environment used by these species, BMPs reduce pollutants to the extent that discharges are not known to have measurable impacts on these species or their habitat;
4. no new construction or structural BMPs are proposed under this permit at this time; and
5. you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the Notice of Intent (NOI), you will re-initiate consultation with the USFWS as necessary (see **MA MS4 General Permit Appendix C: Step 2 (5)**).

If the above criteria are met, further consultation with the USFWS under section 7 of the ESA is not required at this time; however, if the proposed action changes in any way such that it may affect a listed species in a manner not previously analyzed or if new information reveals the presence of additional listed species that may be affected by the project, the applicant or the EPA should contact us immediately and suspend activities that may affect those species until the appropriate level of consultation is completed with our office. Thank you for your cooperation, and please contact David Simmons of this office at (603) 227-6425 if you have questions or need further assistance.

Sincerely yours,

Thomas R Chapman
Supervisor
New England Field Office

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[1] Criterion C includes guidance for project action areas that may contain species for which EPA has already made a determination. These species include the northern long-eared bat (*Myotis septentrionalis*), sandplain gerardia (*Agalinis acuta*), small whorled pogonia (*Isotria medeoloides*), and/or American burying beetle (*Nicrophorus americanus*) (MA MS4 General Permit Appendix C: Step 3 – Determine if You Can Meet Eligibility USFWS Criterion C).

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

VIA EMAIL

April 5, 2019

James A. DeLisle
Chairman, Board of Selectmen

And;

Joshua W. Hall, PE
Director of Public Works
2 Oakmont Avenue
Westminster, MA. 01473
jhall@westminster-ma.gov

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041233, Town of Westminster

Dear Joshua W. Hall, PE:

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

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

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

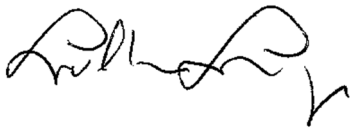
Information about the permit and available resources can be found on our website: https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Should you have

any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

Sincerely,

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

and;



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

Appendix B

Stormwater Bylaws and Regulations

STORMWATER MANAGEMENT BYLAW

Westminster Planning Board
Adopted: [Date of Annual Town Meeting]

1.0 Purpose and Objectives

1.1 The purpose of this Bylaw is to establish minimum stormwater management requirements and procedures in order to minimize damage to public and private property and infrastructure; safeguard the public health, safety, environment and general welfare; protect aquatic resources and wildlife habitat; protect the quality and health of water resources; conserve groundwater supplies; and, foster climate change resiliency. This Bylaw seeks to meet that purpose through the following objectives:

(1) Establish the Planning Board and/or Conservation Commission of the Town of Westminster, or its designated agent, as the legal authority to ensure compliance with the provisions of this Stormwater Management Bylaw and its accompanying Rules and Regulations through a review process, inspection, monitoring, and enforcement.

(2) Establish administrative procedures for: the submission, review, and approval or disapproval of Stormwater Management Permits; the inspection of approved active projects; and post construction follow up.

(3) Establish decision-making processes surrounding new development and re-development that protects watershed integrity and preserves and/or restores the health of local water resources such as lakes, ponds, streams, rivers, wetlands, and groundwater.

(4) Ensure compliance with requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) and other applicable State and Federal mandates in order to minimize or eliminate erosion and maintain sediment onsite so that it is not transported to a water of the Commonwealth and to reduce the discharge of pollutants found in stormwater through the retention and treatment of stormwater during and after construction.

2.0 Authority

This Bylaw is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule statutes, pursuant to the Regulations of the federal Clean Water Act found at 40 CFR 122.34, and as authorized by the residents of the Town of Westminster at the Town Meeting.

Nothing in this Bylaw or the regulations adopted hereunder is intended to replace or be in derogation of the requirements of the Town of Westminster Zoning Bylaw, the Westminster Wetlands Protection Bylaw, or the Westminster Subdivision Control Rules and Regulations.

3.0 Definitions

3.1 For the purposes of this Bylaw, the following shall mean:

(1) AGRICULTURAL USE: The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40, and its implementing regulations.

(2) APPLICANT: Any person, individual, partnership, association, firm, company, corporation, trust, authority, agency, department, or political subdivision, of the Commonwealth or the Federal government to the extent permitted by law requesting a soil erosion and sediment control permit for proposed land-disturbance activity.

(3) BEST MANAGEMENT PRACTICE (BMP): An activity, procedure, restraint, or structural improvement that helps reduce the quantity or improve the quality of stormwater runoff. Some examples of BMPs are described in a stormwater design manual, Stormwater Management, Volume Two: Stormwater Technical Handbook (March, 1997, MA Department of Environmental Protection and MA Office of Coastal Zone Management, as updated or amended).

(4) CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC): A certified specialist in soil erosion and sediment control. This certification program, sponsored by the Soil and Water Conservation Society in cooperation with the American Society of Agronomy, provides the public with evidence of professional qualifications.

(5) CONSERVATION COMMISSION: Town of Westminster Conservation Commission including its employees or authorized agents designated to enforce this Bylaw.

(6) CONSTRUCTION ACTIVITY: The disturbance of the ground by removal of vegetative surface cover or topsoil, grading, excavation, clearing or filling.

(7) DISCHARGE OF POLLUTANTS: The addition from any source of any pollutant or combination of pollutants into the municipal storm drain system or into waters of the United States of America or the Commonwealth of Massachusetts from any source.

(8) DISTURBANCE: Any activity which changes the volume or peak flow discharge rate of rainfall runoff from the land surface. This may include the clearing, grading, digging, scraping, or excavating of soil, placement of fill materials, paving,

construction, substantial removal of vegetation, or any activity which bares soil or rock or involves the diversion or piping of any natural man-made watercourse.

(9) ENFORCEMENT ORDER: A written order issued by the Planning Board and/or Conservation Commission in order to enforce the provisions of this Bylaw as issued in accordance with Section 7.0 of this Bylaw.

(10) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or MUNICIPAL STORM DRAIN SYSTEM: The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Westminster, MA.

(11) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT: A permit issued by the United States Environmental Protection Agency (EPA) or jointly with the State that authorizes the discharge of pollutants to waters of the Unites States.

(12) NEW DEVELOPMENT: Any modification of land that disturbs the ground surface or increases the impervious area on previously undeveloped sites. Any construction, land alteration, or addition of impervious surfaces resulting in total earth disturbances equal to or greater than 1 acre or activities that are part of a larger common plan of development disturbing greater than 1 acre that does not meet the definition of Redevelopment.

(13) OWNER: A person with a legal or equitable interest in property.

(14) PERSON: An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

(15) PLANNING BOARD: Town of Westminster Planning Board including its employees or authorized agents designated to enforce this Bylaw.

(16) PROFESSIONAL ENGINEER (P.E.): A registered Professional Engineer within the State of Massachusetts in good standing.

(17) REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phase projects that disturb the ground surface or increase the impervious area on previously developed sites. Any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances equal to or greater than 1 acre (or activities that are part of a larger common plan of redevelopment disturbing greater than 1 acre) that does not meet the definition of New Development.

(18) STORMWATER: Stormwater runoff, snow melt runoff, and surface water runoff and drainage.

(19) STORMWATER MANAGEMENT PERMIT: The written approval granted by the Planning Board to undertake a construction activity pursuant to a Stormwater Management Permit Application. A valid Stormwater Management Permit must be signed by a majority of the Planning Board participating at a duly noted public hearing, and such permit must be recorded at the Worcester Registry of Deeds, prior to the start of any work.

(20) WATERS OF THE COMMONWEALTH: All waters within the jurisdiction of the Commonwealth of Massachusetts, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, groundwaters, and vernal pools.

(21) WETLAND RESOURCE AREAS: Areas specified in the Massachusetts Wetlands Protection Regulations, 310 CMR 10.00, et seq., as amended, and in the Town of Westminster Chapter 202 Wetlands Bylaw, as amended.

4.0 Administration

4.1. The Planning Board shall be the permit granting authority for this Bylaw except when a project subject to review under this Bylaw falls under the jurisdiction of the Conservation Commission in which case the Conservation Commission shall be the permit granting authority hereunder. Any powers granted to or duties imposed upon the Planning Board may be delegated in writing by the Planning Board to any Town employee, board, commission, committee or agent, hereby known as the "Reviewing Agent."

4.2. The Planning Board shall not have jurisdiction over stormwater issues within areas where the Conservation Commission has jurisdiction under the Wetlands Protection Act and/or any local regulations.

4.3. The Planning Board or its Reviewing Agent shall take any of the following actions as a result of an application for a Stormwater Management Permit as specifically defined within the Stormwater Management Rules and Regulations promulgated as a result of this Bylaw: Approval, Approval with Conditions, or Disapproval.

4.4. A decision of the Planning Board or its Reviewing Agent shall be final. Further relief from a decision by the Planning Board or its Reviewing Agent made under this Bylaw shall be appealable to the Superior Court, in accordance with M.G.L. c. 249, §4.

5.0 Amendments and Regulations

The Planning Board may adopt, and periodically amend, the Stormwater Management Rules and Regulations relating to the terms, conditions, definitions, enforcement, fees (including application, inspection, and/or consultant fees), procedures and administration of this Stormwater Management Bylaw by majority vote of the Planning Board, after conducting an advertised public hearing to receive comments on any proposed revisions. The hearings shall be duly advertised in a paper of general circulation in the Town of Westminster no less than fourteen (14) days prior to the date of the public hearing.

6.0 Applicability and Exemptions

6.1. No person may undertake a construction activity, including clearing, grading, and excavation that results in a land disturbance to an area equal to or greater than one (1) acre of land or will disturb less than one acres of land but is part of a larger common plan of development or sale that will ultimately disturb an area equal to or greater than one (1) acre of land within the Town of Westminster without first obtaining a Stormwater Management Permit issued by the Planning Board.

6.2. Exemptions:

(1) Normal maintenance and improvement of land in agricultural use as defined by the Wetlands Protection act regulation 310 CMR 10.04, as amended;
(2) Maintenance of existing landscaping, gardens, or lawn areas associated with a single-family dwelling;
(3) The construction of fencing that will not substantially alter existing terrain or drainage patterns;
(4) Normal maintenance and improvements of the Town of Westminster's publicly owned roadways and associated drainage infrastructure; and
(5) Emergency repairs to any stormwater management system or feature that poses a threat to public health or safety, or other action as deemed necessary by a Town department or board to abate such a threat to public health or safety.

7.0 Enforcement

7.1. The Planning Board and/or the Conservation Commission, or an authorized agent of the Planning Board and/or Conservation Commission, shall enforce this Bylaw, and any associated regulations, orders, violations notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

7.2. The Planning Board and/or Conservation Commission may issue a written order to enforce the provisions of this Bylaw, which may include requirements to:

(1) Cease and desist from construction or land disturbing activity until there is compliance with this Bylaw and the stormwater management permit;
(2) Repair, maintain, or replace the stormwater management system or portions thereof in accordance with the operation and maintenance plan;
(3) Maintain, install, or perform additional erosion and sediment control measures;
(4) Perform monitoring, analyses, and reporting;

(5) Remediate adverse impact resulting directly or indirectly from malfunction of the stormwater management system or erosion and sediment control system;
(6) Cease and desist from unlawful discharges, practices, or operations; and/or,
(7) Remediate contamination in connection therewith.

7.3. If the Planning Board and/or Conservation Commission determines that abatement or remediation of adverse impacts is required, the Enforcement 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 Town of Westminster may, at its option, undertake such work, and the property owner shall reimburse the Town's expense.

7.4. Within thirty (30) days after completing all measures necessary to abate the violation, the violator and the property owner shall be notified of the costs incurred by the Town of Westminster, including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Planning Board within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within thirty (30) days following a decision of the Planning Board affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in G.L. Ch. 59, § 57, after the thirty-first day at which the costs first become due.

8.0 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 Planning Board and/or Conservation Commission or its Reviewing Agent, may enter upon privately owned property for the purpose of performing their duties under this Bylaw and Regulations and may make or cause to be made such examinations, surveys or sampling as the Planning Board and/or Conservation Commission or Reviewing Agent deems reasonably necessary.

9.0 Waivers and Provisions for Relief

9.1. Planning Board may waive strict compliance with any requirement of this Bylaw promulgated hereunder, where:
(1) Such action is allowed by federal, state and local statutes and/or regulations,
(2) Is in the public interest,
(3) A public safety issue exists, or
(4) Is not inconsistent with the purpose and intent of this Bylaw.

9.2. Any applicant may submit a written request to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the

waiver request and demonstrating that strict application of this Bylaw does not further the purposes or objectives of this Bylaw. The Planning Board may require documentation to be submitted and stamped by a qualified P.E. registered in Massachusetts or a Certified Professional in Erosion and Sediment Control (CPESC).

10.0 Civil Relief

If a person violates the provisions of this Bylaw, permit, notices, or order issued thereunder, the Planning Board and/or Conservation Commission 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.

11.0 Criminal Penalty

Any person who violates any provision of this Bylaw, order or permit issued thereunder, shall be punished by a fine of not more than $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

12.0 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.

13.0 Surety

The Planning Board and/or Conservation Commission may require the permittee to post before the start of land disturbance or construction activity, a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by Town counsel, and be in an amount deemed sufficient by the Planning Board and/or Conservation Commission to ensure that the work will be completed in accordance with the permit. If the project is phased, the Planning Board and/or Conservation Commission may release part of the bond as each phase is completed in compliance with the Stormwater Management Permit but the bond may not be fully released until the Planning Board and/or Conservation Commission has received the final inspection report as required by the Stormwater Management Rules and Regulations and issued a Certificate of Completion.

14.0 Severability

If any provision, paragraph, sentence, or clause of this Bylaw shall be held invalid for any reason, all other provisions shall continue in full force and effect.

STORMWATER MANAGEMENT
RULES AND REGULATIONS

Westminster Planning Board
Adopted: July 21, 2020

1.0 Purpose

The purpose of these rules and regulations is to establish Stormwater Management Rules and Regulations for the Town of Westminster Stormwater Management Bylaw.

2.0 Authority

The Westminster Planning Board, under the authority of Chapter 137 of the Code of the Town of Westminster, and after holding a duly called Public Hearing on July 21, 2020, adopts these Stormwater Management Rules and Regulations.

3.0 Definitions

3.1. For the purposes of these rules and regulations, the following shall mean:

(1) ABUTTER: The owner(s) of land abutting the site on which the activity occurs.

(2) APPLICANT: Any person, individual, partnership, association, firm, company, corporation, trust, authority, agency, department, or political subdivision, of the Commonwealth of Massachusetts or the federal government to the extent permitted by law requesting a Stormwater Management Permit for proposed land-disturbance activity.

(3) BEST MANAGEMENT PRACTICE (BMP): An activity, procedure, restraint, or structural improvement that helps reduce the quantity or improve the quality of stormwater runoff.

(4) CERTIFICATE OF COMPLETION: Document issued by the Town of Westminster Planning Board, its employees, or authorized agents upon receipt of a final inspection report and acknowledgement that all conditions of the Stormwater Management Permit have been satisfactorily completed.

(5) CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC): A certified specialist in soil erosion and sediment control. This certification program, sponsored by the Soil and Water Conservation Society in cooperation with the American Society of Agronomy, provides the public with evidence of professional qualifications.

(6) CERTIFIED VERNAL POOLS: Temporary bodies of freshwater that provide critical habitat for a number of vertebrate and invertebrate wildlife species, certified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP).

(7) CLEARING: Any activity that removes vegetative surface cover.

(8) CONSTRUCTION WASTE AND MATERIALS: Excess or discarded building or site materials, including but not limited to concrete truck washout, chemicals, litter and sanitary waste at a construction site that may adversely impact water quality.

(9) DISCHARGE OF POLLUTANTS: The addition from any source of any pollutant or combination of pollutants into the municipal storm drain system or into the waters of the United States or Commonwealth of Massachusetts from any source.

(10) DISTURBANCE OF LAND: Any action that causes a change in the position, location, or arrangement of soil, sand, rock, gravel or similar earth material.

(11) DPW: Westminster Department of Public Works.

(12) EROSION: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

(13) EROSION AND SEDIMENT CONTROL PLAN: A document containing narrative, drawings, and details developed by a registered professional engineer (P.E.) or CPESC, which includes BMPs, or equivalent measures designed to control surface runoff, erosion, and sedimentation during pre-construction and construction-related land disturbance activities.

(14) ESTIMATED HABITAT OF RARE WILDLIFE: Habitats delineated by the NHESP for state-protected rare wildlife and certified vernal pools for use with the Wetlands Protection Act Regulations (310 CMR 10.00) and the Forest Cutting Practices Act Regulations (304 CMR 11.00).

(15) GRADING: Changing the level or shape of the ground surface.

(16) GROUNDWATER: Water beneath the surface of the ground including confined or unconfined aquifers.

(17) GRUBBING: The act of clearing land surface by digging up roots and stumps.

(18) IMPERVIOUS SURFACE: Any material or structure on or above the ground that prevents or delays water from infiltrating the underlying soil, or causes water to runoff in greater quantities or at an increased rate of flow. Impervious surfaces include, but are not limited to, roads, driveways, parking lots, sidewalks, rooftops, patios, storage areas, concrete or asphalt paving, and gravel/dense-graded crushed stone areas.

(19) LANDOWNER: Owner of the land where a stormwater has been constructed and is in charge of ensuring that maintenance is completed on an annual basis.

(20) LOW IMPACT DEVELOPMENT (LID): An approach to land development design and stormwater management that attempts to mimic the natural hydrology of the site by avoiding, reducing, and mitigating impacts with natural, non-structural and structural measures.

(21) MASSACHUSETTS ENDANGERED SPECIES ACT (MESA): (G.L. c. 13lA) and it's implementing regulations at (321 CMR 10.00). This Act prohibits the "taking" of any rare plant or animal species listed as "Endangered", "Threatened", or of "Special Concern".

(22) MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS (the STANDARDS): The Stormwater Management Standards promulgated by the Massachusetts Department of Environmental Protection (DEP) under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131 § 40 and Massachusetts Clean Waters Act G.L. c. 21, §. 23-56, and further described in the Wetlands Protection Act Regulations (310 CMR 10.00) and the 401 Water Quality Certification Regulations (314 CMR 9.00). The Stormwater Management Standards address stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and to control the quantity of runoff from a site.

(23) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or MUNICIPAL STORM DRAIN SYSTEM: The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Westminster, MA.

(24) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT: A permit issued by the United States Environmental Protection Agency (EPA) or jointly with the Commonwealth of Massachusetts that authorizes the discharge of stormwater to waters of the United States.

(25) NEW DEVELOPMENT: Any construction, land alteration, or addition of impervious surfaces on previously undeveloped sites resulting in total disturbance of land equal to or greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) that does not meet the definition of Redevelopment.

(26) NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM (NHESP): The State program for implementing MESA requirements.

(27) OPERATION AND MAINTENANCE PLAN: A plan setting up the functional, financial and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to ensure that it continues to function as designed.

(28) OUTFALL: The point where stormwater flows out from a point source which is a discernible, confined and discrete conveyance into waters of the Commonwealth of Massachusetts.

(29) OWNER: A person with a legal or equitable interest in property.

(30) PERSON: An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth of Massachusetts or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

(31) PLANNING BOARD: Town of Westminster Planning Board its employees or authorized agents designated to enforce these regulations.

(32) POINT SOURCE: Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which stormwater is or may be discharged.

(33) POLLUTANT: Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or non-point source, that is or may be introduced into any sewage treatment works or waters of the Commonwealth of Massachusetts. Pollutants shall include, but are not limited to:

(a) Chemicals, paints, varnishes, and solvents;
(b) Oil and other automotive fluids;
(c) Non-hazardous liquid and solid wastes and yard wastes;
(d) Refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnances, accumulations and floatables;
(e) Pesticides, herbicides, and fertilizers;
(f) Hazardous materials and wastes, sewage, fecal coliform and pathogens;
(g) Dissolved and particulate metals;
(h) Animal wastes;
(i) Rock, sand, salt, and soils;
(j) Concrete truck washout;
(k) Sanitary wastes;
(l) Construction wastes, demolition debris, and discarded building materials; and
(m) Noxious or offensive matter of any kind.

(34) PRE-CONSTRUCTION: All activity in preparation for construction.

(35) PRIORITY HABITAT OF RARE SPECIES: Habitats delineated for rare plant and animal populations protected pursuant to the MESA and its regulations.

(36) RECHARGE: The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through soil.

(37) REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites. Any construction, land alteration, or improvement of impervious surfaces resulting in total disturbance of land equal to or greater than 1 acre (or activities that are part of a larger common plan of redevelopment disturbing greater than 1 acre) that does not meet the definition of New Development.

(38) RUNOFF: Rainfall, snowmelt, or irrigation water flowing over the ground surface.

(39) SEDIMENT: Mineral or organic soil material that is transported by wind or water, from its origin to another location; the product of erosion processes.

(40) SEDIMENTATION: The process or act of deposition of sediment.

(41) SITE: Any lot, parcel of land, or area of property where land-disturbing activities are, were, or will be performed.

(42) SLOPE: The incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

(43) SOIL: Any earth, sand, rock, gravel, or similar material.

(44) STABILIZATION: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or minimize erosion.

(45) STORMWATER: Stormwater, snow melt, and surface water runoff and drainage.

(46) STORMWATER MANAGEMENT PERMIT: The written approval granted by the Planning Board to undertake a construction activity pursuant to a Stormwater Management Permit Application.

(47) STORMWATER MANAGEMENT PLAN: A plan required as part of the application for a Stormwater Management Permit.

(48) STRIP: Any activity that removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

(49) TOXIC OR HAZARDOUS MATERIAL OR WASTE: Any material, which because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic or organic chemical, petroleum product, heavy metal, radioactive, biological, or infectious waste, acid and alkali, and any substance defined as Toxic or Hazardous under G.L. Ch.21C and Ch.21E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

(50) TOTAL SUSPENDED SOLIDS (TSS): Sediment being carried in stormwater.

(51) WATERCOURSE: A natural or man-man channel through which water flows or a stream of water, including a river, brook, or underground stream.

(52) WATERS OF THE COMMONWEALTH: All waters within the jurisdiction of the Commonwealth of Massachusetts, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, groundwaters, and vernal pools.

(53) WETLAND RESOURCE AREAS: Areas specified in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00, as amended, and in the Town of Westminster Chapter 202 Wetlands Protection Bylaw, as amended.

4.0 Amendments

The Planning Board may adopt, and periodically amend, these Stormwater Management Rules and Regulations by majority vote of the Planning Board, after conducting a minimum of one (1) advertised public hearing to receive comments on any proposed revisions. The hearings shall be duly advertised in a paper of general circulation in the Town of Westminster no less than fourteen (14) days prior to the date of the public hearing.

5.0 Applicability

These rules and regulations apply to all projects meeting the applicability criteria of the Stormwater Management Bylaw (Chapter 137 of the Town's General Bylaws). New development and redevelopment projects must comply with the rules and regulations contained herein unless expressly waived by the Planning Board.

6.0 Permit Procedures and Requirements

6.1. The Building Inspector shall not issue a Building Permit without first confirming that a Stormwater Management Permit has been obtained or is otherwise not required. The Stormwater Management Permit process shall be incorporated into existing permits to ensure efficiency of the Town permitting process for the Town and Applicant. The following Town boards or commissions shall serve as the Permit Granting Authority

(PGA) as described below and their respective permits may serve as the Stormwater Management Permit upon finding the Project has demonstrated compliance with these rules and regulations:

(1) Planning Board: Site Plan Approval, Definitive Subdivision Approval, Earth Removal/Placement of Fill Permit or Special Permit Approval issued by the Westminster Planning Board shall serve as the Stormwater Management Permit, provided the project demonstrates compliance with these rules and regulations and the decision includes a designation as such.

(2) Conservation Commission: An Order of Conditions issued by the Westminster Conservation Commission shall serve as the Stormwater Management Permit, provided the project demonstrates compliance with these rules and regulations and the Order includes a condition as such.

(3) In cases where the above boards or commissions do not include a clear finding of compliance with these rules and regulations or when none of the above permits are required, the Planning Board shall serve as the Stormwater Management PGA.

6.2. Filing Application.

(1) The site owner or his/her agent shall file with the Planning Board, three (3) copies of a completed Stormwater Management Permit Application package. Permit issuance is required prior to any applicable site-altering activity. While the applicant can be a representative, the permittee must be the owner of the site.

(2) The Planning Board shall provide one (1) copy of a completed Stormwater Management Permit Application package to the Westminster Department of Public Works.

(3) Stormwater Management Permit Application package:

(a) Completed Application Form with original signatures of all owners;
(b) List of abutters, certified by the Assessors' Office;
(c) Three (3) copies of the Stormwater Management Plan as specified in Section 7.0;
(d) Three (3) copies of the Erosion Control Plan as specified in Section 8.0;
(e) Three (3) copies of the Operation and Maintenance Plan as specified in Section 9.0;
(f) Payment of any application and review fees.

6.3. Fee Structure.

The Planning Board shall obtain with each submission an Application Fee payable to the Town of Westminster. Applicants shall pay review fees as listed below to cover any expenses connected with the public hearing and review of the Stormwater Management Permit Application before the review process commences. The Planning Board may, at the applicant's expense, retain a registered P.E. or other professional consultant to advise the Planning Board on any or all aspects of these plans.

(1) Application fee for single family residential or duplex only $100
(2) Application fee for projects from 1 to 2 acres $200
(3) Application fee for projects from 3 to 10 acres $300
(4) Application fee for projects greater than 10 acres $500
(5) Application fee for a resubmittal / amendment.....$100
(6) Fees for a professional peer review ..... Assessed on a case by case basis

6.4. Entry. Filing an application of 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.

6.5. Information Requests. The applicant shall submit all additional information requested by the Planning Board to issue a decision on the application.

6.6. Actions. The Planning Board's action, rendered in writing, shall consist of either:

(1) "Approval" of the Stormwater Management Permit Application based upon determination that the proposed Stormwater Management Plan meets the Standards and will adequately protect the water resources of the community and is in compliance with the requirements set forth in these rules and regulations;

(2) "Approval with Conditions" of the Stormwater Management Permit Application subject to any conditions, modifications, or restrictions required by the Planning Board that will ensure the proposed Stormwater Management Plan meets the Standards and will adequately protect the water resources of the community and is in compliance with the requirements set forth in these rules and regulations;

(3) "Disapproval" of the Stormwater Management Permit Application based upon determination that the proposed Stormwater Management Plan, as submitted, does not meet the Standards or will not adequately protect the water resources of the community and is not in compliance with the requirements set forth in these rules and regulations.

6.7. Appeals. The applicant may appeal the decision, within thirty (30) consecutive calendar days, to the Superior Court, in accordance with M.G.L. Ch 249 §4.

6.8. Plan Changes. The permittee must notify the Planning Board in writing of any drainage change or alteration in the system authorized in the Stormwater Management Permit before any change or alteration is made. If the Planning Board determines that the change or alteration is significant, based on the Standards, the requirements set forth in these rules and regulations, or accepted construction practices, the Planning Board may require that an amended application be filed. If any change or alteration from the Stormwater Management Permit occurs during any land disturbing activities, the Planning Board may require the installation of interim erosion and sedimentation control measures before approving the change or alteration.

7.0 Stormwater Management Permit Application

7.1. The Stormwater Management Permit Application shall consist of a submittal of a Stormwater Management Plan to the Planning Board. This Stormwater Management Plan shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Stormwater Management Plan shall be designed to meet the Standards, as set forth in Section 7.3, and the Massachusetts DEP Stormwater Handbook Volumes 1, 2, and 3, as amended.

7.2. The Stormwater Management Plan shall fully describe the project in drawings and narrative. It shall include, as a minimum, the following:

(1) Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan;

(2) Project Narrative containing relevant information related to stormwater requirements;

(3) Locus Map of the Site;

(4) Description of existing and proposed conditions;

(5) Existing and Proposed Zoning and Land Use at the Site;

(6) Existing and Proposed Easements and Utilities at the Site;

(7) Existing and Proposed Topography (1-foot or 2-foot interval contours with additional spot grades as needed to depict detailed drainage patterns) at the Site;

(8) Existing and Proposed hydrology, watershed boundaries, drainage area, and stormwater flow paths;

(9) Existing and Proposed Stormwater Conveyances, Impoundments, and Wetlands into which stormwater flows at and adjacent to the Site;

(10) Existing and Proposed 100-year flood plain, if applicable;

(11) Estimated High Groundwater Elevation (November to April) as determined via completion of representative test pits or other geological investigations in areas to be used for stormwater retention, detention, or infiltration;

(12) Description of subsurface conditions in areas to be used for stormwater retention, detention, or infiltration;

(13) Plans, Drawings, and Descriptions of Proposed Drainage System and all components including:

(a) Locations, cross sections, and profiles of all stormwater conveyances such as drainage swales and their method of stabilization;
(b) All measures for the detention, retention, and/or infiltration of stormwater;
(c) All measures for the protection of water quality;
(d) The structural details and sizing for all components of the proposed drainage systems and stormwater management facilities;
(e) Notes on drawings specifying materials to be used, construction specifications, and typical details and cross-sections;
(f) Analysis of existing and proposed hydrology with supporting calculations.
(g) Calculations supporting the estimate of stormwater treatment performance;
(h) Calculations supporting the design of infiltration practices, including design infiltration rates, estimated dewatering times, and mounding analyses, where applicable;

(14) Stormwater runoff shall be calculated using latest Northeast Regional Climate Center (NRCC) extreme precipitation amounts for recurrence intervals (storm events) 2-, 10-, 25-, 50- and 100-year frequencies.

(15) An Erosion and Sediment Control Plan as detailed in Section 8.0.

(16) An Operation and Maintenance Plan as detailed in Section 9.0.

(17) Documents must be stamped and certified by a qualified registered P.E.; and

(18) Any other information requested by the Planning Board.

7.3. Stormwater Management Standards. Projects shall meet the following standards:

(1) No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth of Massachusetts;

(2) Low Impact Development (LID) site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites;

(3) Stormwater management system design shall be consistent with, or more stringent than, the requirements of the 2008 Massachusetts Stormwater Handbook or most current version of said document;

(4) Stormwater management systems in new development and redevelopment shall be optimized for nitrogen removal as feasible;

(5) Stormwater management systems on new development shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site.

(a) Average annual pollutant removal requirements in 7.3.(4) are achieved through one of the following methods:

i. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
ii. Retaining the volume of runoff equivalent to, or greater than, 1.0 inch multiplied by the total post-construction impervious surface area on the new development site; or
iii. Meeting a combination of retention and treatment that achieves the above standards; or
iv. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

(6) Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual post-construction load of TSS related to the total post-construction impervious area on the site AND 50% of the average annual load of TP related to the total post-construction impervious surface area on the site.

(a) Average annual pollutant removal requirements in 7.3.(5) are achieved through one of the following methods:

i. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or

ii. Retaining the volume of runoff equivalent to, or greater than, 0.8 inches multiplied by the total post-construction impervious surface area on the redevelopment site; or

iii. Meeting a combination of retention and treatment that achieves the above standards; or

iv. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

(b) Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways, (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing conditions unless infeasible and are exempt from part Section 7.3(5). Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of Section 7.3(5).

8.0 Erosion and Sediment Control Plan

8.1. The Stormwater Management Permit Application shall include submittal of an Erosion and Sediment Control Plan to the Planning Board. This Erosion and Sediment Control Plan shall contain sufficient information for the Planning Board about the nature and purpose of the proposed development, pertinent conditions of the site and adjacent areas, proposed erosion and sedimentation controls, and proposed control for other wastes on construction sites such as demolition debris, litter, and sanitary wastes to ensure they are not discharged to the MS4, drainage system, or waters of the United States or Commonwealth of Massachusetts. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design requirements as follows:

(1) Minimize total area of disturbance;

(2) Sequence activities to minimize simultaneous areas of disturbance;

(3) Minimize soil erosion and control sedimentation during construction, provided that prevention of erosion is preferred over sedimentation control;

(4) Divert uncontaminated water around disturbed areas;

(5) Maximize infiltration and groundwater recharge;

(6) Install, inspect, and maintain all Erosion and Sediment Control measures in accordance with the manufacturer's specifications and good engineering practices;

(7) Prevent off-site transport of sediment and wastes;

(8) Protect all storm drain inlets and armor all newly constructed outlets;

(9) Protect and manage on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project);

(10) Comply with applicable federal, state and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;

(11) Institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than fourteen (14) days after construction activity has temporarily or permanently ceased on that portion of the site;

(12) Properly manage on-site construction waste and materials;

(13) Stabilize construction site entrances and exits and prevent off-site vehicle tracking of sediments; and

(14) Ensure that any stormwater BMP (for post-construction stormwater management) installed during construction will be protected from compaction, siltation, and erosion or will be restored or replaced such that the BMP will be capable of functioning as designed in accordance with these stormwater regulations.

8.2. The content of the Erosion and Sediment Control Plan shall contain the following information:

(1) Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing this plan;

(2) Title, date, north arrow, names of abutters, scale, legend, and locus map;

(3) Location and description of natural features including:

(a) Watercourses and water bodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a qualified P.E. for areas not assessed on these maps;
(b) Existing vegetation including tree lines, canopy layer, shrub layer, and ground cover, and trees with a caliper twelve (12) inches or larger, noting specimen trees and forest communities; and
(c) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife, and Certified Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity.

(4) Lines of existing abutting streets showing drainage and driveway locations and curb cuts;

(5) Existing soils, volume and nature of imported soil materials;

(6) Topographical features including existing and proposed contours at intervals no greater than one (1) feet with spot elevations provided when needed;

(7) Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;

(8) Drainage patterns and approximate slopes anticipated after major grading activities;

(9) Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;

(10) Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;

(11) Location and description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures;

(12) A description of construction and waste materials expected to be stored on-site. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;

(13) A description of provisions for phasing the project where one acre of area or greater is to be altered or disturbed;

(14) A description of how the project owner will inspect the site during the course of construction to monitor the management of stormwater in accordance with applicable town, state, and federal regulations;

(15) Plans must be stamped and certified by a qualified registered P.E. or a Certified Professional in Erosion and Sediment Control (CPESC); and

(16) Such other information as is required by the Planning Board.

9.0 Operation and Maintenance Plan

9.1. The Stormwater Management Permit Application shall include a submittal of Operation and Maintenance Plan (O&M Plan) to the Planning Board. This O&M Plan shall be designed to ensure compliance with the Stormwater Management Permit, these rules and regulations, and that the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, are met in all seasons and throughout the life of the system. The Planning Board shall make the final decision of what maintenance option is appropriate in a given situation. The Planning Board will consider natural features, proximity of the site to MS4 infrastructure, proximity of the site to waterbodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The O&M Plan shall remain on file with the Planning Board and shall be an ongoing requirement. The O&M Plan shall include:

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

(2) Maintenance agreements that specify:

(a) The names and addresses of the person(s) responsible for operation and maintenance
(b) The person(s) responsible for financing maintenance and emergency repairs.
(c) A Maintenance Schedule that includes routine inspection along with routine and non-routine maintenance tasks for each BMP.
(d) A list of easements, if applicable, with the purpose and location of each.
(e) The signature(s) of the owner(s).
(f) Estimated operation and maintenance budget.
(g) The responsible party shall:

i. Maintain a log of all operation and maintenance activities for the last three years including inspections, repair, replacement, and disposal (the log shall indicate the type of material and the disposal location);

ii. Make this log available to the Planning Board, Department of Public Works, and the Commonwealth of Massachusetts upon request; and
iii. Allow DEP and the Planning Board to inspect each BMP to determine whether the responsible party is implementing the Operation and Maintenance Plan.

(3) Stormwater Management Easement(s).

(a) Stormwater management easements shall be provided by the property owner(s) as necessary for:

i. Access for facility inspections and maintenance;
ii. Preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event; and
iii. Direct maintenance access by heavy equipment to structures requiring regular cleanout.

(b) The purpose of each easement shall be specified in the maintenance agreement signed by the property owner.

(c) Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Planning Board.

(d) Easements shall be recorded by the Owner with the Worcester Registry of Deeds prior to issuance of a Certificate of Completion.

(4) Changes to Operation and Maintenance Plans.

(a) The owner(s) of the stormwater management system must notify the Planning Board of changes in ownership or assignment of financial responsibility.

(b) The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of these rules and regulations by mutual agreement of the Planning Board and the responsible parties. Amendments must be in writing and signed by all responsible parties. Responsible parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility during future years.

9.2. Stormwater infrastructure shall be privately owned, inspected and maintained per the Operation and Maintenance procedures approved for the project. Inspection and maintenance logs shall be provided to the DPW on a yearly basis by final day in June for the Town to use in preparation of its annual report to the US EPA as part of the NPDES MS4 Permit requirements.

9.3. Landowner shall provide the PGA an annual report prepared and stamped by a Massachusetts Licensed P.E. documenting and certifying performance of required maintenance and providing an assessment of overall system performance.

9.4. The O&M Plan shall include procedures for using dedicated funds, establishing an escrow account, and/or developing a maintenance contract, if determined appropriate to ensure adequate long-term maintenance.

9.5. Stormwater Management operation and maintenance duties shall be recorded with the deed for each lot in a subdivision. The applicant may elect to setup a home owner's association (HOA) or other means to ensure all BMPs are inspected and maintained as required.

9.6. Long-term operators responsible for O&M Plan implementation shall submit an annual report to the Planning Board documenting all inspection and maintenance completed on the stormwater system.

10.0 Site Inspections and Supervision, and Final Reports

10.1. Pre-Construction Meeting. Prior to starting clearing, excavation, construction, or disturbance of land, the Applicant, the Applicant's technical representative, the general contractor, or any other person with authority to make changes to the project, shall meet with relevant Town staff (DPW, Conservation Agent & Town Planner) to review the permitted Stormwater Management, Erosion and Sediment Control, and Operation and Maintenance Plans and their implementation.

10.2. Permittee Erosion and Sediment Control Inspections. The permittee shall conduct and document inspections of all erosion and sediment control measures no less than weekly or as specified in the Stormwater Management Permit, and prior to and following anticipated storm events. The purpose of such inspections is to determine the overall effectiveness of the erosion and sediment control plan, and the need for maintenance or additional control measures. The permittee shall submit monthly erosion and sediment control reports to the Planning Board in a format approved by the Planning Board.

10.3. Routine Inspections. Routine inspections shall be performed as follows:

(1) Initial Site Inspection: prior to approval of any permit/plan;

(2) Erosion and Sediment Control Inspection: to ensure erosion and sediment control measures are in place and stabilized, and to ensure erosion control practices are in accordance with the filed plan.

(3) Site Clearing has been substantially completed;

(4) Rough Grading has been substantially completed;

(5) Final Grading has been substantially completed;

(6) Bury Inspections: prior to backfilling of any underground drainage or stormwater structures.

(7) Close of the Construction Season;

(8) Landscaping (permanent stabilization); and

(9) Final Inspection. After the stormwater management system has been constructed, and before any surety is released, the Applicant must submit a record as-built plan detailing the actual stormwater management system as installed. Such plans shall show compliance with the final approved plans by the Planning Board. The Planning Board or their designee shall inspect the system to confirm its "as-built" features. This inspector shall also evaluate the effectiveness of the system in an actual storm. If the inspector finds the system to be adequate, he/she shall so report to Planning Board which will issue a Certificate of Completion.

10.4. Inspector Qualifications. Inspections shall be performed by an independent third-party registered P.E. or CPESC. Alternatively, inspections shall be performed by a qualified employee of the Town of Westminster.

10.5. Access Permission. To the extent permitted by Massachusetts law, the Planning Board and third-party inspector may enter upon privately owned property for the purpose of performing their duties under these rules and regulations and may make or cause to be made such examinations, surveys or sampling as the Planning Board deems reasonably necessary to determine compliance with the Stormwater Management Permit.

10.6. Final Reports. Upon completion of the work, the permittee shall submit a report (including certified as-built construction plans) from a P.E. or Certified Professional in Erosion and Sediment Control (CPESC). As-built drawings shall be submitted no later than one year after completion of construction projects. The as-built drawings must depict all on site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post-construction stormwater management). The report shall certify that all permitted construction, plans, and approved changes and modifications, were completed in accordance with the conditions of the approved Stormwater Management Permit. Any discrepancies should be noted in the report.

If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the Stormwater Management Plan, it shall be corrected by the permittee before the performance guarantee is released. If

the permittee fails to act the Town of Westminster may use the surety bond to complete the work. Examples of inadequacy include but are not limited to: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins or other structural BMPs.

11.0 Related Permits

Prior to receiving an approved Stormwater Management Permit, all applicable projects must comply with Chapter 136 of the Westminster General Bylaws (LID Bylaw).

12.0 Certification of Completion

The Planning Board will issue a letter certifying completion upon receipt and approval of the final inspection reports and/or upon otherwise determining that all work of the Stormwater Management Permit has been satisfactorily completed in conformance with these rules and regulations. The Planning Board may, in addition to certifying satisfactory completion of the project, require ongoing maintenance procedures as outlined O&M Plan and/or work deemed necessary by the Planning Board.

Appendix C

Stormwater System Mapping

Requirement Summary	Status
Phase I – Must be Complete by July 1, 2020	
1. Outfalls and receiving waters	Complete
2. Open channel conveyances	In progress
3. Interconnections with other MS4s	In progress
4. Municipally owned structural BMPs	Complete
5. Waterbody names and impairments	Complete
6. Initial catchment delineations by topo	Complete (updates ongoing)
Phase II – Must be Complete by July 1, 2028	
1. Outfalls with spatial accuracy +/-30 feet	Complete
2. Pipe connectivity	In progress
3. Manholes	Complete
4. Catch basins	Complete
5. Refined catchment delineations	Not started
6. Municipal sanitary system	Complete
7. Municipal combined sewer system	Not Applicable

ASHBURNHAM

GARDNER

FITCHBURG

Legend

- Town Outfalls
- Catch Basin
- Drop Inlet
- Interconnection
- Manhole
- Overflow
- Swale
- Culvert
- State or Private Outfalls
- State Owned Catch Basin
- State Owned Manhole
- State Owned Swale
- Forebay & Detention Basin
- Detention Basin
- Grass Swale
- Drain Pipes
- State Owned Drain Pipes
- Sewer Pipe
- Sewer Force Main
- Lake, Reservoir
- Wetland, Marsh
- Stream, Brook
- Non-Urban Area

N W E S

Miles

0 0.25 0.5 0.75 1

Stormwater Infrastructure Map
Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, Town of Westminster

11/3/2021

Appendix D

Regulatory Assessments

LID, GI, AND IA REGULATORY ASSESSMENT

To: Josh Hall, P.E., Director of Public Works, Town of Westminster

From: Nick Cristofori, P.E., Comprehensive Environmental Inc

Date: June 10, 2022

Subject: Review of Regulations for LID, GI, and Impervious Cover Creation

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Westminster are required to complete an assessment of existing town regulations as they pertain to Low Impact Development (LID), green infrastructures (GI), and the creation of impervious area (IA) under permit sections 2.3.6.b and 2.3.6.c. In summary, communities must complete the following:

- Develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover to determine if changes to design standards for streets and parking lots can be made to support low impact design options.
- Develop a report assessing existing local regulations to determine the feasibility of making, at a minimum, the following practices allowable when appropriate site conditions exist: green roofs; infiltration practices such as rain gardens, planter gardens, pervious pavements, and other designs to manage stormwater using landscaping and structured soils; and water harvesting devices such as rain barrels and cisterns.

This memorandum serves as a report assessing any barriers to implementing LID and green infrastructure, opportunities for reducing mandatory creation of impervious area, and recommended regulatory changes to be made.

As part of preparation of this memo, CEI reviewed the following regulations:

- General Bylaws
  - Chapter 136: Low Impact Development
  - Chapter 202: Wetlands Protection
- Zoning Bylaws
- Rules and Regulations Governing the Subdivision of Land

Recommendations

The following items are provided as recommendations and next steps:

- Table 1 (attached) provides a detailed assessment and recommended regulatory changes that should be considered when updating relevant sections of the town's regulatory mechanisms.

- Regulatory review and permitting processes such as Site Plan Review, Subdivision, Wetlands, and/or any other similar processes be updated to specifically reference the stormwater regulatory mechanisms adopted to meet MS4 regulations for projects that disturb one or more acres. This should include the construction and post-construction stormwater requirements, including requirements for treating stormwater from new development and redevelopment, so that project proponents are aware of the additional requirements under MS4 regulations.
- Changes should be made as part of the next major regulatory update undertaken by the town for each relevant section, or more suitable timeframe as determined by the Planning Board and/or other regulatory board/department.
- This memorandum should be provided to the Planning Board and local transportation board, if applicable, as recommended by the permit.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x303 or ncristofori@ceiengineers.com. Thank you.

Nick Cristofori, P.E.
Principal, Project Manager

Attachments:

- Table 1: Recommendations for Updating Existing Regulations Pertaining to LID, Green Infrastructure and Impervious Cover Creation

Table 1: Recommendations for Updating Existing Regulations Pertaining to LID, Green Infrastructure and Impervious Cover Creation

Topic	Reference	Existing Requirement	Recommendations
General design for environmental sensitivity	Zoning Article IX: Special Provisions 205-43 Site Plan Review	Promotes public health, safety, and welfare by encouraging the layering out of parking, circulation, and buildings in a safe and convenient manner; to ensure that new developments are designed to protect and enhance the visual and environmental qualities of the Town, and to provide for an adequate review of the development plans which may have significant impacts on traffic, drainage, Town services, environmental quality and community character.	Consider expanding this section to include: • Precautions to prevent pollution from stormwater runoff; • Minimization of cuts and fills; • Minimization of disturbance of steep slopes
	Subdivision Article VI: Design Criteria and Requirements 231-23 Protection of natural features	Provides for due regard be shown for all natural features, such as large trees, watercourses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision, and protect the natural resources of the Town.	
Stormwater Management			
Low Impact Development	Bylaws Chapter 136 Low Impact Development 136-2 Purposes	The purpose of this bylaw is to protect, maintain, and enhance the public health, safety, environment and general welfare by establishing requirements and procedures to manage stormwater runoff, promote groundwater recharge and to prevent water pollution from new development and redevelopment. The bylaw seeks to meet that purpose through the following objectives: (1) Establish regulations for land development activities that preserve the health of water resources	No recommendations

Topic	Reference	Existing Requirement	Recommendations
		(2) Require that the amount and quality of stormwater from new development is equal to or better than predevelopment conditions in order to reduce flooding, stream erosion, pollution, property damage and harm to aquatic life (3) Establish LID management standards and design criteria to control the quantity and quality of stormwater runoff (4) Encourage the use of "low-impact development practices," such as reducing impervious cover and preserving greenspace and other natural areas (5) Establish maintenance provisions to ensure that stormwater treatment practices will continue to function as designed and pose no threat to public safety Establish procedures for the Town's review of low-impact development plans and for the Town's inspection of approved stormwater treatment practices.	
Green Roofs	--	No current provisions regarding green roofs.	Expand LID language as discussed under "LID and green infrastructure design" to include vegetated green roofs as an acceptable technique that may be used in the town.
Rain Water Harvesting	--	No current provisions regarding rain water harvesting.	Expand LID language as discussed under "LID and green infrastructure design" to encourage reuse of stormwater as part of site design.

Topic	Reference	Existing Requirement	Recommendations
Drainage system design	Subdivision Article IV: Design Criteria and Requirements 231-18 Utilities	Current requirements permit the use of stormwater Best Management Practices (BMPs) (vegetated swales, grass-lined retention basins, detention ponds, etc.) be implemented wherever possible in order to minimize the impact development will have on quality runoff.	No changes recommended; requirements encourage surface runoff to flow towards a BMP.
		Requires developments incorporate as many individual treatment devices as practicable. Encourages the use of vegetated swales and overland flows where appropriate in order to reduce the amount of directly connected impervious surfaces throughout the proposed development.	
Storm event design	Subdivision Article IV: Design Criteria and Requirements 231-18 Utilities	Requires drainage improvements be designed so that there will be no adverse effects created by the proposed rates of runoff for the two-year, ten-year, and one-hundred-year storms.	Consider increasing the design storm to accommodate for climate change.
Open Space			
Site design	Subdivision Article IV: Design Criteria and Requirements 231-22 Open spaces	No current requirements to explicitly require LID design techniques for open space site plan and supporting stormwater management features.	Consider requiring open space development sites to be designed as LID and addressing the following site design strategies: • Minimizing pavement, retaining natural drainage paths and features, and treating runoff as close to its source as feasible; • Directing runoff from roofs and pavements into natural or planted • areas to “disconnect” runoff from the formal drainage system;

Topic	Reference	Existing Requirement	Recommendations
			• Maximizing the use of infiltration practices to reduce runoff volume that must otherwise be conveyed and treated; • Use of surface-based stormwater management systems (rather than subsurface systems) that incorporate vegetation to enhance stormwater treatment.
Cluster Development	--	No current provisions to explicitly require LID design techniques for cluster development or open space developments	Consider allowing flexible development such as cluster/open space development as a "by right" form of development (no special permit required) and developing guidance that requires cluster development sites to be designed as LID with guidance regarding what is meant by the LID • Site design strategy for minimizing pavement, retaining natural drainage paths and features, and treating runoff as close to its source as feasible; • Directing runoff from roofs and impervious areas to "disconnect" runoff from the formal drainage system; • Maximizing the use of infiltration practices to reduce runoff volume that must otherwise be conveyed and treated;

Topic	Reference	Existing Requirement	Recommendations
			• Use of surface-based stormwater management systems that incorporate vegetation to enhance stormwater treatment.
Street Design			
Materials	Subdivision Article V: Required Improvements for Approved Subdivision 231-28 Bituminous Pavement	Requires Bituminous concrete pavement conforms to Massachusetts Department of Public Works, 1967 Standard Specifications, Section 460, and designated as Class I binder course, top course and dense mix	Consider allowing the use of permeable materials such as porous pavers, paving stones, and pervious pavement for road shoulders and parking lanes in residential neighborhoods with the use of conventional paving for travel lanes only.
	Subdivision Article V: Required Improvements for Approved Subdivision 231-27 Construction of Ways	Requires residential roads consist of at least 18 inches of gravel after compaction and treated with a prime coat of MC-1, applied at a rate of 0.3 gallon per square yard, the binder course shall be 2 ½ inches thick and a top course shall be 1 ½ inches thick after rolling so as to form a compacted final pavement depth of four inches.	
	Subdivision Article V: Required Improvements for Approved Subdivision 231-27 Construction of Ways	Requires commercial roads be designed to the same specifications as residential roads except for a two-inch base, after compaction, should be applies before the binder course and final course so as to form a compacted final pavement width of six inches.	
Curbs and berms	Subdivision Article V: Required Improvements for Approved Subdivision	Curbing shall be sloped granite edging on all intersections, cul-de-sacs and all other radii. Cape Cod berm Type I dense mix shall be allowed in all remaining sections.	Consider allowing the use of "open drainage" along residential streets. If protection of the roadway edge is a concern, consider allowing alternative

Topic	Reference	Existing Requirement	Recommendations
	231-27 Construction of Ways	Requires curb inlets at every catch basin	designs such as curbs with openings (or "leak-offs") or flush curbs, that enable the use of bioretention, treatment swales, and open drainage instead of piped drainage systems.
Width	Subdivision Article IV: Design Criteria and Requirements 231-14 Width and grade of ways	Provides table of Roadway Design Standards with widths and grades of residential and industrial-commercial roadways	LID practices recommend allowing a minimum pavement width of 18-22 feet on low-traffic local streets in residential neighborhoods and allowing narrower pavement widths along sections of roadway where there are no houses, buildings, or intersections, and where on-street parking is not anticipated. For non-residential mixed-use roadways, pavement widths should be set based on traffic volume, types of vehicles, parking and pedestrian requirements. Be sure to involve public works and emergency response officials in this decision.
Street layout	Subdivision Article IV: Design Criteria and Requirements 231-16 Intersection of Ways	Requires all intersections of ways shall be at an angle of 90° or radial curves. Street lines at intersections shall be cut back to provide for radii of not less than 25 feet in residential subdivisions and not less than 35 feet in industrial and commercial subdivisions.	LID practices recommend street layout considerations include reducing street length and minimizing total paved area (including cul-de-sacs) with the goal of protecting site hydrology, reducing cut and fill, and protecting steep slopes/ important natural features.
Dead-end streets	Zoning: Article IV: Design Criteria and Requirements. 231-15 Dead-end Streets.	Requires a dead-end street not exceed 500 linear feet in combined total length unless, in the opinion of the Planning Board, a greater length is necessitated by topography or other conditions.	Consider minimizing the required paved diameter of cul-de-sacs to 70 feet as encouraged in LID practices and allowing alternative pavement types such as pervious pavement.

Topic	Reference	Existing Requirement	Recommendations
Sidewalks			
General requirements	Subdivision Article V: Required Improvements for Approved Subdivisions 231-29 Sidewalks	Requires all sidewalks be designed to meet all applicable accessibility requirements constructed as shown on Figures 2 and 2A.	No changes recommended, implies flexibility in providing sidewalks only when there is a need for them, which is desirable for promoting low impact design.
Width	Subdivision Article V: Required Improvements for Approved Subdivision 231-29 Sidewalks	Requires sidewalks be five feet wide with a base of eight inches of suitable gravel in accordance with the Massachusetts Department of Public Works, 1967 Standard Specifications, Sections 401 and 405.	Consider lowering requirement to a minimum sidewalk width of 4 feet and establishing a maximum width.
Materials	Subdivision Article V: Required Improvements for Approved Subdivision 231-29 Sidewalks	Provides for Type-1 bituminous concrete, 2 ½ inches in depth and laid in two courses, one-and-one-half-inch binder and one-inch top.	Consider allowing or requiring the use of permeable surfaces for sidewalks.
Landscaping	Zoning Article IX : Special Provisions 205-38 Village Center District regulations	Requires a five-foot landscaped buffer be maintained along the front property line between the public sidewalk and buildings to encourage more hospitable pedestrian experience. Recommends landscaping consist of a combination of noninvasive plantings that are inclusive of low ground cover plantings, trees, shrubs, flowers, and grasses.	Consider allowing LID stormwater management practices (tree-box filters, rain gardens, vegetated swales, etc.) within required buffer areas.
Parking Lots			
Number of spaces	Zoning Article VIII: Off-Street Parking and Loading Requirements 205-30.5 Sizes of spaces; paving	Requires parking spaces for the exclusive use of handicapped individuals be provided in accordance with the most recent rules and regulations of the Architectural Access Board, 521 CMR 23.00	Consider establishing parking maximums and adjusting current minimum requirements to meet the following LID recommendations:

Topic	Reference	Existing Requirement	Recommendations
	Zoning Article VIII: Off-Street Parking and Loading Requirements 205-30.7 Number of required spaces	Current provisions provide number of required parking spaces based on various uses.	• Do not require more than 3 off-street parking spaces per 1000 SF of gross floor area in professional office buildings; • Do not require more than 4.5 off-street parking spaces per 1000 SF of gross floor area of shopping centers; • Do not require more than 2 off-street parking spaces per single family home.
Size of spaces	Zoning Article VIII: Off-Street Parking Regulations and Loading Requirements 205-30.5 Sizes of spaces; paving	Requires car spaces shall be not less than nine feet in width and 18 feet in length, exclusive of drives and maneuvering space.	No recommendations; requirements meet LID recommendations.
Drainage design	Subdivision Article VI: Design Criteria and Requirements 231-26 Lot grading and drainage	Requires lots be prepared and graded in such a manner that development of one does not cause detrimental drainage onto another lot, on areas outside the subdivision, onto roadways, or onto wetlands	Consider expanding to explicitly allow/ encourage drainage be designed so runoff flows towards a stormwater BMP.
Landscaping	Zoning Article VIII Off-Street Parking and Loading Requirements 205-30.8 Location of parking and loading spaces	Requires parking and loading areas for nonresidential uses (excluding customary home occupations) be set back 25 feet from any property line when the property abuts a residential district or residentially used property, and the Planning Board may require landscaping and/or fencing to be installed within the setback area	Consider allowing LID stormwater management practices (bioretention areas, filter strips, swales, rain gardens, constructed wetlands, etc.) to count towards fulfillment of required parking lot landscaped areas.
	Zoning	Requires parking facilities serving commercial, institutional, and mixed-use lots with more than	Consider specifying dimensions for landscaped areas that are sufficient to

Topic	Reference	Existing Requirement	Recommendations
	Article IX: Special Provisions 205-38 Village Center District regulations	five contiguous spaces or more than one row of parking spaces be bordered by landscaped buffers.	plant large, mature trees (e.g., minimum width 6 feet or greater) which will create shade over the lot.
Driveways			
Width	Subdivision Article V: Required Improvements for Approved Subdivision 231-30 Driveways	Requires there be constructed for each lot a driveway ramp not less than 14 feet in width at the gutter line. In addition, driveway cuts into streets shall be prohibited until the Planning Board finds that the location, width, length, line of sight, grades, proximity to other driveways and streets, grade and elevation will provide adequate provisions for the public safety.	Consider requiring driveway width of no more than 9 feet for one-way and 18 feet for two-way driveways.
		Driveway cuts shall not be permitted within 100 feet of the sideline of intersecting streets or railroads crossings. No more than one driveway cut shall be permitted per lot.	
Materials	--	No regulations are in place for material use when constructing driveways.	Consider allowing pervious materials, such as porous pavers and pervious pavement, for driveways. Also consider allowing the use of "two-track" driveways (driveways only paved for the width of each wheel track) for residential driveways.
Lot Layout			
Setback and frontages	Zoning Article VII: Land Space Requirements 205-29 Land Space Requirements Table	Provides table of bulk regulations including minimum lot area, lot frontage, and lot width.	Consider establishing limits on the extent of lawn area in residential lots, either by area or percentage of lot. Encourage property owners to plant native, drought-resistant species on lawn areas which require less water, pesticides, and fertilizers.

Topic	Reference	Existing Requirement	Recommendations
Location of utilities	Subdivision Article IV: Design Criteria and Requirements 231-18 Utilities	Requires proper connections with existing sewers, drains and water mains; design analysis, sanitary sewer system, stormwater management, infiltration or recharge, detention basins, and stormwater quality	Consider allowing the placement of utilities on all roads under the paved section of the ROW so that the land adjacent to the roadway can be used for swales.
Buffer areas	Bylaws Ch 202 Wetlands 202-1 Purpose; administration; terms; exemptions	Provides protection in addition to the Wetlands Act to preserve and protect the wetland resource areas of the Town of Westminster by regulation of, and control of activities deemed by The Westminster Conservation Commission to have significant or cumulatively detrimental effect upon the following interests and values, including: public or private water supply; groundwater; the prevention and control of flooding, erosion, sedimentation, storm damage, and/or pollution; protection of fisheries, wildlife, wildlife habitat and recreation.	Consider allowing the use of low impact stormwater structures (bioretention areas, infiltration trenches, or grass swales) within the buffer zone of wetland resource areas, provided the location of these structures is not in conflict with any other setback criteria required by Massachusetts Wetland Protection Act regulations or the MA Stormwater Management Policy Handbooks.
Site Work			
Earth Removal	Subdivision Article III: Earth Removal and Placement of Fill 97-5 Purpose	Regulate earth removal operations and land filling operations for the protection of human health, public safety, welfare, and the Town's natural resources in Westminster. Further, the provisions of this article are intended to protect abutting property owners from drainage problems that could potentially be created by poorly managed earth removal and/or filling operations.	No changes recommended, establishes regulatory control over earth removal
Land Alteration	Bylaws Chapter 136 Low-Impact Development (LID) 136-4 Scope and applicability	Requires no person shall alter land within the Town of Westminster without having obtained an LID permit for the property. A number of exceptions are included.	Consider requiring developers to limit clearing to the minimum necessary to construct roadway, drainage, sidewalk, and utilities.

Appendix E

Inventory and Ranking of Town-Owned Property

					Municipal Infrastructure										Parks and Open Space						Buildings and Facilities						Vehicle Maintenance and Storage Yards				Spill Prevention, Response and			Construction	
					MI1	MI2	MI3	MI4	MI5	MI6	MI7	MI8	MI9	MI10	PO1	PO2	PO3	PO4	PO5	PO6	BF1	BF2	BF3	BF4	BF5	BF6	VM1	VM2	VM3	VM4	SR1	SR2	SR3	CM1	CM2
Site Name	Address	Map ID	Map Tile Number	Contact	Street Sweeping	Catch Basin Inspection & Cleaning	Outfall Inspection & Maintenance	Stormwater & Water Line Maintenance	Asphalt Cleaning & Repair	BMP Inspection & Maintenance	Oil/Water Separator	Floor Drains	Snow Stockpiling/Removal	Winter Road Maintenance	Landscape Design & Management	Lawn & Grounds Maintenance	Pet Waste & Litter	Storage & Use of Pesticides & Herbicides	Storage & Use of Fertilizers	Waterfowl Management	Building Washing & Repair	Solid Waste Management	Material Loading/ Unloading	Material Storage	Painting	Winter Road Maintenance	Vehicle & Equipment Storage & Maintenance	Vehicle & Equipment Washing	Vehicle & Equipment Fueling	Parts Cleaning	Spill Response	Spill Reporting	Emergency Contact Info	Erosion & Sedimentation Control	Construction Site Inspection
MUNICIPAL BUILDINGS																																		
Azarian Barn (storage)	28 Academy Hill road	D2	E8																		x													
Old Town Hall (vacant)	3 Bacon Street	T2	E7																		x													
Westminster Department of Public Works	2 Oakmont Avenue	D1	C8			x			x												x	x	x	x			x	x	x	x	x	x	x	
Shady Avenue water tank	End of Goodrich Drive	WD3	C4, D4																															
Westminster Town Hall	11 South Street	T1	E7			x			x			x									x	x												
Westminster Town Police and Fire Department	7 South Street	PD1, FD1	E7			x			x			x									x	x		x			x	x		x	x	x	x	
Cemetery Department Building	9 Narrows Road	T3	***F9***			x			x												x		x	x			x	x		x	x	x	x	
Solid Waste Drop-Off Center	165 Fitchburg Road	D3	F13			x			x							x					x	x	x	x							x	x	x	
Hager Park Pumping Station (water)	Hager Park Rd	WD1	F9						x												x													
Ellis Road water tank	Knower Road at Ellis Road	WD4	E6, F6																															
South Street Pumping Station (water, emergency)	South St	WD2	F7						x											x	x													
Frog Hollow Pumping Station (sewer)	Frog Hollow Rd	D4	F6						x																									
Ellis Road Pumping Station (sewer)	Ellis Rd	D5							x																									
Kendall Court Pumping Station (sewer)	Kendall Ct	D6	D6						x																									
Val Road Pumping Station (sewer)	Val Rd	D7	H11																															
Wachusett Drive Pumping Station (sewer)	Wachusett Dr	D8																																
Narrows Road Pumping Station (sewer)	Narrows Rd	D9																																
Whitman River Pumping Station (sewer)	State Road East	D10																																
SCHOOLS AND COMMUNITY BUILDINGS																																		
Westminster Elementary School	9 Academy Hill Road	S1	E7-8, F7-8			x			x												x	x	x	x							x	x	x	
Meetinghouse Elementary School	8 South Street	S2	E7-8, F7-8			x			x												x	x	x	x							x	x	x	
Forbush Memorial Library	118 Main Street	L1	E7			x			x												x	x	x	x							x	x	x	
Oakmont Regional High School	9 Oakmont Drive	S3				x			x												x	x	x	x			x	x		x	x	x	x	
Oakmont Middle School	10 Oakmont Drive	S4				x			x												x	x	x	x							x	x	x	
Community Senior Center	69 West Main Street	S5	D6			x			x												x	x					x			x				
OPEN SPACES																																		
Parks																																		
Town Common	Academy Hill Road at Dawley Road	P1	F8																			x												
Hager Park	26 Hager Park Road	P2	F9																															
Crocker Pond Recreation Area	100 South Ashburnham Road	P3	B11, C11																	x	x	x												
Cemeteries																																		
Mt. Pleasant Cemetery	Knower Road at Ellis Road	C1	E6, F6						x													x												
Woodside Cemetery	9 Narrows Road	C2	F9			x			x												x	x					x			x				
Whitmanville Cemetery	228 South Ashburnham Road	C3							x													x												
OTHER																																		

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BARREL ROAD
Whitman River
Whitmanville Reservoir
Muddy Pond
BEAN PORRIDGE HILL ROAD
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
EAST GARDNER ROAD
CHAPEL STREET
OAKMONT AVENUE
NORTH COMMON ROAD
OVERLOOK ROAD
Crocker Pond
WOODLAND DRIVE
SARGENT ROAD
WEST MAIN STREET
SIMPLEX TECHNOLOGY DRIVE
SHADY AVENUE
Greenwood Pond
STATE ROAD WEST
Tophet Swamp
TOWN FARM ROAD
BARTHERICK ROAD
Snows Millpond
NEWCOMB ROAD
STATE ROAD EAST
TURNPIKE ROAD
DEPOT ROAD
WILLARD ROAD
ROUTE 2
MAIN STREET
Round Meadow Pond
BATTLES ROAD
VILLAGE INN ROAD
Wrights Reservoir
ELLIS ROAD
CARTER ROAD
NARROWS ROAD
NOTOWN ROAD
Sawmill Pond
Minott Pond
Partridge Pond
Cedar Swamp
Meetinghouse Pond
Wyman Pond
Rice Meadow Pond
FITCHBURG ROAD
Smith Brook
MINOTT ROAD
KNOWER ROAD
SPRUCE ROAD
DAVIS ROAD
HONEY BEE LANE
Crocker Pond
SOUTH STREET
WORCESTER ROAD
EAST ROAD
Keyes Brook
Lovewell Pond
WEST PRINCETON ROAD
BOLTON ROAD
MILE HILL ROAD
Mare Meadow Reservoir
East Branch Ware River
Noyes Pond
LANES ROAD
Bickford Pond

Legend

Municipal Properties:
- Cemeteries
- Municipal Buildings
- Open Spaces
- Schools and Community Buildings

- Town Boundaries
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Urbanized Area

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Municipal Properties

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

12/2/2019

MUNICIPAL PROPERTY BMP RETROFITS

To: Josh Hall, P.E., DPW Director, Town of Westminster

From: Nick Cristofori, P.E., Comprehensive Environmental Inc.

Date: September 16, 2022

Subject: Municipal Property BMP Retrofits

Permit Requirements and Project Background

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, as amended (Permit), the Town of Westminster is required to complete an inventory and priority ranking of Town-owned properties (minimum of five properties) and existing stormwater infrastructure that could be retrofitted with stormwater Best Management Practices (BMPs) designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area. At a minimum, Westminster must consider municipal property with significant impervious area that could be mitigated, existing street rights-of-way, and open space and undeveloped land available to mitigate stormwater runoff from nearby areas (e.g., from a trunk line in the street).

The potential for retrofitting particular properties must consider, on a screening level and subject to availability, factors such as maintenance access; subsurface geology; depth to water table; site slope and elevation; and proximity to aquifers and subsurface infrastructure including sanitary sewers and septic systems. Sites must be priority ranked based on factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects as available; current storm sewer level of service (if known); control of discharges to impaired or critical receiving waters; the complexity and cost of implementation; and opportunities for public use and education.

Select waterbodies listed under the final Massachusetts Year 2018/2020 List of Impaired Waters (2018/2020 303d List[1]) and subject to the Total Maximum Daily Loads (TMDLs) and impaired waters requirements of the Permit shall also be considered for retrofit opportunities. Permit requirements are summarized as follows:

- Waterbodies with a phosphorus TMDL (Greenwood Pond, Minott Pond, Minott Pond South, Wrights Reservoir, Bents Pond, Ramsdall Pond): of these waterbodies, only Bents Pond and Ramsdall Pond have a required nutrient reduction requirement; the other four waterbodies have a zero pounds per year of phosphorus reduction. For Bents Pond and Ramsdall Pond, the Town must develop a priority ranking of areas and infrastructure for implementation of phosphorus control practices based on the factors outlined previously. Structural BMPs must then be designed and constructed to meet pollutant reduction requirements specified under the TMDL by the end of June 2033 (Permit Year 15).
- Waterbodies with a nitrogen impairment (Long Island Sound): evaluate Town-owned properties within each watershed for opportunities to construct or retrofit BMPs. The

[1] As of the date of this memorandum, the finalized 2018/2020 303d List is the most recent List of Impaired Waters available.

evaluation must address the engineering and regulatory feasibility of the retrofit, estimated costs for BMP implementation, and the schedule for any planned infrastructure, resurfacing or redevelopment activity. Westminster must design and construct a stormwater BMP as a public demonstration project targeting a catchment with high phosphorus load by the end of June 2024 (Permit Year 6).

Beginning with the fifth-year annual report and in each subsequent annual report, Westminster must report on those permittee-owned properties and infrastructure inventoried that have been retrofitted with BMPs to mitigate impervious area and associated water quality impacts. A minimum of five sites must be maintained in the retrofit inventory.

This memorandum outlines activities completed by Comprehensive Environmental Inc. (CEI) to assist the Town of Westminster with meeting the above Permit requirements, with a focus on potential retrofit opportunities on developed municipal parcels. Analysis of open space and undeveloped land available to mitigate stormwater runoff from nearby areas should be evaluated under a future effort.

Municipal Parcel Retrofits

Desktop and Field Analysis

CEI identified nineteen Town-owned properties consisting of fourteen facilities located within the MS4 regulated area with impervious cover such as parking lots and rooftops as required by the permit which were advanced for additional desktop and field analysis. CEI first developed a series of parcel maps for each facility to be used for recording existing conditions and field notes. Parcel maps typically showed an aerial view of each facility, along with property lines, topography data, available drainage information, and other relevant information. Sara Nelson, EIT of CEI, conducted a series of field assessments of all nineteen properties in the Spring of 2022. The goal was to evaluate opportunities to reduce pollutant loads discharging to the MS4 or surface water bodies from the site through reduction or treatment of stormwater runoff from impervious surfaces.

A map of all facilities is provided as **Figure 1** at the end of this memorandum. A summary of the existing conditions for each site is included as **Table 1**, with proposed retrofit conditions provided as **Table 2** at the end of this memorandum.

Proposed BMP Selection

Proposed conceptual BMPs have been selected based largely on available space, soil types within the area, and proximity to wetland areas. For planning, pollutant removal, and cost estimated purposes, locations with larger areas available for implementation were considered for BMPs with larger footprints such as infiltration basins, extended detention basins, or constructed wetlands, whereas smaller areas were considered for rain gardens, trenches, swales, or porous pavement. Implementation areas with soils classified primarily as Hydrologic Soil Groups (HSG) C or D were assigned non-infiltrating BMP types such as gravel wetlands. Since Westminster soils are comprised largely of HSG C, C/D, and D soils, BMP implementation recommendations did not include infiltrating BMPs.

For the purposes of this initial screening effort, BMP selection focused on surface BMPs that could be installed in existing available spaces with little disturbance to existing paved surfaces, as a typical surface BMP is less expensive on a pounds of pollutant removed than a subsurface system installed below a parking lot or ball field. More expensive underground infiltration BMPs (e.g., subsurface infiltration) will be considered for proposed redevelopment projects where demolition, reconstruction and/or repaving are proposed to minimize the costs of installation. The use of subsurface infiltration BMPs would significantly increase treatment costs, as they can cost up to 4-10 times more than surface BMPs. Other BMPs that disturb pavement, including leaching catch basins and porous pavement, can likely be implemented at a wide variety of site, however, were not comprehensively assessed as part of this project. Note that for the purposes of developing an inventory of at least five sites as required by the Permit, porous pavement is proposed at one location. Actual BMP types and sizes are expected to be refined as part of future designs.

BMP Unit Costs

Costs for BMP design and construction were estimated based on a memorandum from EPA titled "Methodology for developing cost estimates for Opti-Tool" (**Attachment A**). This memorandum built on multiple previous studies dating as far back as 2010 to estimate total implementation costs for multiple types of stormwater BMPs on a dollars per cubic foot of constructed volume in 2016 dollars, which also assumed that 35% of the construction cost would go towards engineering design and other contingencies. For the purposes of this memorandum, 2016 dollars were then converted to 2022 dollars by adding 18% to the total cost in order to account for inflation over the preceding six years.

Additionally, the Opti-Tool memorandum notes that cost adjustment factors may be incorporated to more accurately account for BMP site constraints associated with installation in a urban environments as follows:

- Undeveloped areas: 1.0;
- Partially developed areas: 1.5;
- Developed areas: 2.0; and
- Highly urban setting: 3.0.

Based on current development conditions, a cost adjustment factor of 1.5 was applied to all potential BMPs. Actual engineering costs depend on many factors, and engineering for larger projects generally consist of a lower total percent of the construction cost, with the inverse being true for smaller projects (e.g., a $250,000 construction project may have a $50,000 engineering cost or 20% of construction, whereas a $50,000 construction project may have a $25,000 engineering cost or 50% of construction). Costs outlined in this memorandum are for guidance and comparison purposes only future design phases will further refine costs associated with all BMPs. A summary of costing data is provided in **Table 3** at the end of this memorandum.

Pollutant Removal and Cost Summary

Based on calculations from the BATT calculator, implementation of the top five stormwater BMPs outlined in **Table 2** will removed a total 3.5 pounds of phosphorous per year and 35.3 pounds of nitrogen per year for a total engineering and construction cost of approximately $316,600 at an average cost of $90,800 per pound of phosphorus removed and $9,000 per pound

of nitrogen removed. Pre-conceptual designs for the top five sites have been prepared and are included as **Attachment B**. Implementation of all recommended BMPs will remove a total of 9.1 pounds of phosphorus and 83.2 pounds of nitrogen for a total cost of approximately $693,900.

Roadway Improvement Projects

Roadway improvement projects such as pavement resurfacing, reclamation, and/or roadway widening serve as an opportunity for the Town to coordinate drainage improvements with roadway improvements. It also provides an opportunity to incorporate water quality BMPs, however, such opportunities are often restricted to areas located within, or immediately adjacent to, the roadway. Example roadway intersection improvements for Town to consideration are provided in **Attachment C**, however, other alternative designs may also be considered depending on site-specific conditions. Implementation of such BMPs requires evaluation on a case-by-case basis in consideration of the size of the ROW, soil type, surrounding drainage infrastructure and location of other utilities.

Recommendations and Next Steps

As noted previously, the Town is required to design and construct stormwater BMPs within the Bents Pond and Ramsdall Pond watersheds to meet pollutant reduction requirements specified in the TMDL, as well as construct a public demonstration project targeting a catchment with high nitrogen load by the end of June 2024 within the Long Island Sound watershed. These watersheds are largely located in the southwest portion of the town, an area almost exclusively located outside the urbanized area with the exception of small areas along the border with Gardner. Of all Town-owned properties reviewed, only one is located within TMDL areas, water tower WD-3 which is within the Long Island Sound and Bents Pond watersheds. Due to the very limited impervious areas at this location, it is not recommended for BMP retrofits. Remaining properties are located outside TMDL watersheds. Thus, it is recommended that the Town look for additional BMP construction opportunities within the Bents Pond, Ramsdall Pond, and/or Long Island Sound watershed, as the permit requires construction of one or more BMPs within these watersheds.

Should the Town wish to construct optional BMPs, it is recommended that the Town consider advancing design of BMPs at the facilities outlined in **Table 4** below. These locations were identified to be of high priority as they have good opportunities for retrofit and have good public education opportunities. Pre-conceptual designs for each of these sites have been prepared and are included as **Attachment B**.

The Town should also consider investigating, and implementing where feasible, water quality treatment BMPs as part of drainage improvements during roadway improvement projects. The cost and amount of phosphorus removed from these systems will vary based on the size of the BMP and contributing drainage area.

Table 4 – Top Ranked BMP Retrofit Locations

Location		Proposed BMP(s)	Construction & Engineering	TP Reduction		TN Reduction	
Facility Name	Address			Lbs / Year	Dollars / Pound	Lbs / Year	Dollars / Pound
Elementary School and Meetinghouse School	9 Academy Hill Road and 8 South Street	Gravel Wetland	Const: $60,400 Eng: $21,100	0.6	$146,300	5.1	$16,100
Library and Old Town Hall	118 Main Street and 3 Bacon Street	Gravel Wetland	Const: $69,100 Eng: $24,200	0.7	$137,000	6.2	$15,100
Department of Public Works	2 Oakmont Avenue	Water Quality Swale	Const: $39,300 Eng: $13,800	1.5	$36,100	17.9	$3,000
Town Common	Academy Hill Road	Enhanced Bioretention Basin	Const: $30,800 Eng: $10,800	0.6	$$70,700	4.6	$9,100
Police and Fire Department and Town Hall	7-11 South Street	Porous Pavement	Const: $34,900 Eng: $12,200	0.2	$250,500	1.5	$32,100

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x303 or ncristofori@ceiengineers.com. Thank you.

Nick Cristofori, P.E.
Principal, Project Manager

Attachments:

- Table 1: Summary of Existing Conditions
- Table 2: Proposed Improvements
- Table 3: BMP Costing Information
- Figure 1: Municipal Properties within the Urbanized Area
- Attachment A: Memorandum report on Methodology for developing cost estimates for Opti-Tool; February 20, 2016
- Attachment B: Pre-Conceptual Designs for Top Five Locations
- Attachment C: Example Roadway and Intersection BMP Improvements

Table 1 - Summary of Existing Conditions

Location Description	Address	Property ID	Total Parcel(s) Area (acres)	Total Impervious Area (acres)	Existing Conditions	Existing BMPs	TMDL or Impaired Waterbody/ Watershed	Direct or Near-Direct Discharge	Soil Type	Hydric Soil Group	Soil Area (acres)
High Priority											
Westminster Elementary School and Meetinghouse School	9 Academy Hill Road and 8 South St	S1, S2	20.59	6.67	Public school buildings, parking lots, playgrounds, and recreation fields. Wetlands located in a wooded area on the southern portion of the property.	N/A	N/A	Yes (wetlands)	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	18.7
Westminster Library + Old Town Hall	118 Main St. and 3 Bacon St	L1, T2	1.20	0.48	Town Public Library with small parking lot and landscaped lawn and gardens. Abandoned two-story building previously used as Town Hall with spacious landscaped lawn.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	1.20
Department of Public Works	2 Oakmont Ave	D1	8.55	2.82	DPW yard with two buildings, a salt shed, related facility structures, paved parking lot and driveways, and a large dirt lot. The northeast and northwest sides of the property are forested with a wetland and stream.	N/A	N/A	No	Bucksport and Wonsqueak mucks, 0 to 2 percent slopes	B/D	2.28
									Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	C	4.47
									Marlow fine sandy loam, 3 to 8 percent slopes	C	0.01
									Pillsbury-Peacham association, 0 to 8 percent slopes, extremely stony	C/D	1.50
									Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	0.28
Town Common	Academy Hill Rd	P1	2.03	0.01	Landscaped grassy park space with a gazebo at the top of Academy Hill Rd.	N/A	N/A	Yes (Meetinghouse Pond)	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	2.0
Westminster Police and Fire Department and Town Hall	7-11 South St	T1, PD1, FD1	4.02	2.31	Town Hall and Police and Fire Department buildings with parking lots, driveways, a basketball court, and woods on the west side of the property with a stream which runs south to north.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	4.0
Low Priority											
Cemetaries											
Mount Pleasant Cemetery	Knower Rd - Ellis Rd	C1	4.67	0.81	Small cemetery between Knowers Rd and Ellis Rd with a stone wall along each road.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	4.666685
Woodside Cemetery and Cemetary Department Building	9 Narrows Rd	T3, C2	21.32	3.90	Large cemetery with numerous paved driveways and surrounded by forest with Town-maintained trails.	N/A	N/A	No	Colton gravelly loamy sand, 3 to 8 percent slopes	A	20.72333
									Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	0.594998
Public Schools and Community Buildings											
Oakmont Regional High School	9 Oakmont Dr	S3	33.36	8.84	Regional High school for Westminster and Ashburnham with school facilities, athletic fields, parking lots, and driveways. The school is surrounded by wood areas and on the east side of the property is Whitmanville Reservoir.	N/A	N/A	Yes (Whitmanville Reservoir)	Becket-Monadnock association, 15 to 45 percent slopes, extremely stony	C	7.404343
									Allagash fine sandy loam, 3 to 8 percent slopes	B	19.77406
									Becket-Skerry association, 0 to 15 percent slopes, extremely stony	C	6.081116
									Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	B	0.004797
									Colton gravelly loamy sand, 15 to 25 percent slopes	A	0.097582
Overlook Middle School	10 Oakmont Dr	S4	3.69	1.93	Middle school uphill from Oakmont High School with athletic fields, driveways, parking lots. The school is surrounded by forest.	N/A	N/A	Yes (Whitmanville Reservoir)	Becket-Monadnock association, 15 to 45 percent slopes, extremely stony	C	0.081231
									Becket-Skerry association, 0 to 15 percent slopes, extremely stony	C	3.614939
Community Senior Center	69 West Main St	S5	3.50	0.03	Senior Center building with parking lot and driveways. Two Retention basins are present in front of the building with a wooded wetland on the northwest side of the property.	2 retention basins	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	3.503592
Town Facilities											
First Meeting House - Azarian Barn (storage)	28 Academy Hill Rd	D2	1.88	0.04	Historical site with the First Meeting House and wooded land.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	1.768096
									Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	B	0.107935
Sewer Pumping Station	Kendall Ct	D6	0.06	0.00	Small fenced sewer pumping station in neighborhood, surrounded by forest.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	0.05714
Water Tower	End of Goodridge Dr	WD3	0.97	0.42	Dirt road to water tower in wooded, residential area.	N/A	Millers Basin Watershed	Yes (Greenwood Pond)	Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	B	0.444157
									Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	0.521396
Water Tower	18 Ellis Rd	WD4	0.62	0.06	Water tower adjacent to Mount Pleasant Cemetery with small driveway and grassy lawn.	N/A	N/A	No	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	0.623378

Table 2 - Proposed Improvements

Location Description	Address	Facility ID	Recommendations and BMP Opportunities	Area for Treatment		Pollutant Loading[1]			Proposed BMP(s)		Pollutant Reduction Estimates[2]			BMP Implementation Costs[3]				Dollars per Pound of Removal		
				Total (acres)	Impervious (Acres)	Impervious Area TP Load (lb/yr)	Impervious Area TN Load (lb/yr)	Impervious Area TSS Load (lb/yr)	Proposed BMP(s)	Estimated Size (CF)	TP Reduction (lbs/yr)	TN Reduction (lbs/yr)	TSS Reduction (lbs/yr)	Unit Cost per CF or LF	Estimated Construction Costs	Estimated Engineering Costs	Total BMP Cost (Design & Construction)	TP Reduction ($$/lb)	TN Reduction ($$/lb)	TSS Reduction ($$/lb)
High Priority																				
Westminster Elementary School and Meetinghouse School	9 Academy Hill Road and 8 South St	S1, S2	Construct a gravel wetland in the front lawn of the Westminster Elementary School to capture and treat runoff from Academy Hill Rd. An outlet structure will be connected to the existing drainage network in the parking lot and connect back to the Town drainage system along the roadway.	1.61	0.63	0.8	6.4	931	Gravel Wetland	50' x 35' x 3' deep	0.6	5.1	923	$11.51	$60,400	$21,100	$81,500	$146,300	$16,100	$88
Westminster Library + Old Town Hall	118 Main St. and 3 Bacon St.	L1, T2	Construct a gravel wetland on southeast side of the Old Town Hall property with drainage connections from the Library and Bacon St.	1.09	0.77	1.0	7.8	1139	Gravel Wetland	75' x 40' x 2' deep	0.7	6.2	1128	$11.51	$69,100	$24,200	$93,300	$137,000	$15,100	$83
Department of Public Works	2 Oakmont Ave	D1	Install a water quality swale along the northeast side of the property through the woods to the wetland.	2.57	2.17	2.9	22.0	3205	Water Quality Swale (Infiltration Trench)	240' x 10' x 1' deep	1.5	17.9	2260	$16.38	$39,300	$13,800	$53,100	$36,100	$3,000	$23
Town Common	Academy Hill Rd	P1	Construct an enhanced bioretention basin in the southwest corner of the park which collects runoff from the drainage networks on Foster St. and Dawley Rd.	2.44	0.68	0.9	6.9	1004	Enhanced Bioretention Basin	40' x 20' x 2' deep	0.6	4.6	977	$20.27	$30,800	$10,800	$41,600	$70,700	$9,100	$43
Westminster Police and Fire Department and Town Hall	7-11 South St	T1, PD1, FD1	Convert asphalt to porous pavement for Town Hall rear parking lot.	0.23	0.19	0.3	1.9	277	Porous Pavement (5,000 SF w/ 12'' filter depth)	5,000 sf	0.2	1.5	266	$6.98	$34,900	$12,200	$47,100	$250,500	$32,100	$177
Low Priority																				
Cemetaries																				
Mount Pleasant Cemetary	Knower Rd - Ellis Rd	C1	Consider implementing swales along Ellis Rd to treat runoff.	0.52	0.18	0.2	1.9	273	Water Quality Swale (Infiltration Trench)	100' x 5' x 1' deep	0.2	1.8	263	$16.38	$8,200	$2,900	$11,100	$54,400	$6,300	$42
Woodside Cemetery and Cemetary Department Building	9 Narrows Rd	T3, C2	Consider creating gravel wetland in the wooded area on the southwest side of the property which treats stormwater from the drainage network on Hager Park Rd.	0.96	0.63	0.8	6.4	925	Gravel Wetland	80' x 25' x 2' deep	0.6	4.9	923	$11.51	$46,000	$16,100	$62,100	$112,300	$12,700	$67
Public Schools and Community Buildings																				
Oakmont Regional High School	9 Oakmont Dr	S3	Consider creating a gravel wetland to the east of the football field which treats water from the school parking lots prior to outletting to Whitmanville Reservoir.	4.13	3.97	5.3	40.4	5883	Gravel Wetland	100' x 25' x 2' deep	2.0	17.8	4491	$11.51	$57,600	$20,200	$77,800	$39,500	$4,400	$17
Overlook Middle School	10 Oakmont Dr	S4	Consider creating a gravel wetland in the southeast corner of the property to collect runoff from catch basins in the parking lot.	2.92	2.81	3.8	28.6	4164	Gravel Wetland	80' x 25' x 2' deep	1.5	13.6	3378	$11.51	$46,000	$16,100	$62,100	$40,800	$4,600	$18
Community Senior Center	69 West Main St	S5	No Recommendations - 2 BMPs present	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Town Facilities																				
First Meeting House - Azarian Barn (storage)	28 Academy Hill Rd	D2	Consider creating enhance bioretention basin in the wooded area on the east side of the property to treat stormwater from Academy Hill Rd.	0.79	0.24	0.3	2.4	361	Enhanced Bioretention Basin	50' x 20' x 2' deep	0.3	2.1	355	$20.27	$40,500	$14,200	$54,700	$191,100	$26,100	$154
Sewer Pumping Station	Kendall Ct	D6	Property is very small and unusable for anything other than current use - No Recommendations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Tower	End of Goodrich Dr	WD3	Minimal usable land for retrofit - No Recommendations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Tower	18 Ellis Rd	WD4	Consider creating an enhanced bioretention basin in the grassy section of the property which collects water from drainage network on Ellis Rd.	4.29	1.02	1.4	10.4	1512	Enhanced Bioretention Basin	80' x 25' x 2' deep	1.1	7.9	1497	$20.27	$81,100	$28,400	$109,500	$103,700	$13,900	$73
										Totals	**9.1**	**83.2**	**16462**		**$513,900**	**$180,000**	**$693,900**	**$76,400**	**$8,300**	**$40**

1. Pollutant loading calculated based on land use data through GIS sources.

2. Pollutant reduction estimates calculated through EPA's BATT calculator

3. Information on BMP costing is attached as Attachment A.

Table 3 - BMP Costing Information

Stormwater BMP Type	Unit	OptiTool BMP Estimates, 2016[1,2]	OptiTool BMP Estimates, 2022[3]	Adjusted BMP Estimate, 2022[4]	Adjusted Construction Estimate[4]	Adjusted Engineering/ Contingency Estimate[5]
Biorentention / Rain Garden	per CF	$15.46	$18.24	$27.36	$20.27	$7.09
Constructed Wetlands	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Dry Detention Basin	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Gravel Wetland	per CF	$8.78	$10.36	$15.54	$11.51	$4.03
Infiltration Basin	per CF	$6.24	$7.36	$11.04	$8.18	$2.86
Infiltration Trench	per CF	$12.49	$14.74	$22.11	$16.38	$5.73
Porous Pavement	per CF	$5.32	$6.28	$9.42	$6.98	$2.44
Sand Filter	per CF	$17.94	$21.17	$31.75	$23.52	$8.23
Wet Detention Basin	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Subsurface Infiltration/Detention System (aka Infiltration Chamber)	per CF	$67.85	$80.06	$160.13	$118.61	$41.51

1. Memorandum on Methodology for developing cost estimates for Opti-Tool is provided as Attachment A.
2. Total includes cost of construction, engineering, and contingencies.
3. 2022 Estimate assumes a 18% markup from 2016 Estimate due to inflation.
4. Adjustment factor of 1.5 is applied to account for construction in developed areas.
5. Engineering/Contingency Estimate is 35% of the Construction Estimate.

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BARREL ROAD
BEAN PORRIDGE HILL ROAD
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
EAST GARDNER ROAD
CHAPEL STREET
OAKMONT AVENUE
NORTH COMMON ROAD
OVERLOOK ROAD
WOODLAND DRIVE
SARGENT ROAD
WEST MAIN STREET
TECHNOLOGY DRIVE
SIMPLEX DRIVE
TOWN FARM ROAD
BARTHERICK ROAD
NEWCOMB ROAD
STATE ROAD WEST
MAIN STREET
ROUTE 2
STATE ROAD EAST
WILLARD ROAD
TURNPIKE ROAD
VILLAGE INN ROAD
ELLIS ROAD
CARTER ROAD
NARROWS ROAD
NOTOWN ROAD
FITCHBURG ROAD
MINOTT ROAD
KNOWER ROAD
SPRUCE ROAD
SOUTH STREET
HONEY BEE LANE
EAST ROAD
WORCESTER ROAD
BOLTON ROAD
MILE HILL ROAD
DAVIS ROAD
WEST PRINCETON ROAD
LANES ROAD
S3
S4
S5
D1
D2
D6
WD3
WD4
L1
T2
T1, PD1, FD1
C1
P1
S1, S2
T3, C2
Whitmanville Reservoir
Muddy Pond
Round Meadow Pond
Crocker Pond
Snows Millpond
Sawmill Pond
Greenwood Pond
Tophet Swamp
Wrights Reservoir
Minott Pond
Partridge Pond
Cedar Swamp
Meetinghouse Pond
Wyman Pond
Mare Meadow Reservoir
Noyes Pond

Legend

- Cemeteries
- Municipal Buildings
- Open Spaces
- Schools and Community Buildings
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W
E
S

0 1
Miles

Municipal Properties Map

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

6/23/2022

MUNICIPAL PROPERTY BMP RETROFITS

Attachment A:
BMP costing table and memorandum report on
Methodology for developing cost estimates for Opti-Tool;
February 20, 2016

MEMORANDUM

DATE: February 20, 2016

TO: Opti-Tool TAC

FROM: Karen Mateleska, EPA Region- I

SUBJECT: **Methodology for developing cost estimates for Opti-Tool**

Introduction

EPA – Region I offered to provide TetraTech with BMP cost information for the New England Stormwater Management Optimization Tool (Opti-Tool). The goal was to include the latest available information that would accurately reflect capital costs for select BMPs installed in the New England region. This document describes the approach used to determine these values.

The unit cost estimates originally developed as part of a 2010 study were used as the basis/starting-point for the cost estimates for the Opti-Tool. This study, entitled *Stormwater Management Plan for Spruce Pond Brook Subwatershed,* was produced by the Charles River Watershed Association (CRWA). The full report can be viewed at: http://www.crwa.org/hs-fs/hub/311892/file-636820515-pdf/Our_Work_/Blue_Cities_Initiative/Scientific_and_Technical/CRWA_Franklin_Plan.pdf. This subwatershed in the Town of Franklin (in eastern Massachusetts) was selected, in part, because it represented one of the many communities in the watershed that would be required to reduce nutrient (phosphorus) loads in stormwater runoff as part of EPA's Phase II MS4 General Stormwater Permit and a TMDL for Nutrients in the Upper/Middle Charles River. The cost estimates developed in the study can predominantly be attributed to CRWA and both Rich Claytor and Nigel Pickering of Horsley Witten Group (CRWA *et al.* 2010). The development of these costs was based on a literature review of BMP cost information and Claytor's extensive experience working in this field with Massachusetts communities. These values were originally reported in Appendix B of the aforementioned CRWA document. Those cost estimates have also been used in additional stormwater studies supported by EPA – Region I, including the *Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham, Franklin, and Milford, MA (*2011). (That report can be viewed at: http://www.epa.gov/region1/npdes/charlesriver/pdfs/20110930-SWUtilityReport.pdf)

Before simply relying on the CRWA cost estimates, additional research was conducted of publicly available (online) resources to determine if more recent BMP cost information for the New England region was available. These resources included:

- EPA's LID webpage: http://water.epa.gov/polwaste/green/
- EPA's 2013 Article: *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs: http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf*

- New England Environmental Finance Center: http://efc.muskie.usm.maine.edu/
- UNC Environmental Finance Center's *Catalog of Finance Publications on Green Infrastructure Approaches to Stormwater Management* (This spreadsheet provides a catalog of 46 publications related on green infrastructure for stormwater management that have finance relevance; Several of the sources from the catalog were reviewed for this document) : http://www.efc.sog.unc.edu/reslib/item/catalog-green-infrastructure-and-stormwater-finance-publications
- Houle, *et al. Comparison of Maintenance Cost, Labor Demands, and System Performance for LID and Conventional Stormwater Management*: http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/Houle_JEE_July-2013.pdf
- University of New Hampshire Stormwater Center's *Forging the Link: Linking the Economic Benefits of LID and Community Decisions: http://www.unh.edu/unhsc/forging-link-topics*
- Center for Neighborhood Technology's *Green Values Stormwater Tool Box: http://greenvalues.cnt.org/* which included the Green Values Calculator: http://greenvalues.cnt.org/national/calculator.php
- Water Environment Research Foundation (WERF): User's Guide to the BMP and LID Whole Life Cost Models, Version 2.0: www.werf.org/bmpcost
- Low Impact Development Center: http://www.lowimpactdevelopment.org/
- ECONorthwest's *The Economics of Low-Impact Development: A Literature Review:* http://www.econw.com/our-work/publications/the-economics-of-low-impact-development-a-literature-review/
- Drexel University's Low Impact Development Rapid Assessment (LIDRA Model) http://www.lidratool.org/home/publications.aspx

A review of these resources did highlight the multitude of variables that can impact the cost of installing LID BMPs and the variety of cost analysis methods that can be used when assessing the cost effectiveness of various LID storm water controls. For example, many of the resources emphasized that costs tend to be site specific. Costs often differ significantly among different geographical locations, depending upon labor and material expenses and the constraints of a particular site. Unfortunately, most of the aforementioned resources highlighted projects outside of the New England region (with the exception of the articles by Houle of the UNHSC and New England Environmental Finance Center.)

EPA's recent (2013) report entitled *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs* listed the 7 different types of economic analyses that were represented by the 13 case studies highlighted in the report. These ranged from the simplest form of economic analysis (i.e., the capital cost assessment) to more robust forms, including the life cycle cost assessment. Whole life-cycle costs would provide a more accurate estimate of the cost of installing, operating, maintaining, and replacing a project (i.e., BMP) throughout its expected lifetime. However this type of analysis requires solid estimates for capital, land purchase, O&M, and other related costs.

Ideally, the goal was to include a more advanced economic analysis (i.e. – life cycle costs) in the Opti-Tool while still maintaining some level of simplicity for the end user. However, such a robust economic analysis does not currently appear possible because the literary search for more recent BMP cost estimates, reflective of New England states, was largely unsuccessful. However, the search was not

entirely fruitless. Jamie Houle of the UNHSC did provide extremely valuable information on capital and maintenance costs for various BMPs that have been tested at the UNHSC. Cost estimates for a particular BMP available from *both* the CRWA study and UNHSC were discussed among Mark Voorhees of EPA, Jamie Houle of UNHSC, and Karen Mateleska of EPA, and a best professional judgment decision was made.

The recommendation at this time is to use a combination of the CRWA cost estimates **and** UNHSC costs estimates as the basis for the Opti-Tool BMP cost estimates, and to use a modified capital cost assessment (which includes a fixed percentage for Design and Contingency Costs) as well as a separate field for maintenance hours (from the UNHSC). The details supporting this approach are described below.

Overview of Scope and Approach

According to a draft memo, dated 6/20/14 from Tetra Tech to EPA Region I, the current SUSTAIN BMP Cost function has seven major individual components, using a formula that would likely be useful in a more detailed design mode. For purposes of simplicity, EPA Region I is proposing the following cost function formula for the tool's "planning" mode:

General Cost Function Formula = Storage Volume of BMP* (ft^3) X Cost Estimate for BMP ($/$ft^3$)

X Adjustment Factor

* Storage Volume of BMP is more accurately defined as (Design) Physical Storage Capacity of BMP; See Section A below for more details

Initially, the intention was to include the preliminary Operations and Maintenance (O&M) costs in the general formula (page 3) by simply multiplying the formula results by our Preliminary O & M costs. However, such an approach would only include **one year's worth** of operations and maintenance, which could have been misleading because it would not have reflected the true life cycle cost of the BMP (i.e., assume life cycle of 20 years). However, simply including the 20 year life cycle cost (O&M cost *20) in the above formula would have greatly increased the cost value and perhaps have created misconceptions about BMP use and affordability.

Therefore, the subcommittee decided to include the anticipated operation and maintenance **hours** required for each BMP per year instead. This parameter was included as a completely separate field in the Opti-Tool. The rationale was that Opti-Tool users need to understand that operation and maintenance impact the overall cost-effectiveness of BMPs and should be considered when selecting a BMP. Including O&M hours (instead of costs) as a separate field, would still highlight this important consideration for stormwater managers.

A. Storage Volume and Proposed Cost Estimate Values

As highlighted above, the general cost function formula used in the Opti-Tool consists of 3 factors: the BMP storage volume, the proposed BMP storage volume cost estimate, and the adjustment factor. The first two factors will be covered together in this memo because they are so closely linked. Table 1 below summarizes the proposed BMP cost estimates for the Opti-Tool.

Table 1: Proposed BMP Cost Estimates for Opti-Tool

BMP (From Opti-Tool)	Cost ($/ft^3) [1]	Cost ($/ft^3) – 2016 dollars[6]
Bioretention (Includes rain garden)	13.37 [2,4]	15.46
Dry Pond or detention basin	5.88 [2,4]	6.80
Enhanced Bioretention (aka-Bio-filtration Practice)	13.5 [2,3]	15.61
Infiltration Basin (or other Surface Infiltration Practice)	5.4 [2,3]	6.24
Infiltration Trench	10.8 [2,3]	12.49
Porous Pavement - Porous Asphalt Pavement	4.60 [2,4]	5.32
Porous Pavement - Pervious Concrete	15.63 [2,4]	18.07
Sand Filter	15.51 [2,4]	17.94
Gravel Wetland System (aka-subsurface gravel wetland)	7.59 [2,4]	8.78
Wet Pond or wet detention basin	5.88 [2,4]	6.80
Subsurface Infiltration/Detention System (aka-Infiltration Chamber)	54.54[5]	67.85

[1] Footnote: Includes 35% add on for design engineering and contingencies

[2] Costs in 2010 dollars

[3] From CRWA Cost Estimates

[4] From UNHSC Cost Estimates; Most of original costs were from 2004 and converted to 2010 dollars using U.S. Department of Labor (USDOL). (2012). Bureau of Labor Statistics consumer price index inflation calculator. http://www.bls.gov/data/inflation_calculator.htm

[5] From Cost Estimate of MA TT Rizzo Project (2008 Dollars)

[6] 2010 costs were converted to 2016 values to adjust for inflation. The ENR Cost Index Method was used for this conversion.

Table 1 includes all of the BMPs that are included in the Opti-Tool. The unit costs represent the dollar amount ($) per cubic foot of storage volume (ft^3), where the storage volume reflects the (design) physical static storage capacity that the relevant BMP can hold. This volume includes the volume of ponding water *and* the volume of water retained in the porous media or subbase materials if applicable. (This storage volume does *not* represent the *treated* volume of stormwater, which may be significantly higher than the physical storage volume of a BMP particularly for systems that are sized dynamically or

by a water quality flow rate as opposed to a water quality volume.) This unit cost per storage volume captured by a BMP differs from other (perhaps more traditional) methods that can be used. By choosing to use the unit cost per storage volume instead of volume of water treated, we are trying to eliminate confusion over what the actual dimensions of the BMP will be for the costs being estimated. Additionally, this use of the unit cost per storage volume is consistent with the approach used in developing the BMP performance curves (used in the Opti-Tool) where the x-axis is the actual **physical storage capacity** to hold water. Lastly, expressing the unit costs in this manner will benefit users who are simply interested in using the unit costs (outside of the Opti-Tool) by eliminating the step of modeling hydrology and routing the water through the BMP, which can yield widely varying results depending on modeling approach and supporting assumptions. Attachment A describes the method used in calculating the design storage volume for each of the selected BMPs.

Also, each unit cost per storage value represents the capital cost of construction/installation of the BMP and includes a 35% design/engineering/contingency (D & E) cost. This 35% fixed percentage of the total construction cost follows a general "rule of thumb," often used by consulting firms. Based upon a conversation between Mark Voorhees and Jamie Houle (two members of the Opti-Tool cost subcommittee), a decision was made to include this D&E cost. The values in Table 1 do *not* include the cost of purchasing any land, nor does it include any O&M costs (which is discussed in more detail in a subsequent section). Therefore, each unit cost in Table 1 that was based on the CRWA's 2010 values was calculated by multiplying the relevant BMP cost by 1.35.

Since the CRWA study did not include cost estimates for porous pavement or sand filters, which are BMPs included in the Opti-Tool, relevant data was obtained from Jamie Houle of the University of New Hampshire Stormwater Center (UNHSC). He also provided additional cost estimates (as denoted by Footnote 4 in Table 1) for some of the other BMPs included in the tool. UNHSC can provide valuable data because they have been directly involved with the engineering, design and construction of numerous LID controls, as well as evaluating multiple stormwater treatment systems over multiple years at their primary field research facility in Durham, N.H. Since they could provide cost information for both porous asphalt pavement and pervious concrete, separately, the general category of porous pavement was divided into the aforementioned two sub-categories.

It should be noted that the costs used for the Opti-tool *assume linearity*, which will both allow for *and* incentivize the scaling to smaller-sized systems. For example, EPA has estimated that *smaller* capacity designs for BMPs, rather than large-sized BMPs, can increase both the technical and economic feasibility of installing controls, particularly for retrofits. The assumption of linearity was made for the following reasons: 1) Limited data currently exists on the cost of small capacity systems. Until a larger pool of cost data becomes available which will allow for the development of a non-linear cost curve, the current method is the best available alternative; 2) As the installation of smaller systems becomes more wide-spread, it is likely that economies of scale will develop and cost savings will occur. For example, if one entity is contracted to install multiple small systems at once, materials can be bought in bulk and the installation process can become more efficient and less expensive; 3) An undersized system built to treat a large area can be a very cost effective approach. As an example, there should not be a significant cost difference between a 1-inch system treating 1 acre and a 1/10-inch-system that treats 10 acres, since the absolute capacity of the system is the same in both cases. This topic of linearity will be revisited in the future when more data is available.

Since UNHSC typically calculates the capital costs per cubic foot (ft^3) *treated*, using WQv, Jamie Houle converted the costs to represent the capital costs per BMP storage volume (ft^3). This was necessary so the capital cost data would be consistent with the method used in the Opti-Tool. Also, all of the costs were converted to 2010, and ultimately 2015, dollars. As with the CRWA costs, the UNHSC capital costs were already adjusted to include the 35% design/engineering/contingency (D & E) cost. Details of all of these calculations, and any other assumptions made, are presented in Attachment B.

When developing cost estimates, another topic for consideration was whether or not to address the issue of inflation. CRWA's BMP cost estimates were based on capital costs from 2010. As previously stated, UNHSW's cost estimates have also already been converted to constant 2010 dollars using consumer price index inflation rates [U.S. Department of Labor (USDOL) 2014].[1] Therefore, there was the option of converting all of these 2010 costs to 2016 costs, using the U.S. Department of Labor's consumer price index inflation calculator. However, another suggestion was made to use the ENR Cost Index method to adjust for inflation instead because it more closely tracks construction work. At least one New England state (i.e., Vermont) also uses the ENR Cost Index method, so this could provide some consistency, as well. Therefore, the decision was made to ultimately convert all of the costs to 2016 values using the ENR Cost Index method. These values are reflected in Table 1.

To use the index, one calculates the quotient of the current index number (based on the month and year of *current* date) divided by the index number from a given date (e.g., June of 2010). Since the month was not known for the 2010 costs, the month of June was used as an estimate. This assumption was used because it falls mid-way between the construction season and would likely provide a reasonable estimate. Once the quotient was calculated, it was multiplied by the construction cost (found in the middle column in Table 1, above) to provide the 2016 construction cost value

B. Cost Adjustment Factor

Since the cost of installing a BMP will vary depending on the specific site location, the TAC subcommittee believed it was important for the Opti-Tool to include a scalable cost adjustment factor. The proposed cost estimates for the Opti-Tool (in Table 1) are all based on a Cost Adjustment Factor of 1. However, each Opti-Tool user has the option to choose and enter into the tool a cost adjustment factor that is appropriate for their site. This will adjust the storage volume cost function in the Opti-Tool.

For example, the CRWA report included the cost factors summarized in Table 2.

[1] Reference: U.S. Department of Labor (USDOL). (2014). Bureau of Labor Statistics consumer price index inflation calculator." ⟨http://www.bls.gov/data/inflation_calculator.htm⟩(Sep. 12, 2014)

Table 2: Example of Cost Adjustment Factors

BMP Type	**EXAMPLE** Cost Adjustment Factor
New BMP in undeveloped area	1
New BMP in partially developed area	1.5
New BMP in developed area	2
Difficult installation in highly urban settings	3

(Source: Table 4 of Appendix B of CRWA's Spruce Pond Brook Subwatershed Project for Town of Franklin)

The assumption made was that it would cost more to install a new BMP in a developed area (with more site constraints) than it would cost to install the same BMP in a previously undeveloped area. So in the above example, the cost adjustment factor would be 2 for installing a BMP in a previously developed area versus a cost adjustment factor of 1 for installing a BMP in an undeveloped area.

It should be noted that Table 2 (above) provides just *one example* of adjustment factors. The factor should be flexible enough so that another location (or Opti-Tool user) can adjust it, as needed. For example, the Charles River Watershed (in eastern Massachusetts) used an adjustment factor of 2 for installing a BMP in a developed area, while the State of Vermont uses an adjustment factor of 1.4 to estimate the cost of installing a BMP for existing development.

C. Maintenance (O&M) Costs

Originally, one goal was to include Operation and Maintenance (O&M) costs as part of the cost estimates for the Opti-Tool. These O&M costs would help to provide a more realistic reflection of the long-term expenses of structural storm water controls, which is obviously critical in the practical, real-world implementation of BMPs. However, it is difficult to obtain accurate maintenance costs and they will be highly variable depending on the size, location and equipment needed to perform long-term O&M.

This point was highlighted by a key finding in EPA's recent (2013) publication, *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs.* The report indicated that only a small percentage of the entities that implement LID and GI approach for stormwater management conduct economic analyses due to the "uncertainties surrounding costs, operation and maintenance (O&M) requirements, budgetary constraints, and difficulties associated with quantifying the benefits provided by LID/GI" and the need "to obtain better estimates of the O&M costs associated with different types of LID/GI projects" was a key finding of the report.

As previously mentioned, one article entitled, *Comparison of Maintenance Cost, Labor Demands, and System Performance for LID and Conventional Stormwater Management* (Houle *et al. 2013)*, did contain relevant information for BMP costs in the New England region. During initial discussions between EPA Region I (Mark Voorhees) and UNHSC (Jamie Houle), there was concern that not enough data existed on O&M costs to propose accurate values for each of the BMPs included in the Opti-Tool. There was also

the concern that the O&M costs were not scaleable. For example, initial O&M costs for each BMP were based on the cost of operation and maintenance per year per acre of IC treated. Scaled differences such as the annual O&M costs for treating 0.5 acres of IC or 2 acres of IC have **not** been evaluated and may or may **not** result in a simple linear relationship. Yet the Opti-Tool costs subcommittee also realized the importance of including some maintenance parameter in order to *initiate* the conversation on the importance of accounting for O&M to maintain the functionality of the BMPs. Therefore Table 3, below, presents these annual maintenance costs (in $) for select BMPs, as well as the annual maintenance hours. Although the O&M costs have been presented in this memo, only the O&M **hours** will be included (as a separate field) in the Opti-Tool.

Table 3: Maintenance Costs ($) and Hours per year for select BMPs – From UNHSC

BMP	Maintenance Cost ($) per year	Annual Maintenance Hours
Bioretention	$1,890.00	20.7
Chamber System	Not Assessed	Not Assessed
Detention Pond	$2,380.00	24.0
Gravel Wetland	$2,138.33	21.7
Porous Asphalt	$1,080.00	6.0
Pervious Concrete	$1,080.00	6.0
Retention Pond	$3,060.00	28.0
Sand Filter	$2,807.50	28.5

*Note: initial costs based on cost of maintenance per year per acre of IC treated

Annual maintenance strategies were evaluated by directly quantifying hours spent categorizing maintenance activities, and assessing difficulty of those activities. To better illustrate costs and anticipate maintenance burdens, activities were characterized into distinct categories and a standard cost structure was applied. This unit conversion can easily be adapted according to local conditions, current economic climate, and regional cost variations which is why we decided to go with maintenance **hours** as those were directly measured and should remain constant. These maintenance activity categories allow more accurate cost predictions and provide insight into the appropriate assignment of maintenance responsibilities.

Annual maintenance costs were normalized to 2012 dollars and calculated for all SCMs by both dollars and personnel hours per acre of IC treated per system per year. It is important to note that inflation was not considered in life cycle maintenance cost projections.

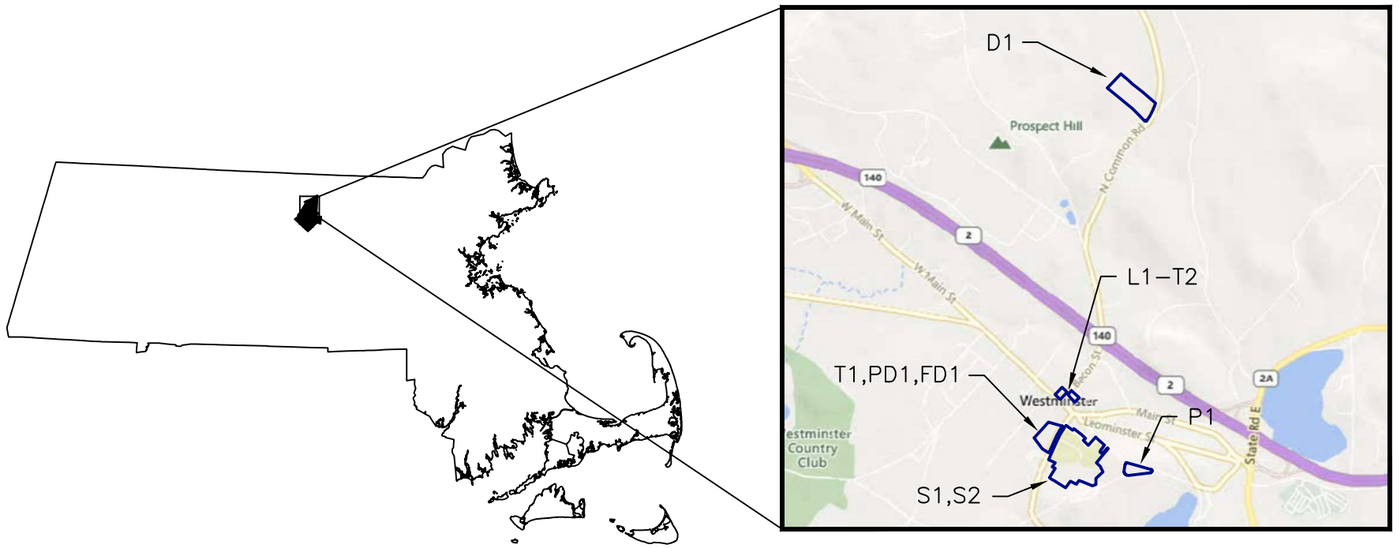
MUNICIPAL PROPERTY BMP RETROFITS

Attachment B:
Pre-Conceptual Designs for Top Five Locations

TOWN OF WESTMINSTER, MA

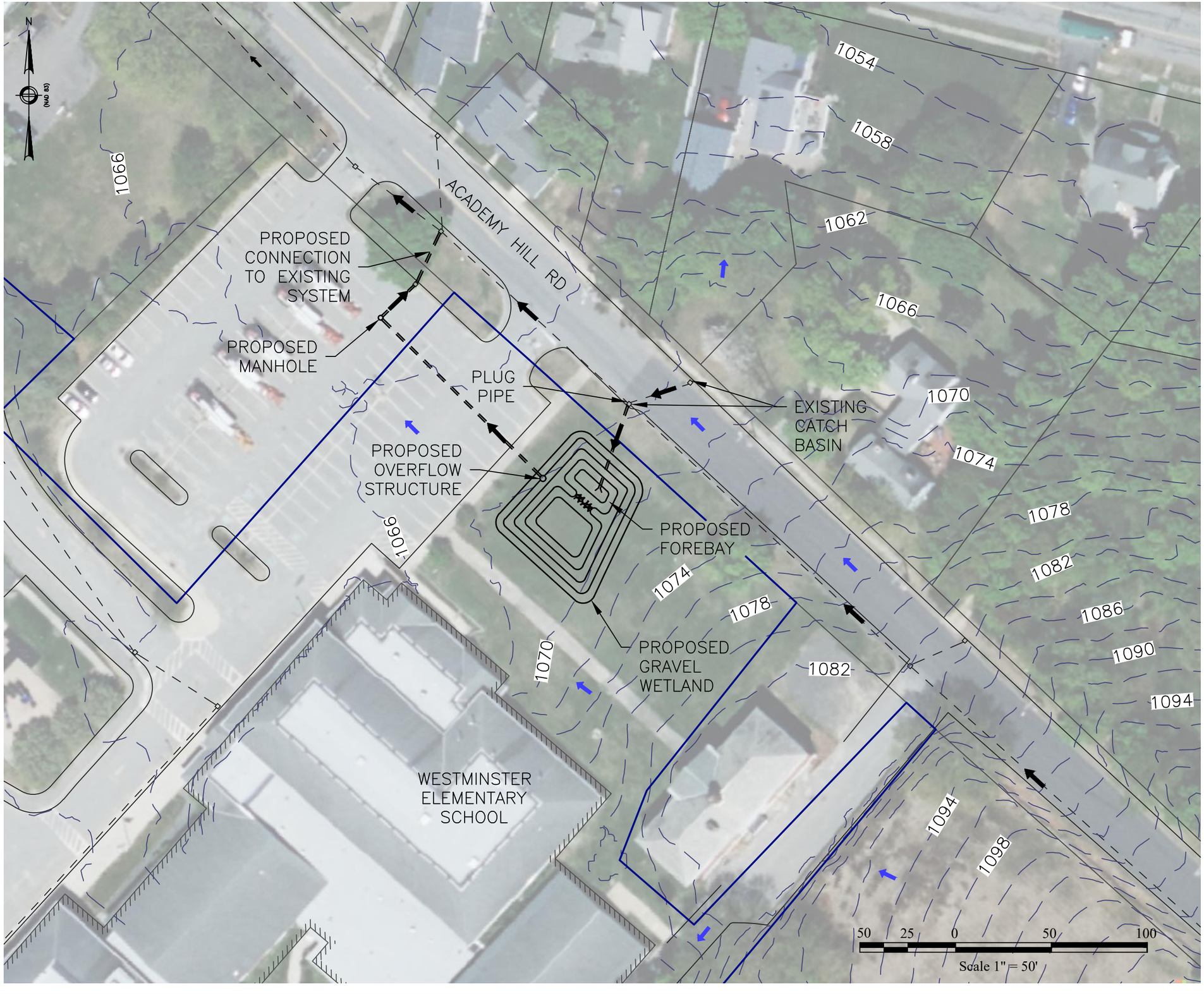
MUNICIPAL PROPERTY BMP RETROFIT OPPORTUNITIES

JUNE 2022



SHEET	TITLE
C-1	WESTMINSTER ELEMENTARY SCHOOL
C-2	LIBRARY/OLD TOWN HALL
C-3	DEPARTMENT OF PUBLIC WORKS
C-4	ACADEMY HILL COMMON
C-5	TOWN HALL AND FIRE/POLICE DEPARTMENT

COMPREHENSIVE ENVIRONMENTAL INCORPORATED • BOLTON, MASSACHUSETTS



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING BUILDING
- EDGE OF PAVEMENT
- PROPOSED DRAIN PIPE
- FLOW DIRECTION ARROW

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

PROPOSED CONDITIONS WESTMINSTER ELEMENTARY SCHOOL PLAN VIEW

TOWN OF WESTMINSTER, MA

Project No.: 336 Date: 4/7/2022	Sheet
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Checked By: NC	
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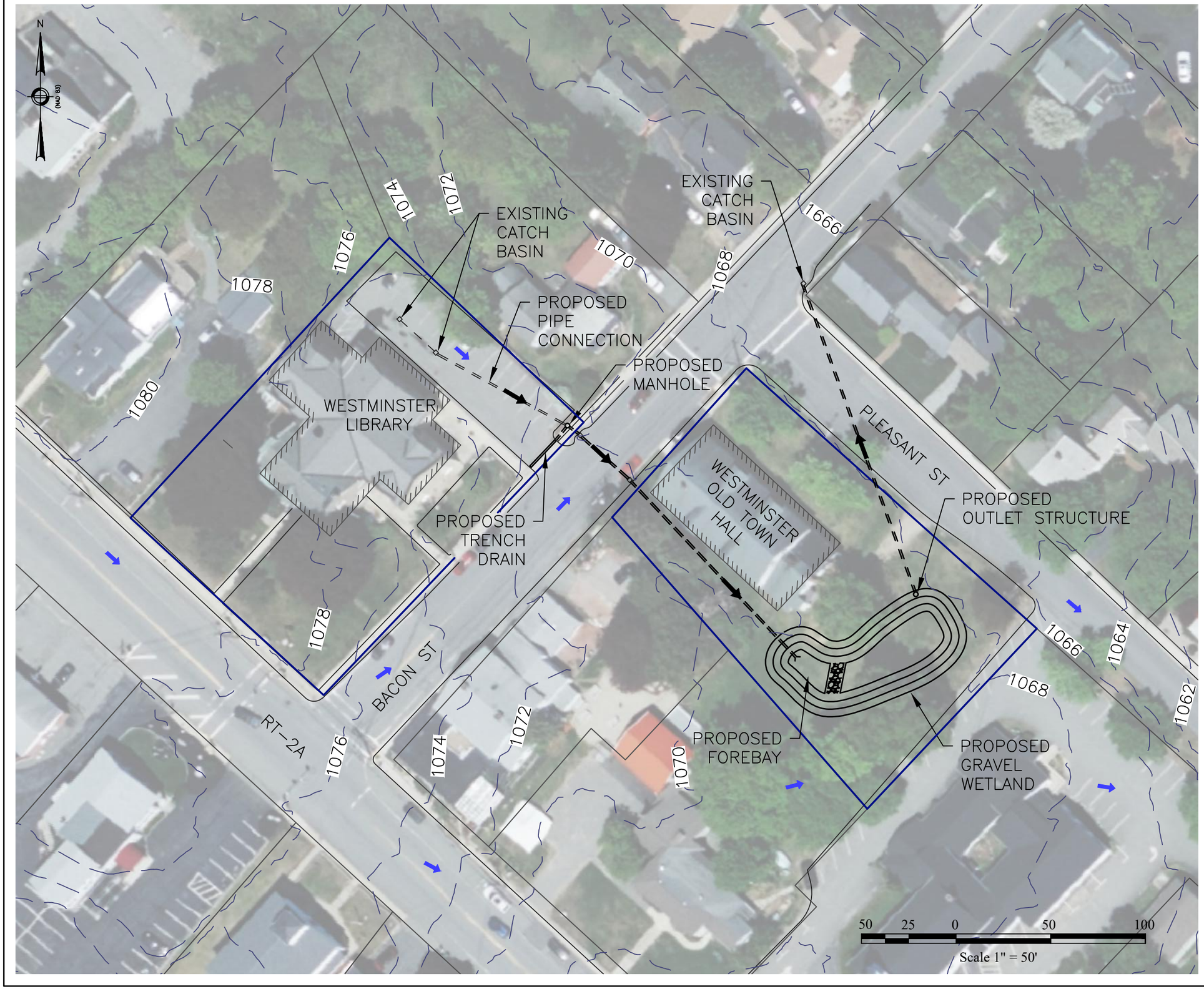

GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
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- EXISTING BUILDING
- EDGE OF PAVEMENT
- PROPOSED DRAIN PIPE
- FLOW DIRECTION ARROW

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

PROPOSED CONDITIONS LIBRARY/OLD TOWN HALL PLAN VIEW

TOWN OF WESTMINSTER, MA

Project No.: 336 Date: 4/7/2022	Sheet
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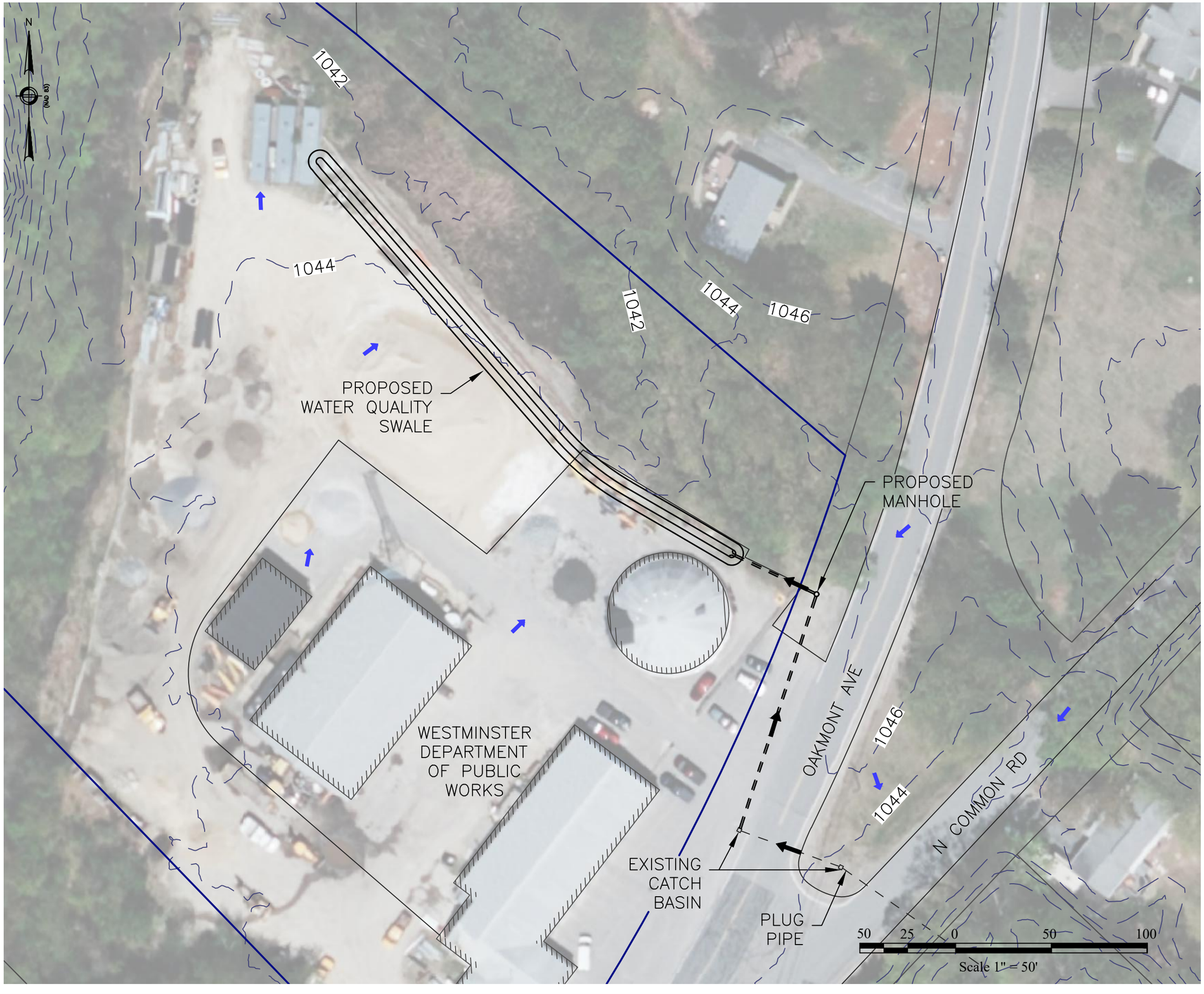

GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING BUILDING
- EDGE OF PAVEMENT
- PROPOSED DRAIN PIPE
- FLOW DIRECTION ARROW

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

PROPOSED CONDITIONS
DEPARTMENT OF PUBLIC WORKS
PLAN VIEW

TOWN OF WESTMINSTER, MA

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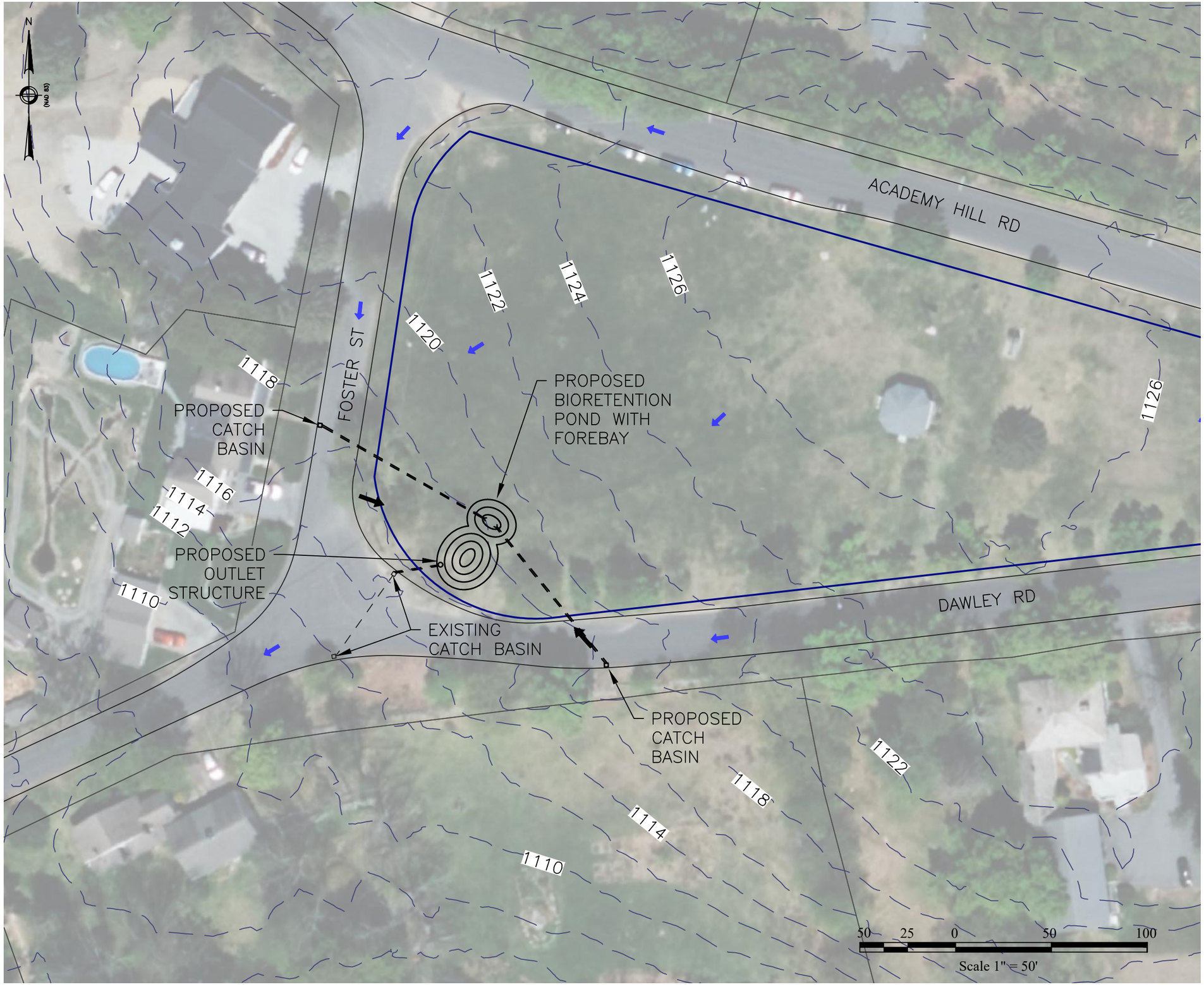

GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING BUILDING
- EDGE OF PAVEMENT
- PROPOSED DRAIN PIPE
- FLOW DIRECTION ARROW

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

PROPOSED CONDITIONS ACADEMY HILL COMMON PLAN VIEW

TOWN OF WESTMINSTER, MA

Project No.: 336 Date: 4/7/2022	Sheet
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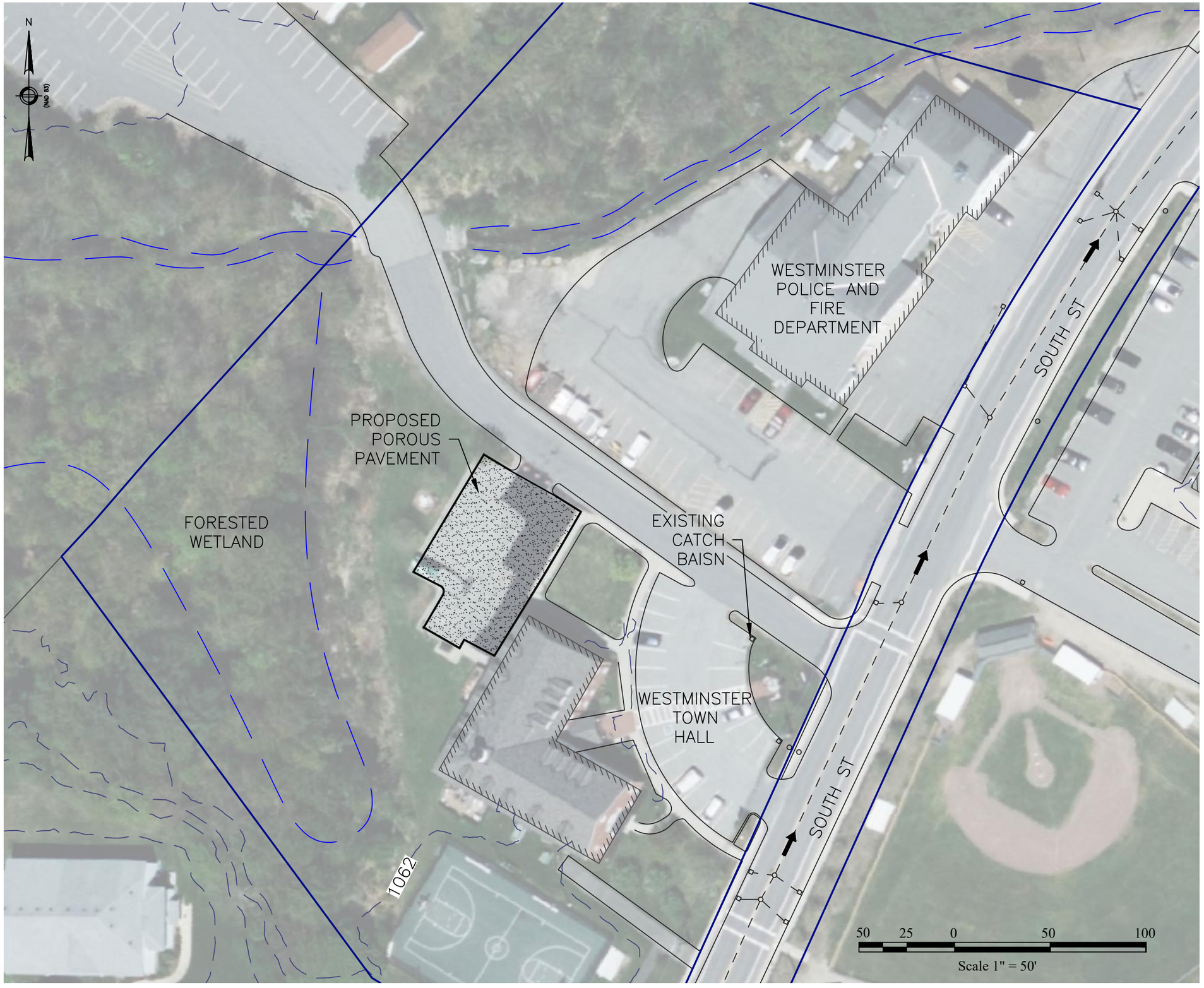
Checked By: NC	
Scale: AS SHOWN	



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING BUILDING
- EDGE OF PAVEMENT
- PROPOSED DRAIN PIPE
- FLOW DIRECTION ARROW

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN STREET
BOLTON, MA 01740

PROPOSED CONDITIONS TOWN HALL AND FIRE/POLICE DEPARTMENT PLAN VIEW

TOWN OF WESTMINSTER, MA

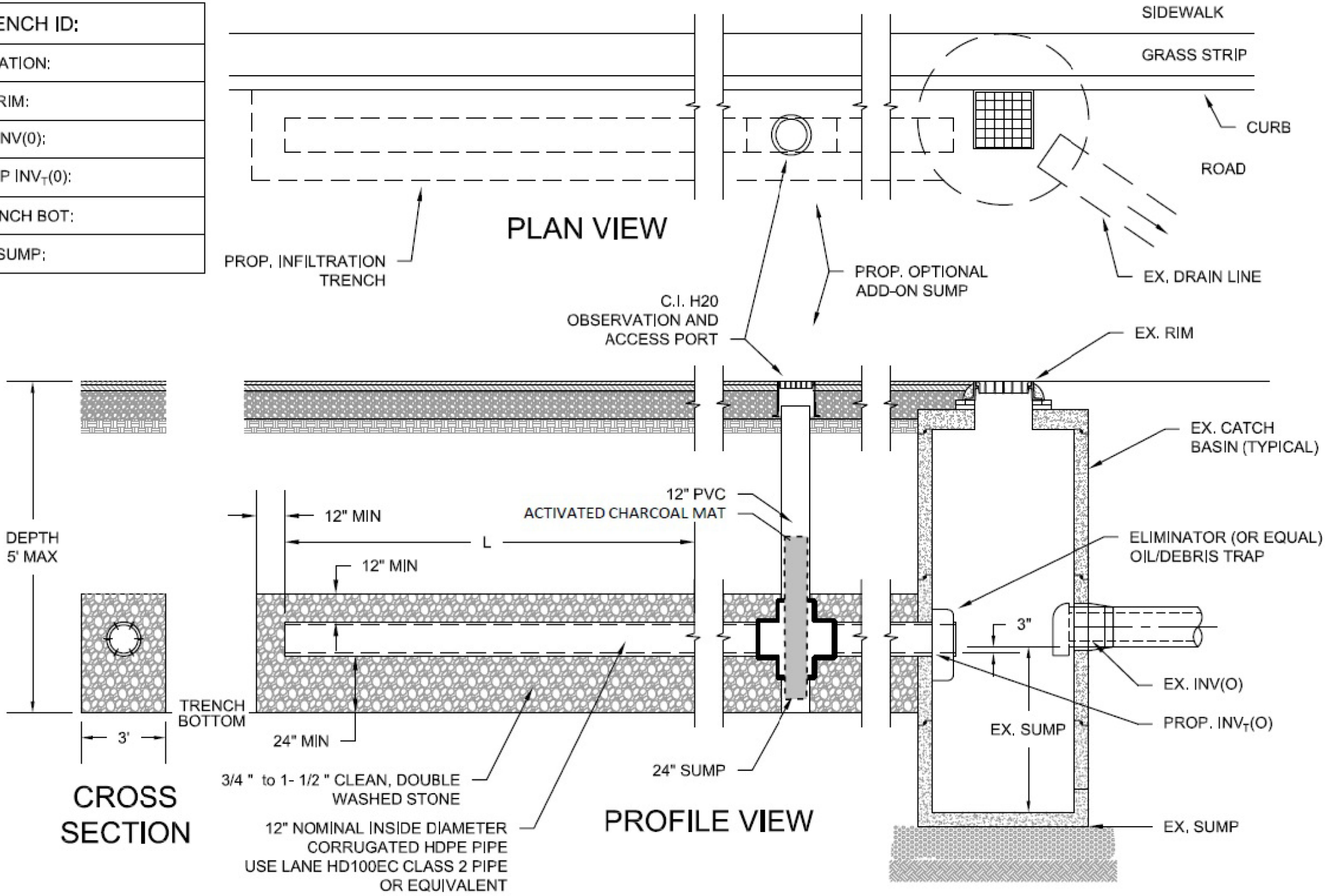
Project No.: 336 Date: 4/7/2022	Sheet
Drawn By: NP	C – 5
Checked By: NC	
Scale: AS SHOWN	

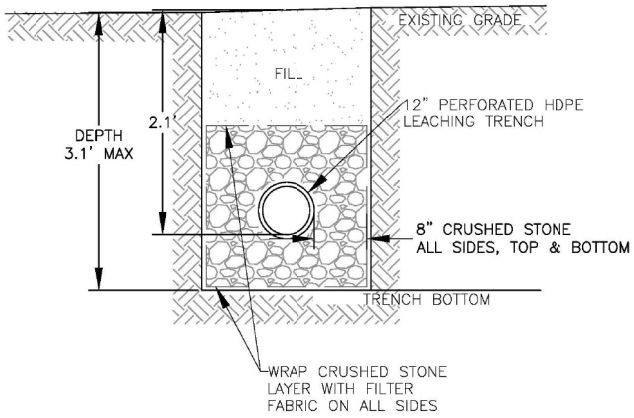
MUNICIPAL PROPERTY BMP RETROFITS

Attachment C:

Example Roadway and Intersection BMP Improvements

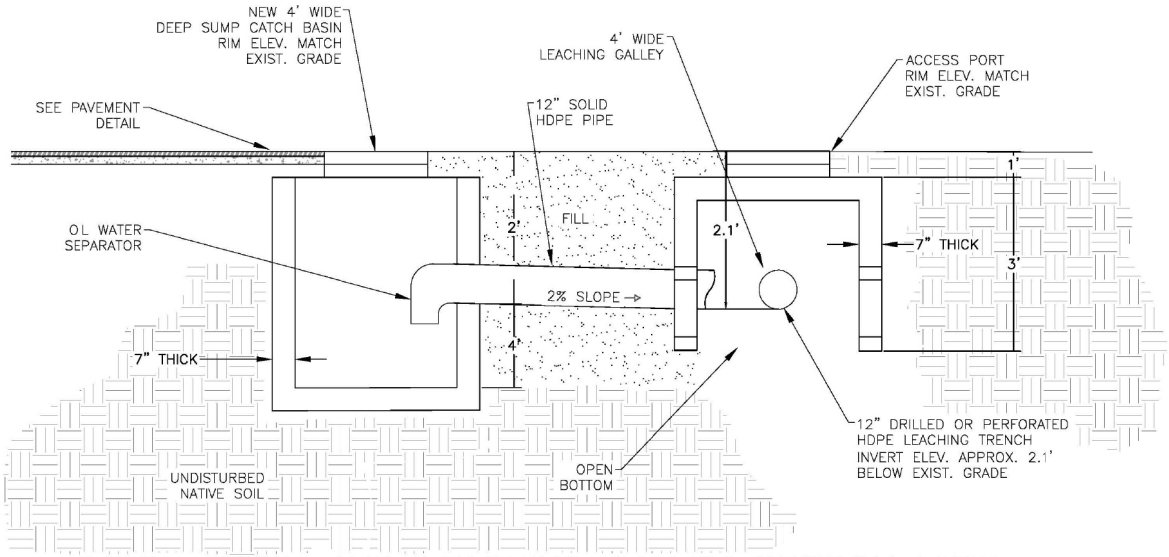
TRENCH ID:
LOCATION:
EX. RIM:
EX. INV(0):
PROP INV_T(0):
TRENCH BOT:
EX. SUMP:





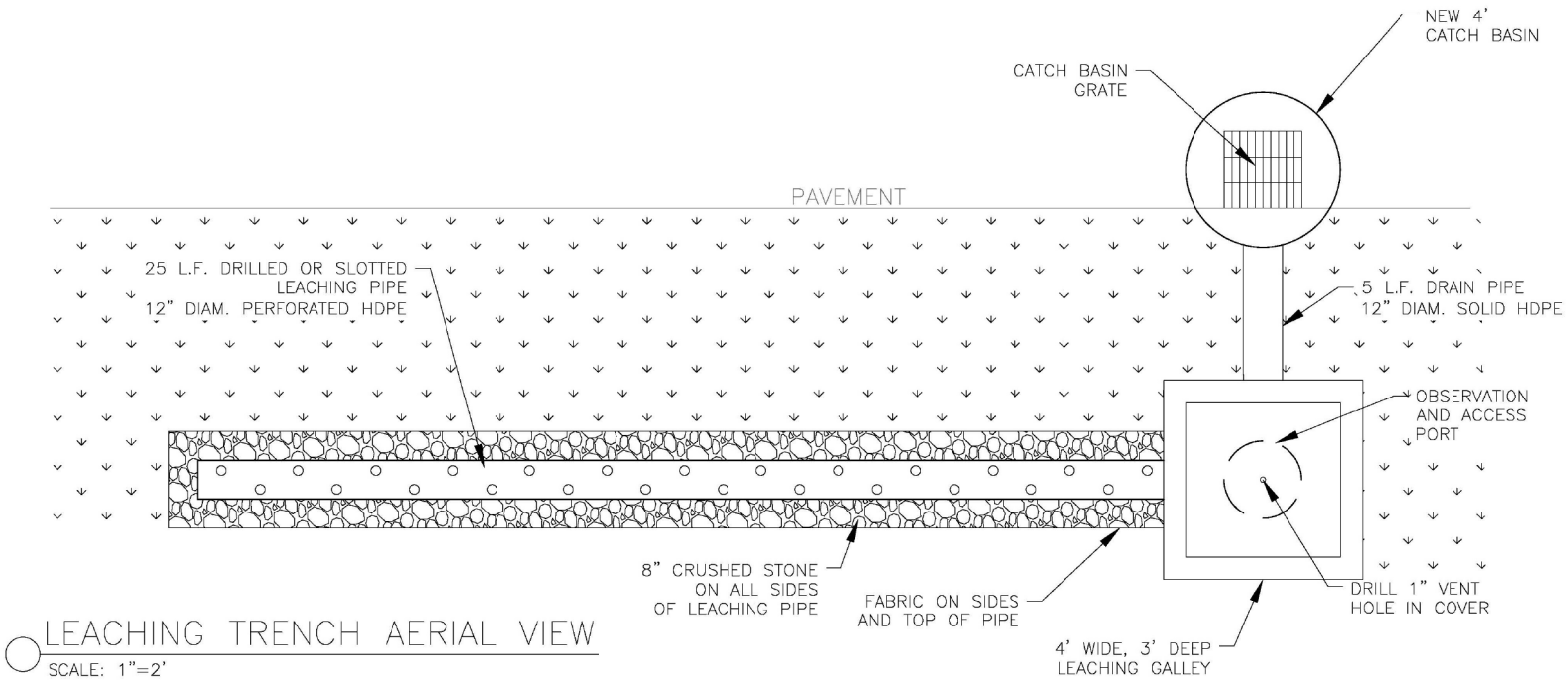
LEACHING TRENCH SECTION VIEW

SCALE N.T.S.



CATCH BASIN AND LEACHING GALLEY SECTION VIEW

SCALE: 1"=3'



LEACHING TRENCH AERIAL VIEW

SCALE: 1"=2'

Appendix F

Street Sweeping Optimization Plan

MI-1, Street Sweeping

Street sweeping is performed to remove sediments from streets and parking lots before it is washed into catch basins and waterways.

Procedures and Practices

- Sweep all Town-owned streets within the urbanized area with the exception of high-speed limited access highways at least once per year in the spring.
- For areas subject to nitrogen and phosphorus TMDL and impaired waters requirements, sweep streets once in the spring and once in the fall.
- If required, sweep priority areas such as those with construction sites or areas subject to heavier sanding and/or traffic volumes multiple times a year to minimize sediment accumulation.
- Sweep all Town parking lots in spring after snow melts.
- If possible, notify residents and businesses of street sweeping schedule and requirements such as restricted parking and removal of objects that could obstruct sweeping operations.
- Lightly spray water on streets before sweeping to minimize airborne dust.
- Avoid pushing materials into or around storm drains and catch basins.
- Do not use kick brooms or sweeper attachments that tend to spread dirt.
- When unloading sweeper, make sure there is no dust or sediment release.
- After sweeping is finished, properly dispose of sweeper wastes (see below). Never dispose sweep debris into the storm drain systems, catch basins, or waterways.
- Never store street sweepings in areas where stormwater could transport fine materials to the storm drain system or a waterbody.
- If possible, clean catch basins after streets are swept.

Prior to the Start of the Sweeping Season (Spring)

- Train employees on the proper maintenance and operation of equipment and on the proper storage and disposal of street sweepings.
- Ensure all sweeping equipment is in good working order and conduct maintenance as needed (see Equipment Maintenance Section).
- Ensure road crews are familiar with sweeping routes to efficiently cover the entire municipality.

Prior to Leaving the Facility for Sweeping

- Speak with supervisor to determine special circumstances (i.e. rain, priority areas) and to confirm sweeping route.
- Inspect all vehicles. Check fluid levels and fill to proper levels. Ensure lights are in working order. Document any repairs.

Street Sweeping

- Operate all sweepers according to the manufacturer's recommended settings, standards, and procedures.
- While sweeping, drive between the optimal speed limit.
- If spills occur or illegal discharges are seen, report to your supervisor.
- Do not perform sweeping during heavy rainfall.

Upon Return to the Facility

- Provide daily progress reports on the number of miles and names of roads swept to supervisor.
- Wash vehicle following the Vehicles and Equipment Washing SOP (VM-2).
- Before parking any truck or equipment after use, check all fluid levels. Note any minor repairs conducted and other repairs that may be needed. Follow the Vehicle and Equipment Maintenance SOP (VM-1).

Storage, Disposal and Reuse

Storage

- Store separately from catch basin cleaning materials.
- Store street sweepings on an impermeable surface away from areas that receive stormwater runoff.
- Cover street sweeping piles with tarps to prevent rainwater from generating contaminated stormwater.
- Any Town employee handling the street sweepings should wear appropriate personal protective equipment, such as a dust mask, safety goggles, long-sleeved shirts and long pants at all times.

Reuse

Street sweepings may also be used as fill in public ways or as an additive to compost without prior approval from MassDEP provided certain conditions are met:

- Not been collected from Urban Center Roads (defined as local roads in central commercial and retail business districts and industrial and manufacturing areas).
- Used under the road surface or as fill along the side of the road within the public way.
- Not used in residential areas.
- Kept above the level of the groundwater.
- Not used in designated "No Salt Areas".
- Not used within the 100 foot buffer zone of a wetland or within wetland resource areas including bordering vegetative wetlands and riverfront areas.
- Not used within 500 feet of a ground or surface drinking water supply.

Inspection and Maintenance

- Inspect sweepers before sweeping to ensure they are in good working order. Maintain and adjust as necessary.
- Inspect tarp to ensure pile is covered and no tears.

- Inspect erosion controls weekly and after major storms to ensure they are free of tears and sediment buildup. Repair as needed.
- Immediately abate any nuisance conditions (i.e., noise, dust, odor).
- Train employees on proper street sweeping procedures.

Recordkeeping and Reporting

- Use attached Street Sweeping Log to document street sweeping activities.
- Town employees should record:
    - Miles of roadway swept.
    - Tons or cubic yards of street sweeping materials generated.
    - Tons or cubic yards of street sweeping materials disposed of.
    - Tons or cubic yards of street sweeping materials reused as fill.

Street Sweeping Log

Date:_________________ **Precipitation in the last three days?** **Yes** **No**

Weather Today:____

Supervisor/Crew Leader:_______________________________________

Street Swept (Name)	Miles	Observed Potential Sources of Pollution	Volume or Mass of Material Removed	Comments
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
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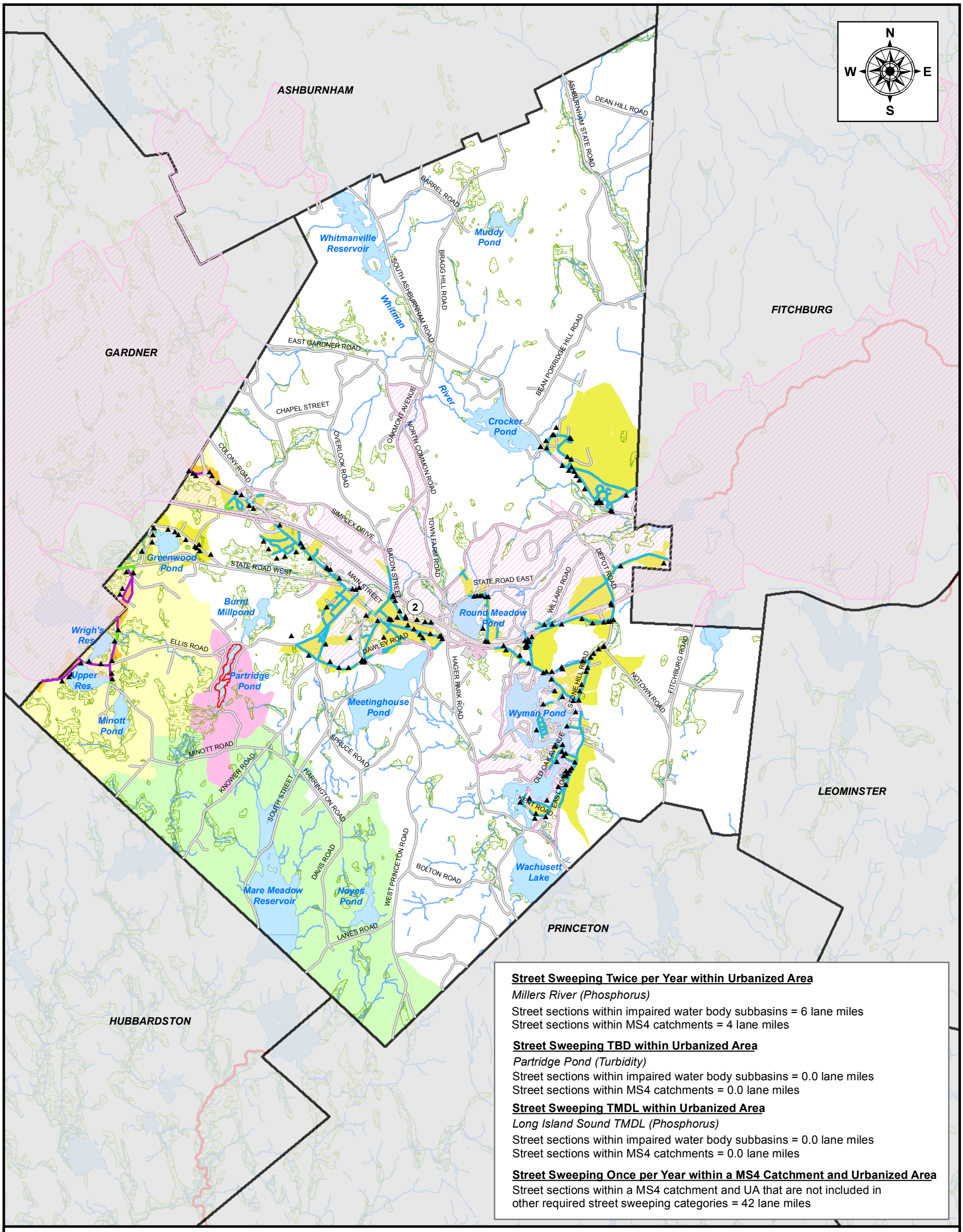
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		

Total Sediment Accumulated from Route (as weighed at landfill):_______________ tons

* Provide additional comments to describe the observations made for the category. Comments should also identify issues that hinder street sweeping progress (i.e., parked cars, obstructions).



Street Sweeping Twice per Year within Urbanized Area

Millers River (Phosphorus)

Street sections within impaired water body subbasins = 6 lane miles
Street sections within MS4 catchments = 4 lane miles

Street Sweeping TBD within Urbanized Area

Partridge Pond (Turbidity)

Street sections within impaired water body subbasins = 0.0 lane miles
Street sections within MS4 catchments = 0.0 lane miles

Street Sweeping TMDL within Urbanized Area

Long Island Sound TMDL (Phosphorus)

Street sections within impaired water body subbasins = 0.0 lane miles
Street sections within MS4 catchments = 0.0 lane miles

Street Sweeping Once per Year within a MS4 Catchment and Urbanized Area

Street sections within a MS4 catchment and UA that are not included in other required street sweeping categories = 42 lane miles

Legend

- MS4 Outfalls
- Urbanized Area -

303d Water Bodies - Category 5

- Impaired Lake, Pond
- Impaired River, Stream - Category 5

Hydrography

- Lake, Pond, River
- Wetland
- Stream, Brook

Outfall Catchments

- Discharges to Impaired Water Body Subbasin within UA
- Does Not Discharge to Impaired Water Body Subbasin within UA

Impaired Water Body Subbasins

- Sweep Twice per Year (Millers River)
- Sweep TBD (Partridge Pond)
- Sweep TMDL (Long Island Sound)
- Street Sweeping Once per Year within MS4 Catchment and UA (required)

Street Sweeping Twice per Year, within UA

- Within MS4 Catchment (required)
- Within Impaired Water Body Subbasins (not required)

0 2,500 5,000 7,500 10,000 Feet

Street Sweeping Map

Sweeping per Phase II Requirements

Westminster, Massachusetts

Comprehensive Environmental Inc.

Appendix G

Catch Basin Optimization Plan

Plan for Optimizing Catch Basin Cleaning

Westminster, MA

Prepared June 30, 2019

Revised December 31, 2021

Prepared For:

Town of Westminster
11 South Street
Westminster, MA 01473

Prepared by:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

Table of Contents

Plan for Optimizing Catch Basin Cleaning – Westminster, MA

List of Tables

List of Appendices

1 Introduction

This Catch Basin Cleaning Optimization Plan has been prepared by Westminster, MA to address the catch basin inspection, cleaning and maintenance 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 MS4 Permit".

The 2016 MS4 Permit requires the permittee to document its plan for optimizing catch basin cleaning, inspections, or its schedule for gathering information to develop the optimization plan. This plan documents the Town's existing catch basin cleaning program and its plans for gathering additional information to refine its program to meet the requirements of the permit.

2 Permit Requirements

This Catch Basin Cleaning Optimization Plan addresses Section 2.3.7.1.a.iii.2 of the 2016 MS4 Permit (Infrastructure Operations and Maintenance), which includes the following requirements:

- **Establish a schedule** with the goal that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50 percent full[1];

- **Prioritize** inspection and maintenance for catch basins:
  - Located near construction activities[2]. These should be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings;
  - Discharging to impaired waters where the pollutant of concern is E. coli or enterococcus; and
  - With sumps more than 50% full during consecutive inspections.

- **Establish proper documentation** of catch basin inspections to include:
  - The location and total number of catch basins;
  - The location and total number of catch basins cleaned or inspected; and
  - The total volume or mass of material removed from catch basins.

Develop an optimization plan (this plan) for catch basin cleaning, inspection plans, or a schedule for gathering information to develop the optimization plan in the first annual report and in the SWMP.

[1] A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.
[2] Roadway construction; residential, commercial, or industrial development or redevelopment.

3 Existing Catch Basin Management Program

The Town has approximately 680 Town-owned catch basins within the urbanized area to clean and maintain (refer to the map in **Appendix A**). Westminster currently cleans all of their catch basins each year using an outside contractor. The cleanings take approximately two weeks to complete and a condition assessment of the catch basins is completed every year. The materials are disposed of at the Fitchburg-Westminster Landfill. Note that other catch basins in town owned by others (e.g. MassDOT, private entities) are not maintained by the Town and thus are not addressed by this plan.

4 Refined Catch Basin Management Program

4.1 Optimization Methodology

In summer 2021, Westminster continued implementing its existing annual catch basin cleaning program as outlined above. During this time, it collected data on the sump depth and sediment depth in each catch basin. Catch basin inspection data was then reviewed and evaluated to determine the status of catch basins and whether the sump was more than half full. A total of 169 catch basins had sumps more than 50% full. These catch basins were further evaluated for potential factors that may have contributed to it being 50% full (i.e., smaller sump, nearby construction, location in town). Results are documented further in the next section.

4.2 Catch Basin Inspection Results

Catch basin inspections were conducted in two rounds: one before and one after cleaning activities in summer and fall 2021. During this time, the Town collected data for each cleaned basin that included the following:

- Total depth of each catch basin;
- Depth to sediment before cleaning;
- Depth to the bottom of the basin after cleaning;
- Sump depth within each basin;
- Material inventory of the basin, frame, grate, chimney, etc.;
- General condition assessment of the interior of the basin;
- General condition of the exterior and basin rim; and
- Any potential illicit discharge indicators.

A total of 681 catch basins were attempted to be visited during the first round of inspections. Of these, 55 catch basins could not be found, 21 could not be accessed, nine were drop inlets, and 86 catch basins originally marked as Town-owned were found to be privately owned and maintained[3]. Therefore, a total of 510 catch basins were inspected during the first round and revisited during the second round of inspections. Of these 510 basins, a total of 68 catch basins

[3] The 86 catch basins found to be private were located in private housing communities on Crestview Lane, Heritage Lane, Kimberly Lane, Old Mill Circle, and West Hill Drive.

were not cleaned by contractors as determined by the sediment depths from round one and the absence of a newly spray-painted orange dot on the grate. Catch basins that were not cleaned most likely had obstructions such as dumpsters or cars in the way, or were excessively full of compacted sediment that could not be removed with available equipment. Additionally, catch basins on Theodore Drive were not cleaned or fully inspected due to construction on this roadway with sediment traps present in the basins at the time of inspections.

Of the 442 inspected and cleaned catch basins, 169 (38%) had sumps more than 50% full, including 31 catch basins (7%) that were completely full. A total of thirteen catch basins inspected had unknown sump fullness due to unclear sump and/or sediment depths. A summary of the inspection results can be found below in **Table 1**. A spreadsheet was used to track sediment depth at each location, along with an inspection form included with the standard operating procedure (SOP) in **Appendix B** used to document data collected during cleaning. Based on the 2021 inspection data, maps of catch basins more than 50% full were developed and are included in **Appendix C**. The complete inspection results, including all field comments, are in **Appendix D**.

Table 1: Summary of 2021 Inspection Results

	# of Catch Basins
Total Attempted to be Visited During Round 1	**681**
Not Found	55
Could Not Access	21
Drop Inlets	9
Privately Owned*	86
Total Inspected During Round 1 and Revisited during Round 2	**510**
Not Cleaned	68
Cleaned and Evaluated in Rounds 1 and 2	442
Sump Fullness % in Round 2	
Full	31
75% to 100%	35
50% to 75%	103
25% to 50%	123
< 25%	137
Unknown	13
Obvious Illicit Discharge Indicators Noted	0
Minor Damage Noted	9

*Originally marked as Town-owned, found to be private, no second inspection done

During inspections, the Town documented any illicit discharge indicators such as visual or olfactory evidence, sewage odor, suds, and/or oily sheen in the catch basin. In 2021, there were no obvious indicators of illicit discharges such as evidence of toilet paper or other similar evidence. Minor evidence, such as some olfactory evidence of sewer smell, organic decay, suds, oil sheen, etc. was observed at 23 locations. A table of all catch basins that exhibited minor

evidence of illicit discharge and corresponding field notes is found in **Appendix E**. Additionally, minor damage was noted for nine of the inspected catch basins as shown below in **Table 2**.

Table 2: Catch Basin Damage

Catch Basin ID	Street Location	Damage Comment
831-ER-006	E Gardener Road	Pipe end damaged.
831-NR-007	N Commons Road	Pipe end completely rusted away.
831-NR-027	N Commons Road	Pipe end damaged.
CS 2.1	Church Street	Sinking, undermined. Chimney walls falling in.
ES 1.17	Smith Ave	Frost heave, slanted. Frame, surface in poor shape.
HR 1.5	Hy Road	Walls falling apart.
VIR 2.2	Village Inn Road	Broken corner.
VIR 3.4	Village Inn Road	Broken corner.
VIR 6.7	Village Inn Road	Broken corner.

5 Recommendations and Next Steps

5.1 Priority Areas

Catch basins with sumps that were completely full are listed below in **Table 3**. These 31 catch basins are the top priority for cleanings and inspections. The remaining 138 of the 169 catch basins with sumps more than 50% full should be prioritized second. Of the 169 catch basins with sumps more than 50% full, 21 had considerably smaller sump depths (i.e. less than one foot). A complete list of catch basins with sumps more than 50% full is found in **Appendix F**.

Table 3: Catch Basins 100% Full

Catch Basin ID	Street Location	Catch Basin ID	Street Location
811-CR-2	Carter Road	DR 1.8*	Narrows Road
811-CR-4	Carter Road	EAR 7.1*	East Road
811-CR-5	Carter Road	ES 2.1*	Ellis Road
831-BS-010	Bacon Street	HOW 1.1	Howard Lane
831-ER-007	E Gardener Road	LS 1.2*	Leominster Street
831-MR-006	Mossman Road	LS 1.6*	Leominster Street
831-NR-010	N Common Road	MS 1.15	Main Street
831-NR-019	N Common Road	MS 1.38	Main Street
831-NR-021*	N Common Road	SHR-722-2	Stone Hill Road
831-NR-027	N Common Road	SIM 2	Simplex Drive
831-NR-030	N Common Road	VIR 3.10	Village Inn Road
831-NR-034	N Common Road	VIR 6.7	Village Inn Road
BAT 1.14*	Bathrick Road	VR 1.1	Val Road
BAT 1.17	Bathrick Road	VR 1.4	East Road
DPT 1.2	Depot Road	WAT 1.0	Waterman Lane
DPT 1.7	Depot Road		

*Catch basins with small sumps, which likely contributes to the fullness

Over half the catch basins were more than 50% full on four streets (East Gardener Road, North Common Road, Town Farm Road, and Sargent Road). Other than Sargent Road, these streets are located in the same area on the north side of town. The nearby streets, Bacon Street and Mossman Road, also had almost half of the catch basins more than 50% full. These streets may be prioritized for more frequent catch basin cleanings and/or street sweeping as the location or conditions of these streets in town may be contributing factors to the amount of sediment in the catch basins. A breakdown of catch basins on the same priority streets is provided in **Appendix G**.

Although there was no obvious evidence of illicit discharges during the 2021 inspections, catch basins that had olfactory and/or visual indicators should be prioritized for further investigation. **Table 4** below outlines the 23 catch basins that exhibited minor illicit discharge indicators. **Appendix E** provides further details and field comments on these illicit discharge indicators.

Table 4: Potential Illicit Discharges

Catch Basin ID	Street Location	Catch Basin ID	Street Location
810-ER-6	Ellis Rd	ES 1.47	Ellis Rd
831-ER-008	E Gardener Rd	MS 1.35	Academy Hill Rd
831-NR-002	N Common Rd	NR-40	N Common Rd
831-School-004	Academy Hill Rd	RS-730-1	Ridge St
AH 1.2	Academy Hill Rd	SHR-722-2	Stone Hill Rd
BAT 1.11	Bathrick Rd	TFR 1.5	Town Farm Rd
BAT 1.17	Bathrick Rd	THD 1.13	Theodore Rd
BAT 1.3	Bathrick Rd	THD 1.5	Theodore Rd
BTL 1.1	Battles Rd	VIR 6.3	Village Inn Rd
CS 2.1	Church St	VIR 6.5	Village Inn Rd
ER 1.13	Ellis Rd	VIR-630-1	Village Inn Rd
ER 1.15	Ellis Rd		

5.2 Summary

Table 5 below summarizes the prioritization of catch basins that may require more frequent cleaning and/or inspection. A complete list of prioritized catch basins is found in **Appendix H**. Maps highlighting all full basins and priority streets are in **Appendix I**.

Table 5: Summary of Catch Basin Prioritization for Cleaning and/or Inspections

Priority	Prioritization Category	# of Catch Basins
1	Full	31
2	50% to 100% Full	138
3	Remaining Catch Basins on Priority Streets	55

5.3 Next Steps

Based on the above, it is recommended that the Town work to complete the items outlined below:

- The 31 catch basins that were completely full (**Table 3**) should be inspected quarterly to ensure they are functioning properly. Basins should be cleaned if needed to prevent flooding.
- The remaining 138 of 169 catch basins that were more than 50% full (**Appendix F**) should be inspected in the spring after winter operations and again in the early fall to ensure they are functioning properly. Basins should be cleaned if needed to prevent flooding.
- The remaining 55 catch basins on the priority streets (Bacon Street, E Gardener Road, Mossman Road, N Common Road, Sargent Road, and Town Farm Road) listed in **Appendix H** should be cleaned more frequently and/or these streets should be swept more frequently if feasible.
- The 9 catch basins with damage (**Table 2**) should be repaired by the Town to ensure they are, and will continue, functioning properly. In particularly, basins ES 1.17 and CS 2.1 should be addressed due to evidence of advanced deterioration.
- The 23 catch basins that exhibited minor evidence of illicit discharge (**Appendix E**) should be prioritized for further investigation and monitored during future years.
- The annual catch basin cleaning program should continue being implemented through 2022, prioritizing catch basins with sumps more than 50% full during consecutive inspections. As required in the MS4 permit, the contributing drainage area of catch basins that are more than 50% full during two consecutive routine inspections/ cleaning events must be investigated for sources of excessive sediment loading. To the extent practicable, contributing sources must be abated. It is recommended that the Town complete this work in conjunction with other field exercises, including mapping pipe connectivity and completing catchment investigation, by the end of Year 10 (June 2028).

Appendix A

Map of Drainage Infrastructure

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BARREL ROAD
Whitmanville Reservoir
Muddy Pond
BEAN PORRIDGE HILL ROAD
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
EAST GARDNER ROAD
CHAPEL STREET
OVERLOOK ROAD
Crocker Pond
COLONY ROAD
ROUTE 2
TECHNOLOGY DRIVE
SIMPLEX DRIVE
NORTH COMMON ROAD
TOWN FARM ROAD
BARTHERICK ROAD
DEPOT ROAD
Snows Millpond
Greenwood Pond
STATE ROAD WEST
WILLARD ROAD
TURNPIKE ROAD
Round Meadow Pond
ELLIS ROAD
HAGER PARK ROAD
Sawmill Pond
NOTOWN ROAD
FITCHBURG ROAD
Minott Pond
Partridge Pond
Meetinghouse Pond
Wyman Pond
Cedar Swamp
MINOTT ROAD
KNOWER ROAD
SPRUCE ROAD
SOUTH STREET
HONEY BEE LANE
WORCESTER ROAD
EAST ROAD
Crocker Pond
Mare Meadow Reservoir
DAVIS ROAD
Noyes Pond
WEST PRINCETON ROAD
BOLTON ROAD
MILE HILL ROAD
LANES ROAD

Legend

- Outfalls 2021
- Catch Basin
- Drop Inlet
- Manhole
- Overflow
- Swale
- Culvert
- BMPs
- Drain Pipes
- Interconnection
- State or Private Outfalls
- State Owned Catch Basin
- State Owned Manhole
- State Owned Swale
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

0 1
Miles

Stormwater Infrastructure Map

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

11/19/2021

Appendix B

Standard Operating Procedures for Catch Basin Cleaning and Inspection

MI-2, Catch Basin Cleaning & Inspection

Catch basin cleaning (CBC) is performed to remove sediments from structures before it is washed into waterways. The Town has 496 catch basins to clean and maintain. For additional information, see the Town's Catch Basin Cleaning Optimization Plan.

Schedule

The Town cleans each catch basin on a yearly basis. The Town hires an outside contractor to complete the cleaning of all catch basins each year. The cleanings take approximately two weeks to complete and a condition assessment of the catch basins is completed every year.

Procedures and Practices

1. If possible, notify residents and businesses of catch basin cleaning schedule to restrict parking that could obstruct catch basin cleaning operations.
2. Work upstream to downstream when cleaning catch basins within a drainage network.
3. Clean sediment and trash off grate before removing grate.
4. Inspect the outside of the grate and inside of the catch basin to determine cleaning needs and for structural integrity.
5. Either manually use a shovel to remove accumulated sediments, use a bucket loader to remove accumulated sediments, or use a high pressure washer to clean any remaining material out of the catch basin while capturing the slurry with a vacuum.
6. If necessary, after the catch basin is cleaned, use the rodder of a vacuum truck to clean downstream pipe and pull back sediment that might have entered downstream pipe.
7. After cleaning is finished, properly dispose of collected sediments (see below).
8. Collect and dispose of fluids during catch basin cleaning. Do not discharge fluids to a wetland or waterway.
9. If any suspected illicit discharges are observed or suspected, notify your supervisor.
10. At the end of each day, document location and number of catch basins cleaned, amount of waste collected, and disposal method for all screenings.

Storage and Disposal

Storage

- Store separately from street sweeping materials.
- Store materials on an impermeable surface away from areas that receive stormwater runoff.
- Cover piles with tarps to prevent rainwater from generating contaminated stormwater.
- Any Town employee handling the street sweepings should wear appropriate personal protective equipment, such as a dust mask, safety goggles, long-sleeved shirts and long pants at all times.

Disposal

Catch basin cleanings must be disposed of at landfills as daily cover. Sampling of the catch basin cleaning materials is not required unless there is evidence that cleanings were contaminated by a spill or other means. No reuse is allowed without first obtaining a Beneficial Use Determination (BUD) from MassDEP. The materials are disposed of at the Fitchburg Landfill.

Inspection and Maintenance

- Clean catch basins to maintain sediment levels in sumps at less than 50% full.
- If catch basins are more than 50% full for two consecutive cleaning events, catch basins should either be cleaned more often or the contributing area should be investigated for sediment sources.
- Inspect catch basins for structural integrity and evidence of illicit discharges during cleaning.
- Inspect tarp to ensure pile is covered and no tears.
- Immediately abate any nuisance conditions (i.e., noise, dust, odor).
- Train employees on proper CBC procedures.

Recordkeeping and Reporting

- Use attached Catch Basin Inspection Form when inspecting catch basins. Town employees should record:
    - Number of catch basins inspected.
    - Number of catch basins cleaned.
    - Log of catch basins cleaned or inspected.
    - Tons or cubic yards of catch basin cleaning materials generated.
- Use attached Catch Basin Maintenance/Repair Log to document CBC activities.

Catch Basin Inspection Procedures

Option 1: Inspection during Cleaning

1. Clean sediment and trash off of grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
    - **Before cleaning**:
        - Do a visual inspection of outside of grate.
        - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
        - Measure depth from rim of catch basin to top of sediment.
        - Measure depth from rim of catch basin to the top of the outlet pipe.
        - Take photo of catch basin.
    - **Clean catch basin**:
        - For manual removal, place removed material in a location protected from potential runoff and place cleanings in a vehicle for transport to designated disposal area.
        - OR use a high-powered vac truck to remove sediment.
    - **After cleaning**:
        - Measure depth from rim to bottom of catch basin.
        - Measure depth of sum (outlet pipe to bottom of catch basin).
        - Note if the catch basin is more than 50% full with sediment.
        - Note if the catch basin requires maintenance or it there are pollutants present.
        - Take photo of catch basin.
4. If any illicit discharges are observed or suspected, notify supervisor.

Option 2: Interim Inspection between Cleaning Cycles

1. Clean sediment and trash off grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
    - Do a visual inspection of outside of grate.
    - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
    - Measure depth from rim of catch basin to top of sediment.
    - Using sump depth collected during previous cleaning, note if the catch basin is more than 50% full with sediment.
    - Note if the catch basin requires maintenance or if there are pollutants present.
4. If any illicit discharges are observed or suspected, notify supervisor.

Catch Basin Inspection Form

Inspection Information			
Catch Basin ID			
Street Location		GPS Location	
Inspector's Name			
Date of Inspection		Time of Inspection	
Weather (circle)	Dry Light Rain Heavy Rain Snow		

Catch Basin Information

Location	**Surface Type**	**Grate**
☐ Road/Curb ☐ Alley ☐ Ditch ☐ Parking Lot ☐ Driveway ☐ Sidewalk Other:_____	☐ Asphalt ☐ Gravel ☐ Concrete ☐ Grass/Dirt Other:_____	____inches x ____ inches Material: _____ Shape:

Catch Basin Condition

CB Damage: No Yes	Comment:

	Materials (circle)					**Condition (circle)**			
Grate	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Frame	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Chimney	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Walls	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Trap/Hood	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Sump	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent

Sediment Depth and IDDE (inches)

A. Depth from Rim to Top of Sediment: _____ B. Depth from Rim to Bottom of Basin (after vac): _____ C. Sump Depth: _____ D. Depth of Sediment (B-A): _____ E. More than 50% Full of Sediment? (D/C): _____ **CB Cleaned?** No Yes **Suspected illicit discharge?** No Yes	Check those Present: __Sanitary Waste/Smell __Excessive Sediment __Oil Sheen __Floatables/Trash __Pet Waste: Other:_____ Potential Source: _____

Catch Basin Maintenance/Repair Log

Structure ID	Location (Street Name, Approximate Address)	Inspection Date	Problem(s) Identified, Comments	Date of Maint/Repair	Type of Maintenance/Repair, Comments

Appendix C

Maps of Catch Basins > 50% Full

GARDNER

BSR 3.7
BSR 2.1
BSR 3.2
COLONY ROAD
WEST MAIN STREET
SGT 1.2
SARGENT ROAD
SGT 1.1
SIM
ROUTE 2
RAMP-RT 140 TO RT 2 WB
SD 1.2
SUNSET ROAD
SD 1.4
SD 1.3
SD 1.1
CL 1.7
CL 1.8
CL 1.9
CL 1.6
SHADY AVENUE
Greenwood Pond
Tophet Swamp
STATE ROAD WEST
LIVERMORE HILL ROAD
RIDGE STREET
RS-730-1
RS-730-2
RS 4.1
OLD COUNTY ROAD
Wrights Reservoir
ELLIS ROAD
WHITNEY STREET
WHI 1.1
MINOTT ROAD
Minott Pond
KURIKKA PLACE
PARTRIDGE HILL ROAD
LAKE DRIVE WEST
LAKE DRIVE EAST
BOURGEOIS TERRACE
Cedar Swamp

Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W
E
S

Sheet: A1

0 1,000
Feet

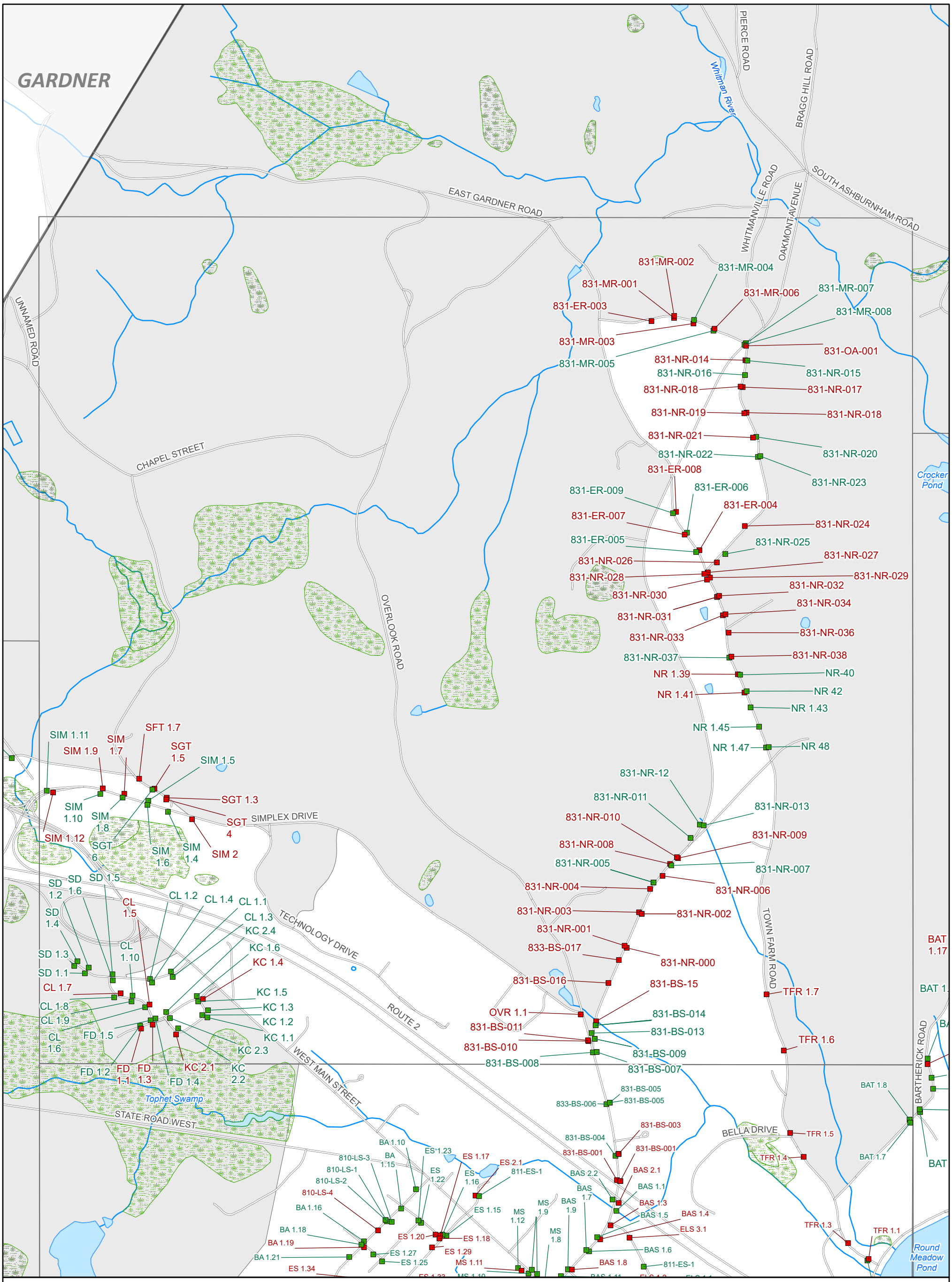
Full Catch Basins in 2021

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: A2

0 1,000 Feet

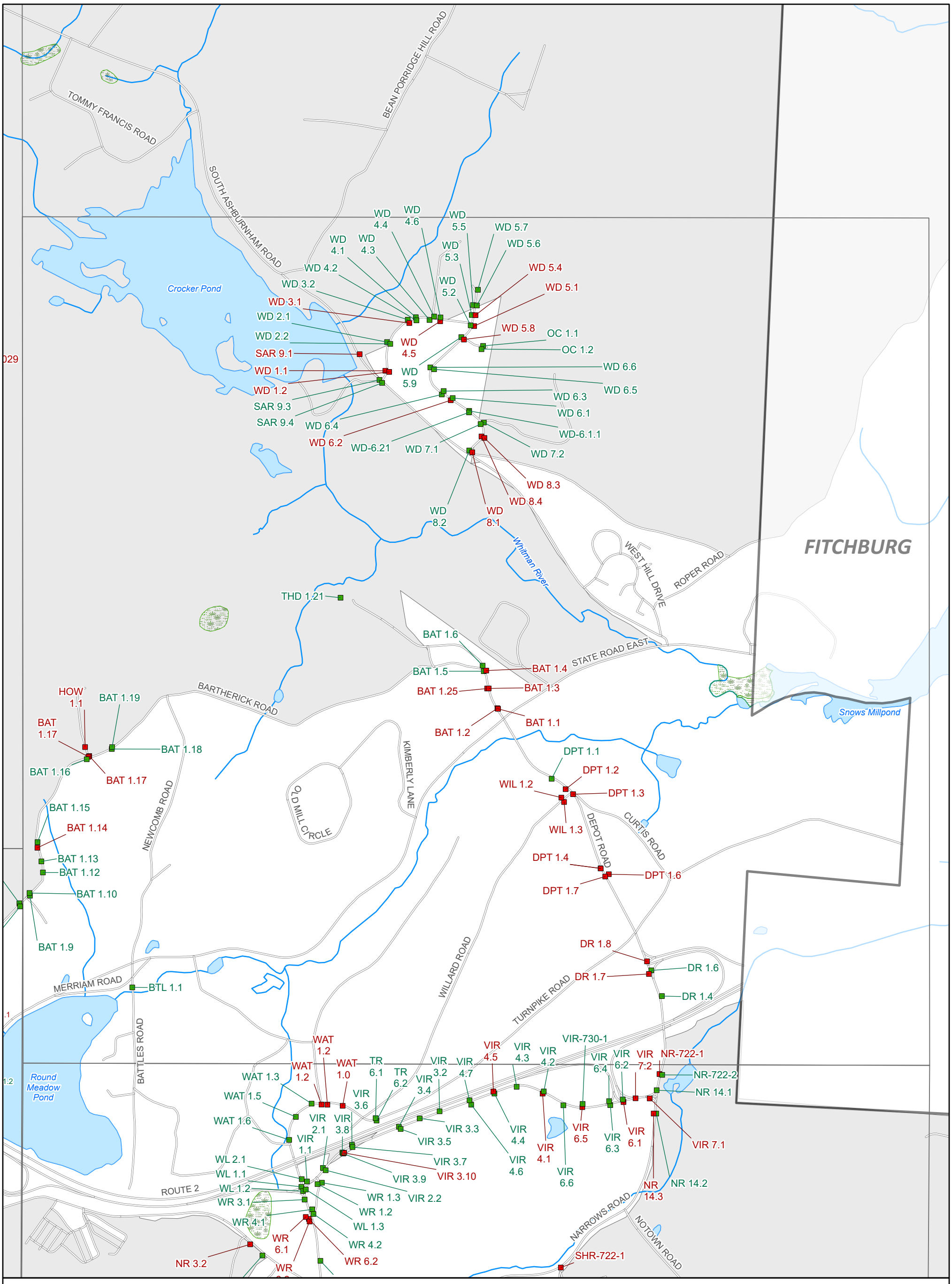
Full Catch Basins in 2021

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: A3

0 1,000 Feet

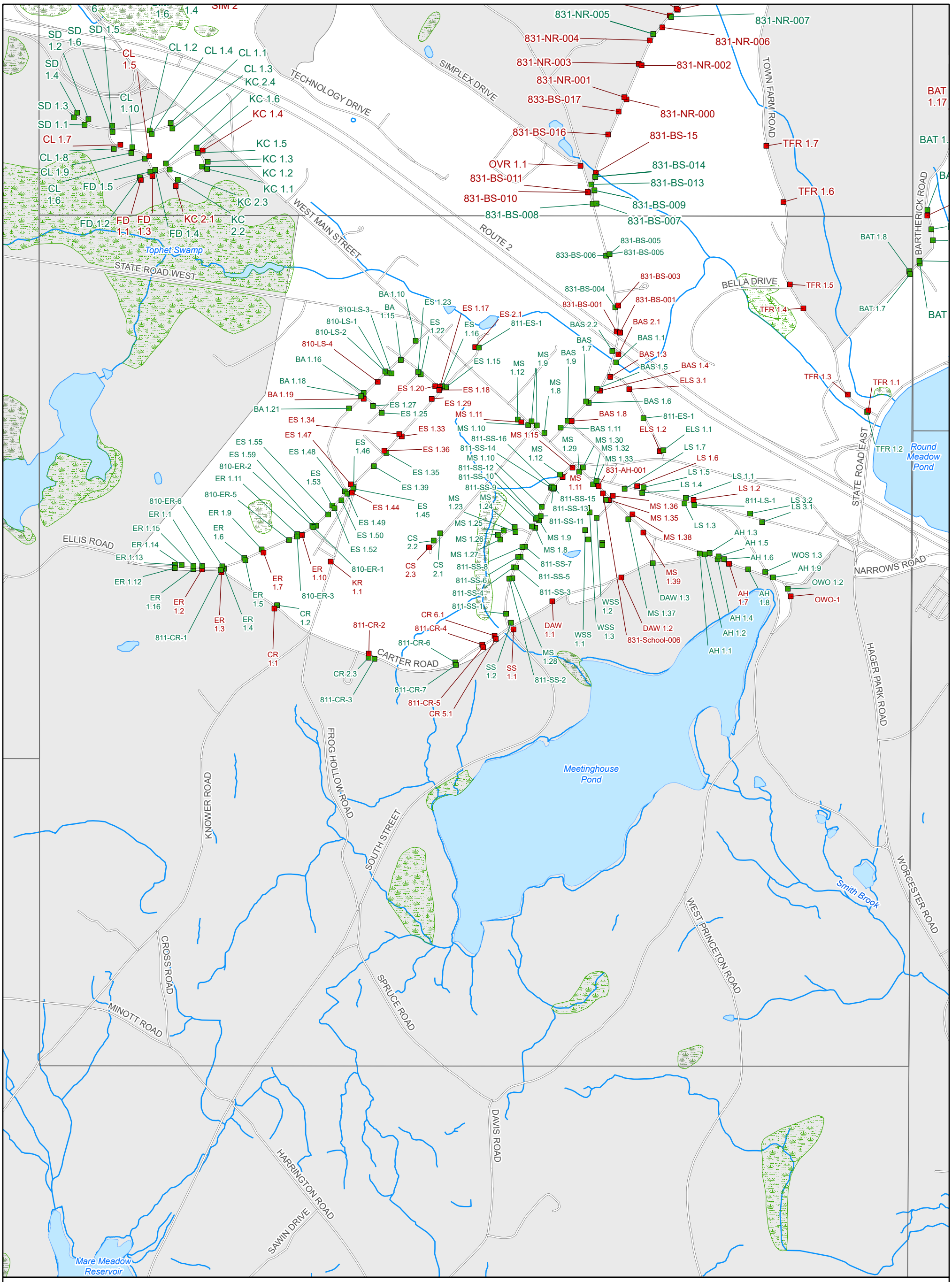
Full Catch Basins in 2021

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: B2

0 1,000

Feet

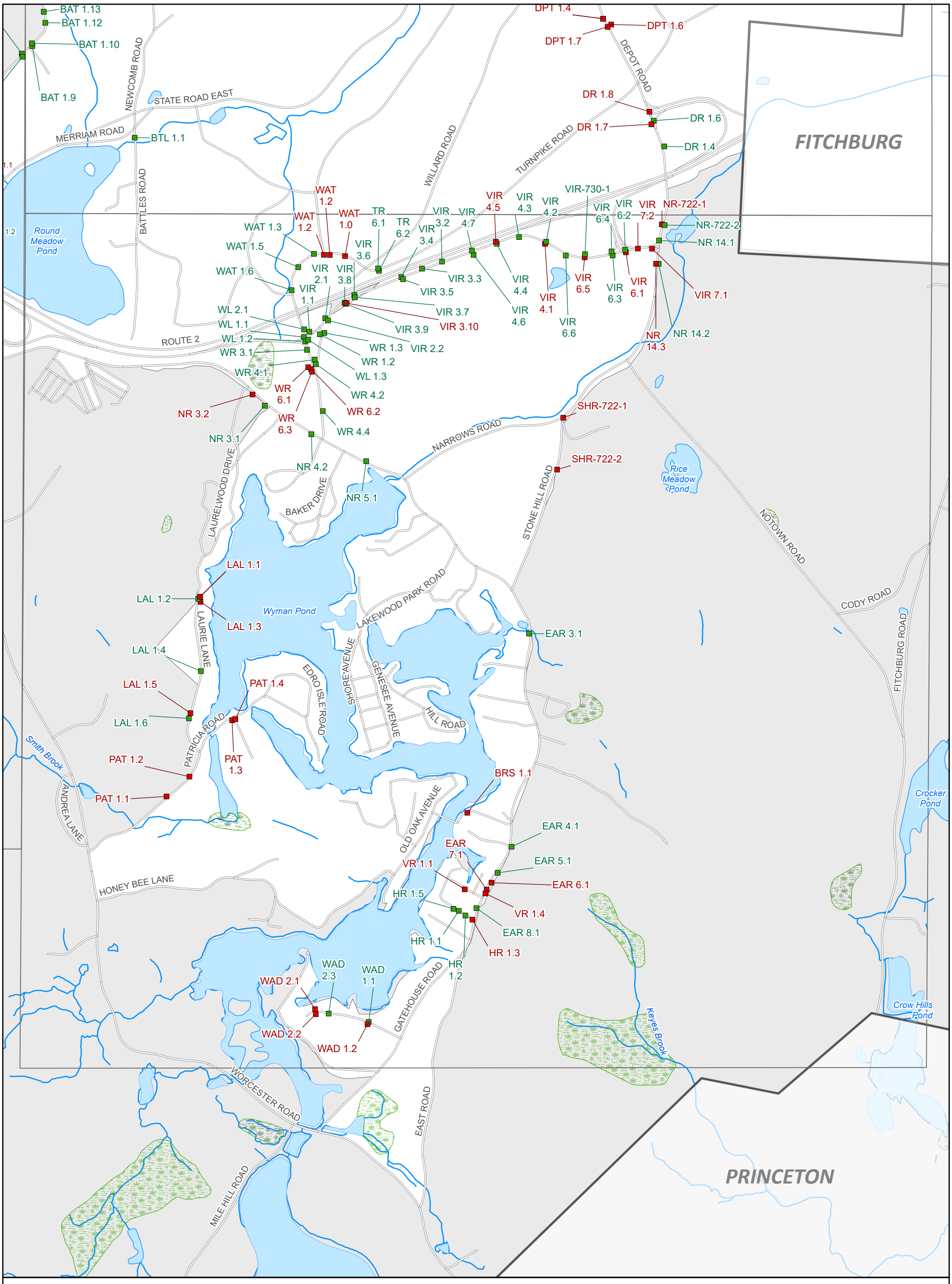
Full Catch Basins in 2021

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: B3

0 1,000 Feet

Full Catch Basins in 2021

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022

Appendix D

2021 Catch Basin Inspection Results

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE											
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	Other Comments
810-ER-1	Found	Ellis Rd	10/29/2021	9:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	87	90.5	58.5	3.5	32	10.94	No	None	N/A		
810-ER-2	Found	Ellis Rd	10/29/2021	9:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	83	87	59	4	28	14.29	No	None	N/A		
810-ER-3	Found	Ellis Rd	10/29/2021	9:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	80	80	58	0	22	0.00	No	None	N/A		
810-ER-4	Found	Ellis Rd	8/10/2021	12:01	Dry	Other	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete		Fair	Fair	Fair	Fair	N/A		No	26										Catch basin not cleaned
810-ER-5	Found	Ellis Rd	10/29/2021	9:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Fair	Yes	82	86.5	66.5	4.5	20	22.50	No	None	N/A		
810-ER-6	Found	Ellis Rd	10/29/2021	10:11	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Fair	Yes	64	71	48.5	7	22.5	31.11	No	Floatables - Suds, Odor - Sewage	Unlikely		There is a golf course next to this catch basin
810-LS-1	Found	Lovell Street	10/22/2021	13:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	57	57	50	0	7	0.00	No	None	N/A		Block
810-LS-2	Found	Lovell St	10/22/2021	13:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	N/A	Excellent	Excellent	Good	Excellent	N/A	Good	Yes	66	68	50	2	18	11.11	No	None	N/A		Block
810-LS-3	Found	Lovell St	10/22/2021	13:25	Dry	Other	Grass/Dirt	2x2	Round	Leaching	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	N/A	Excellent	Excellent	Excellent	Excellent	N/A	Excellent	No	43	45		2					N/A		Leaching catch basin not cleaned
810-LS-4	Found	Lovell St	10/22/2021	13:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	68	71	65	3	6	50.00	Yes	None	N/A		Block
810-OA-1	Found	Oakmont Ave	8/10/2021	13:46	Dry	Road/Curb	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	N/A	Concrete	N/A		Fair	Fair	N/A	Fair	N/A		No	56										Catch basin not cleaned
811-CR-1	Found	Carter Rd	10/29/2021	10:11	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	62	66	48	4	18	22.22	No	None	N/A		
811-CR-2	Found	Carter Rd	10/29/2021	10:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	35	50	36	15	14	100.00	Yes	None	N/A		
811-CR-3	Found	Carter Rd	10/29/2021	10:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	61	65	33.5	4	31.5	12.70	No	None	N/A		
811-CR-4	Found	Carter Rd	10/29/2021	10:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	31	55	32	24	23	100.00	Yes	None	N/A		
811-CR-5	Found	Carter Rd	10/29/2021	10:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Fair	Yes	41	56	42.5	15	13.5	100.00	Yes	None	N/A		Block
811-CR-6	Found	Carter Rd	10/29/2021	10:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	57	62	40	5	22	22.73	No	None	N/A		
811-CR-7	Found	Carter Rd	11/11/2021	10:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	56	57	43	1	14	7.14	No	None	N/A		
811-ES-1	Found	Eaton St	10/29/2021	9:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Fair	Yes	47	50	31	3	19	15.79	No	None	N/A		
811-ES-1	Found	Elliott St	10/29/2021	13:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	51	51	46	0	5	0.00	No	None	N/A		
811-LS-1	Found	Leominster St	11/2/2021	13:51	Dry	Road/Curb	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	No	37	37	29	0	8			None	N/A		
811-SS-1	Found	South St	10/29/2021	11:11	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	86	97	57	11	40	27.50	No	None	N/A		
811-SS-10	Found	South St	10/29/2021	12:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Good	Fair	Good	Yes	92	97	50	5	47	10.64	No	None	N/A		
811-SS-11	Found	South St	10/29/2021	12:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	90	93.5	49	3.5	44.5	7.87	No	None	N/A		
811-SS-12	Found	South St	10/29/2021	12:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	87	90	50	3	40	7.50	No	None	N/A		
811-SS-13	Found	South St	10/29/2021	12:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	88	90.5	49	2.5	41.5	6.02	No	None	N/A		
811-SS-14	Found	South St	10/29/2021	12:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	99	100	50	1	50	2.00	No	None	N/A		
811-SS-15	Found	South St	10/29/2021	12:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	89	92.5	48	3.5	44.5	7.87	No	None	N/A		
811-SS-16	Found	South St	10/29/2021	12:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	102	104	58	2	46	4.35	No	None	N/A		
811-SS-2	Found	South St	10/29/2021	11:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Fair	Good	Good	N/A	Yes	82	90	57	8	33	24.24	No	None	N/A		
811-SS-3	Found	South St	10/29/2021	11:18	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Fair	Yes	72	82	51	10	31	32.26	No	None	N/A		
811-SS-4	Found	South St	10/29/2021	11:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	91	96	50	5	46	10.87	No	None	N/A		
811-SS-5	Found	South St	10/29/2021	11:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Fair	Yes	80	96	58	16	38	42.11	No	None	N/A		
811-SS-6	Found	South St	10/29/2021	11:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Fair	Good	Yes	84	90	56	6	34	17.65	No	None	N/A		
811-SS-7	Found	South St	10/29/2021	11:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	78	87	59	9	28	32.14	No	None	Unlikely		
811-SS-8	Found	South St	10/29/2021	11:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	Yes	91	99	60	8	39	20.51	No	None	N/A		
811-SS-9	Found	South St	10/29/2021	12:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Good	Good	Good	Yes	94	105	52	11	53	20.75	No	None	N/A		
831-AH-001	Found	Academy Hill Rd	11/2/2021	14:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	61	88	58	27	30	90.00	Yes	None	N/A		
831-BS-001	Found	Bacon St	10/20/2021	11:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	64	71	58	7	13	53.85	Yes	None	N/A		
831-BS-002	Found	Bacon St	10/20/2021	11:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	55	65	46	10	19	52.63	Yes	None	N/A		
831-BS-003	Found	Bacon St	10/20/2021	11:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	59	74	56	15	18	83.33	Yes	None	N/A		
831-BS-004	Found	Bacon St	10/20/2021	11:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	80	80	62	0	18	0.00	No	None	N/A		
831-BS-005	Found	Bacon St	10/20/2021	11:34	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	63	73	37	10	36	27.78	No	None	N/A		
831-BS-007	Found	Bacon St	10/20/2021	11:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	59	66	47	7	19	36.84	No	None	N/A		
831-BS-008	Found	Bacon St	10/20/2021	11:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	55	65	44	10	21	47.62	No	None	N/A		
831-BS-009	Found	Bacon St	10/20/2021	11:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Fair	Fair	N/A		Yes	78	83	58	5	25	20.00	No	None	N/A		
831-BS-010	Found	Bacon St	10/20/2021	11:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Poor	Poor	N/A		Yes	52	67	53	15	14	100.00	Yes	None	N/A		
831-BS-011	Found	Bacon St	10/20/2021	11:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	60	65	57	5	8	62.50	Yes	None	N/A		
831-BS-012	Found	Bacon St	8/31/2021	10:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	62										Catch basin not cleaned by contractor
831-BS-013	Found	Bacon St	10/20/2021	11:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	70	78	51	8	27	29.63	No	None	N/A		
831-BS-014	Found	Bacon St	10/20/2021	11:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	72	77	58	5	19	26.32	No	None	N/A		
831-BS-016	Found	Bacon St	10/20/2021	11:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	68	78	58	10	20	50.00	Yes	None	N/A		
831-BS-15	Found	Bacon St	10/20/2021	11:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	55	64	47	9	17	52.94	Yes	None	N/A		
831-ER-001	Found	E Gardener Rd	8/31/2021	12:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	46										CB not cleaned by contractor
831-ER-002	Found	E Gardener Rd	8/31/2021	12:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	51										CB not cleaned by contractor
831-ER-003	Found	E Gardener Rd	10/19/2021	13:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	48	57	45	9	12	75.00	Yes	None	N/A		
831-ER-004	Found	E Gardener Rd	10/20/2021	9:33	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	49	62	42	13	20	65.00	Yes	None	N/A		
831-ER-005	Found	E Gardener Rd	10/20/2021	9:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	47	56	34	9	22	40.91	No	None	N/A		
831-ER-006	Found	E Gardener Rd	10/20/2021	9:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Pipe end damaged	Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	52	65	38	13	27	48.15	No	None	N/A		
831-ER-007	Found	E Gardener Rd	10/20/2021	9:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	52	69	54	17	15	100.00	Yes	None	N/A		
831-ER-008	Found	E Gardener Rd	10/20/2021	9:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	57	71	49	14	22	63.64	Yes	Floatables - Suds	Unlikely	Some suds on water surface, could be from organic matter	
831-ER-009	Found	E Gardener Rd	10/20/2021	9:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Good	N/A	Good	Yes	64	67	35	3	32	9.38	No	None	N/A		
831-MR-001	Found	Mossman Rd	10/19/2021	13:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	60	68	57	8	11	72.73	Yes	None	N/A		
831-MR-002	Found	Mossman Rd	10/19/2021	13:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	48	58	42	10	16	62.50	Yes	None	N/A		
831-MR-003	Found	Mossman Rd	10/19/2021	13:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	55	60	50	5	10	50.00	Yes	None	N/A		
831-MR-004	Found	Mossman Rd	10/19/2021	13:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	51	59	42	8	17	47.06	No	None	N/A		
831-MR-005	Found	Mossman Rd	10/19/2021	13:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	57	60	49	3	11	27.27	No	None	N/A		
831-MR-006	Found	Mossman Rd	10/19/2021	13:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Concrete	Concrete	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	45	61	45	16	16	100.00	Yes	None	N/A		
831-MR-007	Found	Mossman Rd	10/19/2021	13:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	73	73	57	0	16	0.00	No	None	N/A		
831-MR-008	Found	Mossman Rd	10/19/2021	13:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	54	62	43	8	19	42.11	No	None	N/A		
831-NR-000	Found	N Common Rd	10/20/2021	10:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	57	60	55	3	5	60.00	Yes	None	N/A		
831-NR-001	Found	N Common Rd	10/20/2021	10:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	58	68	50	10	18	55.56	Yes	None	N/A		
831-NR-002	Found	N Common Rd	10/20/2021	10:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	75	90	67	15	23	65.22	Yes	Odor - Other	Unlikely		
831-NR-003	Found	N Common Rd	10/20/2021	10:53	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Fair	Fair	Fair	N/A	Fair	Yes	52	62	49	10	13	76.92	Yes	None	N/A		
831-NR-004	Found	N Common Rd	10/20/2021	10:51	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	42	57	39	15	18	83.33	Yes	None	N/A		
831-NR-005	Found	N Common Rd	10/20/2021	10:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	54	61	41	7	20	35.00	No	None	N/A		
831-NR-006	Found	N Common Rd	10/20/2021	10:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	48	60	41	12	19	63.16	Yes	None	N/A		
831-NR-007	Found	N Common Rd	10/20/2021	10:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Pipe end completely rusted away	Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A		Yes	60	65	41	5	24	20.83	No	None	N/A		
831-NR-008	Found	N Common Rd	10/20/2021	10:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	51	58	48	7	10	70.00	Yes	None	N/A		Outlet pipe corroded on bottom
831-NR-009	Found	N Common Rd	10/20/2021	10:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	46	60	34	14	26	53.85	Yes	None	N/A		
831-NR-010	Found	N Common Rd	10/20/2021	10:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	42	65	48	23	17	100.00	Yes	None	N/A		
831-NR-011	Found	N Common Rd	10/20/2021	10:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	N/A	Fair	Yes	67	71	50	4	21	19.05	No	None	N/A		
831-NR-013	Found	N Common Rd	10/20/2021	10:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	N/A	Good	Good	Good	Good	N/A	N/A	Yes	46	59	30	13	29	44.83	No	None	N/A		
831-NR-014	Found	N Common Rd	10/19/2021	13:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	67	79	55	12	24	50.00	Yes	None	N/A		
831-NR-015	Found	N Common Rd	10/19/2021	13:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	57	68	45	11	23	47.83	No	None	N/A		
831-NR-016	Found	N Common Rd	10/19/2021	13:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	58	65	48	7	17	41.18	No	None	N/A		
831-NR-017	Found	N Common Rd	10/19/2021	13:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Fair	Yes	59	64	55	5	9	55.56	Yes	None	N/A		
831-NR-018	Found	N Common Rd	10/19/2021	13:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Fair	Fair	Good	Good	Good	Fair	Yes	60	72	57	12	15	80.00	Yes	None	N/A		
831-NR-018	Found	N Common Rd	10/19/2021	13:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	93	93	53	0	40	0.00	No	None	N/A		
831-NR-019	Found	N Common Rd	10/19/2021	13:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Fair	Fair	Poor	Fair	Yes	62	69	62	7	7	100.00	Yes	None	N/A		Hood missing cover
831-NR-020	Found	N Common Rd	10/19/2021	14:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Fair	Fair	Fair	Fair	Poor	Fair	Yes	87	99	56	12	43	27.91	No	None	N/A		
831-NR-021	Found	N Common Rd	10/19/2021	14:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Fair	Good	Good	Fair	Yes	56	64	60	8	4	100.00	Yes	None	N/A		
831-NR-022	Found	N Common Rd	10/19/2021	14:05	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	70	81	48	11	33	33.33	No	None	N/A		
831-NR-023	Found	N Common Rd	10/19/2021	14:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Fair	Fair	Fair	Fair	Fair	Fair	Yes	62	67	47	5	20	25.00	No	None	N/A		
831-NR-024	Found	N Common Rd	10/19/2021	14:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	40	50	38	10	12	83.33	Yes	None	N/A		
831-NR-025	Found	N Common Rd	10/19/2021	14:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	51	58	39	7	19	36.84	No	None	N/A		Invert depth taken at water line, can’t see pipe.
831-NR-026	Found	N Common Rd	10/19/2021	14:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	48	60	40	12	20	60.00	Yes	None	N/A		
831-NR-027	Found	N Common Rd	10/20/2021	9:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Pipe end damaged	Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	28	49	28	21	21	100.00	Yes		N/A		Lots of leaves
831-NR-028	Found	N Common Rd	10/20/2021	9:36	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	48	59	43	11	16	68.75	Yes	None	N/A		
831-NR-029	Found	N Common Rd	10/20/2021	9:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	46	59	41	13	18	72.22	Yes	None	N/A		
831-NR-030	Found	N Common Rd	10/20/2021	9:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	50	65	50	15	15	100.00	Yes	None	N/A		
831-NR-031	Found	N Common Rd	10/20/2021	9:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	41	60	36	19	24	79.17	Yes	None	N/A		
831-NR-032	Found	N Common Rd	10/20/2021	9:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	41	58	36	17	22	77.27	Yes	None	N/A		
831-NR-033	Found	N Common Rd	10/20/2021	9:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	33	48	32	15	16	93.75	Yes	None	N/A		
831-NR-034	Found	N Common Rd	10/20/2021	9:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A		Yes	34	52	34	18	18	100.00	Yes	None	N/A		
831-NR-035	Found	N Common Rd	8/31/2021	14:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	35										CB not cleaned by contractor
831-NR-036	Found	N Common Rd	10/20/2021	9:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	39	54	33	15	21	71.43	Yes	None	N/A		
831-NR-037	Found	N Common Rd	10/20/2021	10:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	41	45	35	4	10	40.00	No	None	N/A		
831-NR-038	Found	N Common Rd	10/20/2021	10:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A		Yes	48	64	42	16	22	72.73	Yes	None	N/A		
831-NR-12	Found	N Common Rd	10/20/2021	10:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	49	59	38	10	21	47.62	No	None	N/A		
831-OA-001	Found	Oakmont Ave	10/19/2021	13:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	55	64	46	9	18	50.00	Yes	None	N/A		
831-School-001	Found	Academy Hill Rd	11/2/2021	14:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	113	116	77	3	39	7.69	No	None	Unlikely		
831-School-002	Found	Academy Hill Rd	11/2/2021	15:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	94	107	61	13	46	28.26	No	None	Unlikely		
831-School-003	Found	Academy Hill Rd	11/2/2021	15:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	Yes	83	94	36	11	58	18.97	No	None	Unlikely		
831-School-004	Found	Academy Hill Rd	11/2/2021	15:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	81	94	37	13	57	22.81	No	Odor - Sewage	Unlikely		Faint sewage smell
831-School-005	Found	Academy Hill Rd	11/2/2021	14:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good	N/A	Good	Yes	92	98	45	6	53	11.32	No	None	Unlikely		
831-School-006	Found	Academy Hill Rd	11/2/2021	14:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	54	98	50	44	48	91.67	Yes	None	Unlikely		
833-BS-006	Found	Bacon St	10/20/2021	11:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	69	72	62	3	10	30.00	No	None	N/A		
833-BS-017	Found	Bacon St	10/20/2021	11:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	58	78	51	20	27	74.07	Yes	None	N/A		
AH 1.1	Found	Academy Hill Rd	11/2/2021	12:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	52	59	41	7	18	38.89	No	None	Unlikely		
AH 1.10	Found	Academy Hill Rd	9/15/2021	11:29	Dry	Road/Curb	Asphalt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	46							None	N/A		
AH 1.2	Found	Academy Hill Rd	11/2/2021	12:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	61	64	47	3	17	17.65	No	Floatables - Suds	Unlikely		
AH 1.3	Found	Academy Hill Rd	11/2/2021	12:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good		Good	Yes	67	69	48	2	21	9.52	No	None	Unlikely		
AH 1.4	Found	Academy Hill Rd	11/2/2021	12:56	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	46.5	50	34	3.5	16	21.88	No	None	Unlikely		
AH 1.5	Found	Academy Hill Rd	11/2/2021	12:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	73	82	49	9	33	27.27	No	None	Unlikely		
AH 1.6	Found	Academy Hill Rd	11/2/2021	13:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	53	61	42	8	19	42.11	No	None	Unlikely		
AH 1.7	Found	Academy Hill Rd	11/2/2021	13:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	54	65	47	11	18	61.11	Yes	None	Unlikely		
AH 1.8	Found	Academy Hill Rd	11/2/2021	13:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good		Good	Yes	56	59	42	3	17	17.65	No	None	Unlikely		
AH 1.9	Found	Academy Hill Rd	11/2/2021	13:13	Dry	Road/Curb	Asphalt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes		53	38		15		Unknown	None	Unlikely		

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE											
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	Other Comments
BA 1.10	Found	Lovell St	10/22/2021	13:54	Dry	Other	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Good	Good	N/A		No	45	45	31	0	14			None	N/A		May not see actual outlet
BA 1.14	Not Found	Lovell St	8/10/2021	10:51	Dry																															
BA 1.15	Found	Lovell St	10/22/2021	13:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular			Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	53	62	41	9	21	42.86	No	None	Unlikely		Block
BA 1.16	Found	Lovell St	10/22/2021	13:13	Dry	Road/Curb	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Good	Excellent	N/A		Yes	49	52		3			Unknown	None	N/A		Potential leaching basin
BA 1.17	Not Found	Lovell St	8/10/2021	11:10																																
BA 1.18	Found	Lovell St	10/22/2021	13:08	Dry	Road/Curb	Asphalt	2x2	Square	Square	No		Cast Iron	N/A	Concrete	Concrete	N/A		Good	N/A	Fair	Fair	N/A		Yes	39	40	40	1	0	0.00	No	None	N/A		No frame
BA 1.19	Found	Lovell St	10/22/2021	13:10	Dry	Road/Curb	Asphalt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	40	48	39	8	9	88.89	Yes	None	Unlikely		Block
BA 1.21	Found	Lovell St	10/22/2021	12:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	N/A		Good	Good		Good	N/A		Yes	55	56	49	1	7	14.29	No	None	N/A		
BAS 1.1	Found	Bacon St	10/20/2021	11:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	78	83	58	5	25	20.00	No	None	N/A		
BAS 1.10	Could Not Access	Bacon St	8/11/2021	11:12	Dry	Road/Curb	Asphalt	2x2																												Car parked over
BAS 1.11	Found	Bacon St	10/29/2021	12:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Good	N/A	Fair	Yes	64	68	55	4	13	30.77	No	None	N/A		
BAS 1.2	Found	Bacon St	8/11/2021	11:28	Dry	Road/Curb	Asphalt	2x2	Square	Square	No		Cast Iron	Cast Iron		Concrete			Fair	Fair		Fair			No	30										On second visit, full of sediment very compacted, had orange dot to indicate it was cleaned but had more sediment in it than last time
BAS 1.3	Found	Bacon St	10/29/2021	13:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	63	71	55	8	16	50.00	Yes	None	Unlikely		
BAS 1.4	Found	Bacon St	10/29/2021	13:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	44	53.5	35.5	9.5	18	52.78	Yes	None	Unlikely		
BAS 1.5	Found	Bacon St	10/29/2021	13:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Good	Poor	N/A	Poor	Yes	20	28		8			Unknown	None	N/A		Uneven asphalt bottom at 28”. Can’t see any outlets
BAS 1.6	Found	Bacon St	10/29/2021	13:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	42	50	31	8	19	42.11	No	None	Unlikely		
BAS 1.7	Found	Bacon St	10/29/2021	13:00	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron					Fair	Fair					No	19	20		1				None	N/A		Marked as clean but only 20” to bottom. Can’t see any outlets
BAS 1.8	Found	Bacon St	10/29/2021	12:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	52	65	44.5	13	20.5	63.41	Yes	None	Unlikely		
BAS 1.9	Found	Bacon St	10/29/2021	12:56	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Concrete	Concrete									No	16	16		0				None	Unlikely		Marked as cleaned with orange dot but doesn't appear to have been.
BAS 2.1	Found	Bacon St	10/20/2021	11:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	64	77	59	13	18	72.22	Yes	None	N/A		
BAS 2.2	Found	Bacon St	10/20/2021	11:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	60	70	47	10	23	43.48	No	None	N/A		
BAT 1.1	Found	Bathrick Rd	10/19/2021	10:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	74	78	72	4	6	66.67	Yes	None	N/A		
BAT 1.10	Found	Bathrick Rd	10/20/2021	14:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Good	Good	N/A	Good	Yes	94	96	54	2	42	4.76	No	None	N/A		
BAT 1.11	Found	Bathrick Rd	9/10/2021	11:56	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	46		44					Odor - Other	Unlikely	Perfumed laundry smell	CB not cleaned by contractors
BAT 1.12	Found	Bathrick Rd	10/20/2021	14:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Good	Good	N/A		Yes	62	64	46	2	18	11.11	No	None	N/A		
BAT 1.13	Found	Bathrick Rd	10/20/2021	14:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes		68	47		21		Unknown	None	N/A		
BAT 1.14	Found	Bathrick Rd	10/20/2021	14:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	54	64	56	10	8	100.00	Yes	None	N/A		
BAT 1.15	Found	Bathrick Rd	10/20/2021	14:11	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Good	Good	N/A	Fair	Yes	57	58	43	1	15	6.67	No	None	N/A		
BAT 1.16	Found	Bathrick Rd	10/20/2021	14:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	N/A	Fair	No	58	65	48	7	17			None	N/A		
BAT 1.17	Found	Bathrick Rd	10/20/2021	14:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	33	54	34	21	20	100.00	Yes	Excessive Sediment	Unlikely		
BAT 1.18	Found	Bathrick Rd	10/20/2021	14:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	N/A	Good	Yes	53	57	36	4	21	19.05	No	None	N/A		
BAT 1.19	Found	Bathrick Rd	10/20/2021	14:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	52	57	44	5	13	38.46	No	None	N/A		
BAT 1.2	Found	Bathrick Rd	10/19/2021	10:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	47	57	40	10	17	58.82	Yes	None	N/A		
BAT 1.25	Found	Bathrick Rd	10/19/2021	10:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	50.5	57	46	6.5	11	59.09	Yes	None	Unlikely		
BAT 1.3	Found	Bathrick Rd	10/19/2021	10:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Good	Good	N/A	Good	Yes	48	58	41	10	17	58.82	Yes	Floatables - Oil Sheen	Unlikely		
BAT 1.4	Found	Bathrick Rd	10/19/2021	10:51	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	58	68	57	10	11	90.91	Yes	None	N/A		
BAT 1.5	Found	Bathrick Rd	10/19/2021	10:51	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	62	67	56	5	11	45.45	No	None	N/A		
BAT 1.6	Found	Bathrick Rd	10/19/2021	10:55	Dry	Road/Curb	Asphalt	2x4	Double Square	6' Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes		64	54		10		Unknown	None	N/A		
BAT 1.7	Found	Bathrick Rd	10/20/2021	14:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	87	87	42	0	45	0.00	No	None	N/A		
BAT 1.8	Found	Bathrick Rd	10/20/2021	14:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Good	Good	N/A	Good	Yes	92	93	42	1	51	1.96	No	None	N/A		
BAT 1.9	Found	Bathrick Rd	10/20/2021	14:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	101	101	52	0	49	0.00	No	None	N/A		
BRS 1.1	Found	Bridge St	10/29/2021	13:39	Dry	Road/Curb	Asphalt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	35	50	31	15	19	78.95	Yes	None	N/A		
BSR 1.1	Found	Betty Spring Rd	7/30/2021	13:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Good	Fair	Good	N/A	Fair	No	69										CB not cleaned by contractor
BSR 2.1	Found	Betty Spring Rd	11/11/2021	9:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	48	73	31	25	42	59.52	Yes	None	N/A		
BSR 3.1	Found	Betty Spring Rd	7/30/2021	12:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Poor	Fair	N/A	Fair	No	72										CB not cleaned by contractor
BSR 3.2	Found	Betty Spring Rd	11/11/2021	9:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	67	76	40	9	36	25.00	No	None	N/A		
BSR 3.3	Not Found	Betty Spring Rd	7/30/2021	12:52	Dry																															
BSR 3.4	Not Found	Betty Spring Rd	7/30/2021	12:52	Dry																															
BSR 3.5	Found	Betty Spring Rd	7/30/2021	12:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Good	Fair	Good	N/A	Good	No	51										CB not cleaned by contractor
BSR 3.6	Not Found	Betty Spring Rd	7/30/2021	12:46	Dry			2x2																												
BSR 3.7	Found	Betty Spring Rd	11/11/2021	9:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	60	75	45	15	30	50.00	Yes	None	N/A		
BTL 1.1	Found	Battles Rd	11/2/2021	15:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	No	55	71	36	16	35			Floatables - Suds	Unlikely		
CB-722-3	Could Not Access	Crestview Ln																																		Vehicle parked on top of CB and not cleaned by contractor. Privately owned.
CL 1.1	Found	Scenic Dr	10/22/2021	10:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Excellent	N/A	Good	Yes	73	77	45	4	32	12.50	No	None	Unlikely		
CL 1.10	Found	Carpenter Ln	10/22/2021	11:14	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Excellent		Excellent	N/A		Yes	72	77	60	5	17	29.41	No	None	N/A		
CL 1.2	Found	Scenic Dr	10/22/2021	10:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	74	78	49	4	29	13.79	No	None	Unlikely		
CL 1.3	Found	Scenic Dr	10/22/2021	10:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Excellent	Good	Excellent	N/A		Yes	72	77	53	5	24	20.83	No	None	N/A		
CL 1.4	Found	Scenic Dr	10/22/2021	10:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Excellent	Excellent	Excellent	N/A		Yes	132	133	72	1	61	1.64	No	None	N/A		
CL 1.5	Found	Carpenter Ln	10/22/2021	11:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	N/A	Concrete	Excellent	Excellent		Excellent	N/A		Yes	63	70	56	7	14	50.00	Yes	None	N/A		
CL 1.6	Found	Carpenter Ln	10/22/2021	11:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Concrete	N/A	Excellent	Good	Good	Good	N/A		Yes	71	79	53	8	26	30.77	No	None	Unlikely		
CL 1.7	Found	Carpenter Ln	10/22/2021	11:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	Concrete	Concrete	Excellent	Excellent		Excellent	N/A		Yes	69	73	66	4	7	57.14	Yes	None	N/A		
CL 1.8	Found	Carpenter Ln	10/22/2021	11:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular			Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	Good		Yes	82	84	65	2	19	10.53	No	None	Unlikely		
CL 1.9	Found	Carpenter Ln	10/22/2021	11:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	173	183	140	10	43	23.26	No		Unlikely		
CR 1.1	Found	Carter Rd	10/29/2021	10:34	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	55	63	47	8	16	50.00	Yes	None	Unlikely		
CR 1.2	Found	Carter Rd	10/29/2021	10:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	53	62	43	9	19	47.37	No	None	N/A		
CR 2.1	Not Found	Carter Rd	8/11/2021	9:25																																
CR 2.2	Not Found	Carter Rd	8/11/2021	9:25	Dry																															
CR 2.3	Found	Carter Rd	10/29/2021	10:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	55	56	38	1	18	5.56	No	None	Unlikely		
CR 3.1	Not Found	Carter Rd	8/11/2021	9:30	Dry																															
CR 4.1	Could Not Access	Carter Rd	8/11/2021	9:32	Dry																															Car parked over
CR 5.1	Found	Carter Rd	11/11/2021	10:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	N/A	Good	Good	Fair	Good	N/A	Fair	Yes	50	68	49	18	19	94.74	Yes	None	N/A		
CR 6.1	Found	Carter Rd	10/29/2021	11:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	40	52	36	12	16	75.00	Yes	None	N/A		
CS 2.1	Found	Church St	10/22/2021	14:39	Dry	Road/Curb	Asphalt	2x2	Round	Circular	Yes	Sinking, undermined. Chimney walls falling in.	Cast Iron	Cast Iron	Brick	Concrete			Good	Poor	Poor	Poor	N/A		Yes	71	71	44	0	27	0.00	No	Other	Unlikely	Irrigation pipe	Stone, collapsing. Pipe runs under barn across street according to neighbor.
CS 2.2	Found	Church St	10/22/2021	14:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good	N/A	N/A	Yes	60	62	44	2	18	11.11	No	None	Unlikely		Block
CS 2.3	Found	Church St	10/22/2021	14:33	Dry	Road/Curb	Asphalt	2x2		Circular			Cast Iron	Cast Iron		Concrete	N/A		Excellent	Excellent		Excellent	N/A		Yes	53	63	45	10	18	55.56	Yes	None	N/A		Leaves, block
CV-722-1	Found	Crestview Ln	7/22/2021	11:05	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	47										CB not cleaned by contractor; Privately owned
CV-722-2	Found	Crestview Ln	7/22/2021	11:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	55										CB not cleaned by contractor; Privately owned
CV-722-4	Found	Crestview Ln	7/22/2021	11:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	68										CB not cleaned by contractor; Privately owned
CV-722-5	Found	Crestview Ln	7/22/2021	11:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	46										CB not cleaned by contractor; Privately owned
DAW 1.1	Found	Dawley Rd	11/2/2021	12:20	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	51	64	40	13	24	54.17	Yes	None	Unlikely		
DAW 1.2	Found	Dawley Rd	11/2/2021	12:24	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	50	65	41	15	24	62.50	Yes	None	Unlikely		
DAW 1.3	Found	Dawley Rd	11/2/2021	12:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	63	67	36	4	31	12.90	No	None	Unlikely		
DPT 1.1	Found	Depot Rd	11/11/2021	11:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	47	49	43	2	6	33.33	No	None	N/A		
DPT 1.2	Found	Depot Rd	11/11/2021	11:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	46	63	47	17	16	100.00	Yes	None	N/A		
DPT 1.3	Found	Depot Rd	11/11/2021	11:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	52	64	48	12	16	75.00	Yes	None	N/A		
DPT 1.4	Found	Depot Rd	11/11/2021	11:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	53	63	46	10	17	58.82	Yes	None	N/A		
DPT 1.5	Found	Depot Rd	9/14/2021	11:05	Dry	Parking Lot	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Brick	Brick	Brick	Good	Good	Good	Fair	Good	Good	No	68								N/A		CB not cleaned by contractor
DPT 1.6	Found	Depot Rd	11/11/2021	10:59	Dry	Parking Lot	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	45	48	42	3	6	50.00	Yes	None	N/A		
DPT 1.7	Found	Depot Rd	11/11/2021	11:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	48	65	51	17	14	100.00	Yes	None	N/A		
DR 1.1	Not Found	Narrows Rd						2x2																												
DR 1.2	Found	Narrows Rd	7/22/2021	12:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52										CB not cleaned by contractor
DR 1.3	Found	Narrows Rd	7/22/2021	12:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Good	N/A	Good	No											Drop inlet, sump is under sidewalk, can’t measure sediment. CB not cleaned by contractor.
DR 1.4	Found	Narrows Rd	11/11/2021	10:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	69	84	48	15	36	41.67	No	None	N/A		
DR 1.5	Found	Narrows Rd	7/22/2021	12:33	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	53										CB not cleaned by contractor
DR 1.6	Found	Narrows Rd	11/11/2021	10:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	68	79	55	11	24	45.83	No	None	N/A		
DR 1.7	Found	Narrows Rd	11/11/2021	10:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	65	82	53	17	29	58.62	Yes	None	N/A		
DR 1.8	Found	Narrows Rd	11/11/2021	10:56	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	64	75	68	11	7	100.00	Yes	None	N/A		
DR 1.9	Found	Narrows Rd	7/22/2021	12:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	67										CB not cleaned by contractor
EAR 1.1	Not Found	East Rd	7/30/2021	11:01	Dry																															
EAR 3.1	Found	East Rd	10/29/2021	13:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	30	30.5		0.5			Unknown	None	Unlikely		
EAR 4.1	Found	East Rd	10/29/2021	13:43	Dry	Road/Curb	Asphalt	2x2																	No	53										Not CB, drop inlet
EAR 5.1	Found	East Rd	10/29/2021	13:45	Dry	Road/Curb	Asphalt	2x2																	No	38										Not CB, drop inlet
EAR 6.1	Found	East Rd	10/29/2021	13:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Fair	N/A	Fair	Yes	36	42	35	6	7	85.71	Yes	None	N/A		
EAR 7.1	Found	East Rd	10/29/2021	13:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	39	44	40	5	4	100.00	Yes	None	N/A		
EAR 8.1	Found	East Rd	10/29/2021	13:53	Dry	Sidewalk	Grass/Dirt	2x2	Square		No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	43	43	40.5	0	2.5	0.00	No	None	Unlikely		
EAR 8.2	Found	East Rd	7/22/2021	14:23	Dry	Road/Curb	Asphalt	2x2																	No											Drop inlet with 2 concrete slab tops. Can’t measure depth, sediment accumulated on both sides.
ELS 1.1	Found	Elliott St	10/29/2021	13:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	64	69	54	5	15	33.33	No	None	N/A		
ELS 1.2	Found	Elliott St	10/29/2021	13:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	58	66	51	8	15	53.33	Yes	None	Unlikely		
ELS 3.1	Found	Elliott St	10/29/2021	13:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	42	48	41	6	7	85.71	Yes	None	N/A		
ER 1.1	Found	Ellis Rd	10/29/2021	10:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete			Excellent	Good	Good	Good		N/A	Yes	58	68	40	10	28	35.71	No	None	Unlikely		
ER 1.10	Found	Ellis Rd	10/29/2021	9:51	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	74	84	65	10	19	52.63	Yes	None	N/A		
ER 1.11	Found	Ellis Rd	10/29/2021	9:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	66	71.5	42	5.5	29.5	18.64	No	None	Unlikely		
ER 1.12	Found	Ellis Rd	10/29/2021	10:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	69	75	47	6	28	21.43	No	None	N/A		
ER 1.13	Found	Ellis Rd	10/29/2021	10:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	65	77	46	12	31	38.71	No	Floatables - Suds	Unlikely		Light suds
ER 1.14	Found	Ellis Rd	10/29/2021	10:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	47	53	38	6	15	40.00	No	None	N/A		
ER 1.15	Found	Ellis Rd	10/29/2021	10:24	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	66	69	46.5	3	22.5	13.33	No	Floatables - Suds	Unlikely		In front of Westminster country club
ER 1.16	Found	Ellis Rd	10/29/2021	10:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	61	65	45	4	20	20.00	No	None	N/A		
ER 1.2	Found	Ellis Rd	10/29/2021	10:18	Dry	Road/Curb	Asphalt	3x2	Other	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	51	68	40	17	28	60.71	Yes	None	N/A		
ER 1.3	Found	Ellis Rd	10/29/2021	10:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	58	67	52	9	15	60.00	Yes	None	N/A		
ER 1.4	Found	Ellis Rd	10/29/2021	10:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	Fair	Fair	Yes	63	66	50	3	16	18.75	No	None	N/A		
ER 1.5	Found	Ellis Rd	10/29/2021	10:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	65	67	47	2	20	10.00	No	None	N/A		
ER 1.6	Found	Ellis Rd	10/29/2021	10:05	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	69	69	43.5	0	25.5	0.00	No	None	Unlikely		
ER 1.7	Found	Ellis Rd	10/29/2021	10:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	56	69	46	13	23	56.52	Yes	None	N/A		
ER 1.8	Not Found	Ellis Rd	8/10/2021	12:10																																
ER 1.9	Found	Ellis Rd	10/29/2021	10:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	61	67.5	41	6.5	26.5	24.53	No	None	Unlikely		
ES 1.15	Found	Smith Ave	10/22/2021	14:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Excellent	Excellent	Good	Excellent	N/A		Yes	47	56	31	9	25	36.00	No	None	N/A		Outlet to centerline drain
ES 1.16	Found	Smith Ave	10/22/2021	14:18	Dry	Road/Curb	Asphalt	2x2		Circular			Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Fair			Yes	62	66	54	4	12	33.33	No	None	Unlikely		

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE											
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	Other Comments
ES 1.17	Found	Smith Ave	10/22/2021	14:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Frost heave, slanted	Cast Iron	Cast Iron	Concrete	Concrete			Good	Poor	Poor	Good	N/A		Yes	50	57	45	7	12	58.33	Yes	None	N/A		Frame, surface in poor shape
ES 1.18	Found	Smith Ave	10/22/2021	14:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	50	58.5	45.5	8.5	13	65.38	Yes	None	Unlikely		
ES 1.19	Not Found	Smith Ave	8/10/2021	10:34																																
ES 1.20	Found	Smith Ave	10/22/2021	14:10	Dry	Road/Curb	Grass/Dirt	2x2	Square	Circular			Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	42	50.5	38.5	8.5	12	70.83	Yes	None	Unlikely		Block
ES 1.21	Not Found	Smith Ave	8/10/2021	10:43	Dry																															
ES 1.22	Found	Smith Ave	10/22/2021	14:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Excellent	Excellent	Excellent	Excellent	N/A		Yes	50	53	40	3	13	23.08	No	None	N/A		Block
ES 1.23	Found	Smith Ave	10/22/2021	14:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	49	54	37	5	17	29.41	No	None	Unlikely		Block
ES 1.25	Found	Howard Ave	10/22/2021	14:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	68	70.5	59	2.5	11.5	21.74	No	None	Unlikely		Block
ES 1.27	Found	Elm St	10/22/2021	13:18	Dry	Other	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Excellent	Good	Good	Good			Yes	39	39	26	0	13	0.00	No	None	Unlikely		
ES 1.29	Found	Nichols St	10/29/2021	9:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	41	50	34	9	16	56.25	Yes	None	Unlikely		
ES 1.32	Not Found	Nichols St	8/10/2021	11:28	Dry																															
ES 1.33	Found	Nichols St	10/29/2021	9:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	48	54	43	6	11	54.55	Yes	None	N/A		
ES 1.34	Found	Nichols St	10/29/2021	9:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	42	54	30.5	12	23.5	51.06	Yes	None	Unlikely		
ES 1.35	Found	Nichols St	10/29/2021	9:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	52	57	44	5	13	38.46	No	None	N/A		
ES 1.36	Found	Nichols St	10/29/2021	9:17	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good	N/A	N/A	Yes	41	54.5	31.5	13.5	23	58.70	Yes	None	Unlikely		
ES 1.39	Found	Ellis Rd	10/29/2021	9:20	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	52	61	41	9	20	45.00	No	None	N/A		
ES 1.44	Found	Ellis Rd	10/29/2021	9:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	40	43	38	3	5	60.00	Yes	None	N/A		
ES 1.45	Found	Ellis Rd	10/29/2021	9:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	69	72	46	3	26	11.54	No	None	N/A		
ES 1.46	Found	Ellis Rd	10/29/2021	9:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Good	N/A	Good	Yes	69	77	50	8	27	29.63	No	None	N/A		
ES 1.47	Found	Ellis Rd	11/2/2021	12:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	68	86	57	18	29	62.07	Yes	Odor - Sewage	Unlikely		
ES 1.48	Found	Ellis Rd	10/29/2021	9:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	78	78	57	0	21	0.00	No	None	Unlikely		
ES 1.49	Found	Ellis Rd	10/29/2021	9:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	81	86	70.5	5	15.5	32.26	No	None	Unlikely		
ES 1.50	Found	Ellis Rd	10/29/2021	9:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	89	90	76	1	14	7.14	No	None	N/A		
ES 1.51	Not Found	Ellis Rd	8/31/2021	8:48																																
ES 1.52	Found	Ellis Rd	10/29/2021	9:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	87	88	64	1	24	4.17	No	None	N/A		
ES 1.53	Found	Ellis Rd	10/29/2021	9:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	83	85	59	2	26	7.69	No	None	Unlikely		
ES 1.54	Not Found	Ellis Rd	8/10/2021	11:43	Dry																															
ES 1.55	Found	Ellis Rd	10/29/2021	9:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good	N/A	N/A	Yes	101	102	87	1	15	6.67	No	None	Unlikely		
ES 1.56	Not Found	Ellis Rd	8/10/2021	11:43																																
ES 1.57	Not Found	Ellis Rd	8/10/2021	11:44																																
ES 1.58	Not Found	Ellis Rd	8/10/2021	11:45	Dry																															
ES 1.59	Found	Ellis Rd	10/29/2021	9:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	83	90	72	7	18	38.89	No	None	N/A		
ES 2.1	Found	Ellis Rd	10/29/2021	9:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Good	Yes	46	55	48	9	7	100.00	Yes	None	N/A		
ES 2.2	Not Found	Eaton St	8/11/2021	8:53	Dry																															
ES 2.3	Not Found	Eaton St	8/11/2021	8:53	Dry																															
FD 1.1	Found	Fenno Dr	10/22/2021	11:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete			Excellent	Excellent		Excellent	N/A		Yes	77	82	76	5	6	83.33	Yes	None	N/A		Block structure
FD 1.2	Found	Fenno Dr	10/22/2021	11:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	57	57	25	0	32	0.00	No	None	Unlikely		Block
FD 1.3	Found	Fenno Dr	10/22/2021	11:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron		Brick	Concrete	N/A		Excellent	Good		Good	N/A		Yes	57	61	53	4	8	50.00	Yes	None	N/A		Concrete block
FD 1.4	Found	Fenno Dr	10/22/2021	11:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	59	62	38	3	24	12.50	No	None	Unlikely		
FD 1.5	Found	Fenno Dr	10/22/2021	11:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	71	71	51	0	20	0.00	No	None	Unlikely		
GR 2.1	Not Found	Gatehouse Rd	7/22/2021	14:29																																
HER 1.1	Found	Heritage Ln	9/10/2021	14:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	110								N/A		CB not cleaned by contractor; Privately owned
HER 1.10	Found	Heritage Ln	9/10/2021	14:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Concrete	Concrete	Good	Good	Good	Good	Good	Good	No	110							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.11	Found	Heritage Ln	9/10/2021	14:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	103								N/A		CB not cleaned by contractor; Privately owned
HER 1.12	Found	Heritage Ln	9/10/2021	14:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	106							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.13	Found	Heritage Ln	9/10/2021	14:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	No	120								N/A		CB not cleaned by contractor; Privately owned
HER 1.14	Found	Heritage Ln	9/10/2021	14:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	115							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.15	Found	Heritage Ln	9/10/2021	14:44	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	No	79								N/A		CB not cleaned by contractor; Privately owned
HER 1.16	Found	Heritage Ln	9/10/2021	14:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	79							None	N/A		Filled with water. CB not cleaned by contractor. Privately owned.
HER 1.2	Found	Heritage Ln	9/10/2021	14:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	111							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.3	Found	Heritage Ln	9/10/2021	14:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	112							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.4	Found	Heritage Ln	9/10/2021	14:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	116							None	Unlikely		CB not cleaned by contractor; Privately owned
HER 1.5	Found	Heritage Ln	9/10/2021	14:18	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	No	115								N/A		CB not cleaned by contractor; Privately owned
HER 1.6	Found	Heritage Ln	9/10/2021	14:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	128							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.7	Found	Heritage Ln	9/10/2021	14:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	77								N/A		CB not cleaned by contractor; Privately owned
HER 1.8	Found	Heritage Ln	9/10/2021	14:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	124							None	N/A		CB not cleaned by contractor; Privately owned
HER 1.9	Found	Heritage Ln	9/10/2021	14:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	103								N/A		CB not cleaned by contractor; Privately owned
HOW 1.1	Found	Howard Ln	10/20/2021	13:59	Dry	Road/Curb	Asphalt	2x4	Double Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	30.5	57	33	26.5	24	100.00	Yes	None	N/A		
HR 1.1	Found	Hy Rd	10/29/2021	14:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	59	63	46	4	17	23.53	No	None	N/A		
HR 1.2	Found	Hy Rd	10/29/2021	13:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	64	64	44	0	20	0.00	No	None	N/A		
HR 1.3	Found	Hy Rd	10/29/2021	13:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	60	68	57	8	11	72.73	Yes	None	N/A		
HR 1.4	Found	Hy Rd	7/22/2021	14:20	Dry	Road/Curb	Asphalt	2x2																	No	36										Drop inlet with three separate concrete slab covers. In need of maintenance.
HR 1.5	Found	Hy Rd	10/29/2021	14:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Poor	Poor	N/A	Poor	Yes	52	53	48	1	5	20.00	No	None	N/A		Walls falling apart
HR 1.6	Not Found	Hy Rd																																		
KC 1.1	Found	Kendall Ct	10/22/2021	12:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	N/A		Good	Good		Excellent	N/A		Yes	83	87	63	4	24	16.67	No	None	N/A		Block
KC 1.2	Found	Kendall Ct	10/22/2021	12:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	62	66	46	4	20	20.00	No	None	Unlikely		Block
KC 1.3	Found	Kendall Ct	10/22/2021	12:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	N/A		Excellent	Excellent		Excellent	N/A		Yes	72	78	56	6	22	27.27	No	None	N/A		Block
KC 1.4	Found	Kendall Ct	10/22/2021	12:25	Dry	Road/Curb	Asphalt	2x2		Circular			Cast Iron	Cast Iron	Brick				Good	Excellent			N/A		Yes	32	40	28	8	12	66.67	Yes	None	N/A		Can't see structure
KC 1.5	Found	Kendall Ct	10/22/2021	12:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	68	73	36	5	37	13.51	No	None	Unlikely		
KC 1.6	Found	Fenno Dr	10/22/2021	12:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	Concrete		Good	Excellent		Good	N/A		Yes	62	65	54	3	11	27.27	No	None	N/A		Block
KC 2.1	Found	Kendall Ct	10/22/2021	12:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good		Good	N/A		Yes	74	95	58	21	37	56.76	Yes	None	N/A		Block
KC 2.2	Found	Kendall Ct	10/22/2021	12:41	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good			Yes	61	70	46	9	24	37.50	No	None	Unlikely		
KC 2.3	Found	Kendall Ct	10/22/2021	11:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	56	60	44	4	16	25.00	No	None	Unlikely		Block
KC 2.4	Found	Fenno Dr	10/22/2021	11:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron		Concrete	N/A		Excellent	Good		Good			Yes	57	60	52	3	8	37.50	No	None	N/A		Block
KIM 1.1	Found	Kimberly Ln	9/10/2021	12:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Fair	Good	No	87								N/A		Hood has debris buildup on top. CB not cleaned by contractor. Privately owned.
KIM 1.10	Found	Kimberly Ln	9/10/2021	12:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	108							None	Unlikely		CB not cleaned by contractor; Privately owned
KIM 1.11	Found	Kimberly Ln	9/10/2021	12:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Fair	Good	Good	Good	No	101							Floatables - Other	Unlikely	Trash	CB not cleaned by contractor; Privately owned
KIM 1.12	Found	Kimberly Ln	9/10/2021	12:47	Dry	Road/Curb	Asphalt	2x2		Circular			Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	112							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.13	Found	Kimberly Ln	9/10/2021	12:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	90		51					None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.14	Found	Kimberly Ln	9/10/2021	12:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	85							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.15	Found	Kimberly Ln	9/10/2021	12:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good		N/A	Good	No	118							Floatables - Other	Unlikely	Cut grass pile next to catch basin	CB not cleaned by contractor; Privately owned
KIM 1.16	Found	Kimberly Ln	9/10/2021	12:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	113							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.17	Found	Kimberly Ln	9/10/2021	13:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	118								N/A		CB not cleaned by contractor; Privately owned
KIM 1.18	Found	Kimberly Ln	9/10/2021	13:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	118							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.19	Found	Kimberly Ln	9/10/2021	13:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	99							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.2	Found	Kimberly Ln	9/10/2021	12:20	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	85							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.3	Found	Kimberly Ln	9/10/2021	12:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	110							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.4	Found	Kimberly Ln	9/10/2021	12:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Fair	Good	No	98							None	Unlikely		CB not cleaned by contractor; Privately owned
KIM 1.5	Found	Kimberly Ln	9/10/2021	12:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	101							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.6	Found	Kimberly Ln	9/10/2021	12:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	88							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.7	Found	Kimberly Ln	9/10/2021	12:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	104							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.8	Found	Kimberly Ln	9/10/2021	12:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	102							None	N/A		CB not cleaned by contractor; Privately owned
KIM 1.9	Found	Kimberly Ln	9/10/2021	12:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	102							None	N/A		CB not cleaned by contractor; Privately owned
KR 1.1	Found	Knower Rd	11/1/2021	12:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Good	Good	Good	Good			Yes	46	53	40	7	13	53.85	Yes	None	Unlikely		
LAL 1.1	Found	Laurie Ln	11/4/2021	9:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	40	61	34	21	27	77.78	Yes	None	N/A		
LAL 1.2	Found	Laurie Ln	11/4/2021	9:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	48	54	35	6	19	31.58	No	None	N/A		
LAL 1.3	Found	Laurie Ln	11/4/2021	9:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	49	68	42	19	26	73.08	Yes	None	N/A		
LAL 1.4	Found	Laurie Ln	11/4/2021	8:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	50	60	24	10	36	27.78	No	None	N/A		
LAL 1.5	Found	Laurie Ln	11/4/2021	8:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	46	72	26	26	46	56.52	Yes	None	N/A		
LAL 1.6	Found	Laurie Ln	11/4/2021	8:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	48	52	32	4	20	20.00	No	None	N/A		
LS 1.1	Found	Leominster St	11/2/2021	13:55	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	69	73	53	4	20	20.00	No	None	Unlikely		
LS 1.2	Found	Leominster St	11/2/2021	13:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	32	35	34	3	1	100.00	Yes	None	Unlikely		
LS 1.3	Found	Leominster St	11/2/2021	13:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	48	62	30	14	32	43.75	No	None	Unlikely		
LS 1.4	Found	Leominster St	11/2/2021	14:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	50	53	34	3	19	15.79	No	None	Unlikely		
LS 1.5	Found	Leominster St	11/2/2021	13:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	47	50	40	3	10	30.00	No	None	Unlikely		
LS 1.6	Found	Leominster St	11/2/2021	14:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	22	30	27	8	3	100.00	Yes	None	Unlikely		Says it was cleaned but doesn’t appear to be
LS 1.7	Found	Leominster St	11/2/2021	14:04	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Fair	N/A	Good	Yes	44	50	35	6	15	40.00	No	None	Unlikely		
LS 3.1	Found	Leominster St	11/2/2021	13:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	37	41	31	4	10	40.00	No	None	Unlikely		
LS 3.2	Found	Leominster St	11/2/2021	13:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	48	64	25	16	39	41.03	No	None	Unlikely		
MH 1.1	Found	Marshall Hill Rd	8/11/2021	13:06	Dry	Road/Curb	Asphalt	2x2	Square	Square	No		Cast Iron	Cast Iron	N/A	Concrete	N/A		Fair	Fair	N/A	Fair	N/A		No	26										
MH 1.2	Found	Marshall Hill Rd	8/11/2021	13:07	Dry	Road/Curb	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	36										
MS 1.10	Found	South St	10/29/2021	12:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	102	105	55	3	50	6.00	No	None	N/A		
MS 1.11	Found	South St	10/29/2021	12:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete			Excellent	Good	Good	Good			Yes	30	32	27	2	5	40.00	No	None	Unlikely		
MS 1.12	Found	South St	10/29/2021	12:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	93	101	55	8	46	17.39	No	None	N/A		
MS 1.13	Not Found	South St	8/11/2021	10:38																																
MS 1.14	Not Found	South St	8/11/2021	10:39																																
MS 1.15	Found	Main Street	11/2/2021	14:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	Yes	32	104	67	72	37	100.00	Yes	None	Unlikely		
MS 1.22	Not Found	Meetinghouse Rd	8/11/2021	10:13	Dry																															
MS 1.23	Found	Meetinghouse Rd	10/29/2021	11:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Good	Good	Good	Good			Yes	67	72	53	5	19	26.32	No	None	Unlikely		
MS 1.24	Found	Meetinghouse Rd	10/29/2021	11:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	63	67	45	4	22	18.18	No	None	N/A		
MS 1.25	Found	Meetinghouse Rd	10/29/2021	11:38	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	69	71	52	2	19	10.53	No	None	N/A		
MS 1.26	Found	Meetinghouse Rd	10/29/2021	11:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	64	69	49	5	20	25.00	No	None	N/A		
MS 1.27	Found	Meetinghouse Rd	10/29/2021	11:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good			Yes	57	61.5	38.5	4.5	23	19.57	No	None	Unlikely		
MS 1.28	Found	South St	10/29/2021	11:14	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Concrete	Concrete			Excellent	Good	Good	Good			Yes	57	59	45	2	14	14.29	No	None	Unlikely		
MS 1.29	Found	Main St	11/2/2021	14:18	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	Yes	95	101	61	6	40	15.00	No	None	Unlikely		
MS 1.30	Found	Main St	11/2/2021	14:20	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	Yes	74	86	59	12	27	44.44	No	None	Unlikely		
MS 1.31	Not Found	Main St	8/31/2021	9:55																																
MS 1.32	Found	Academy Hill Rd	11/2/2021	14:55	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes		56	38		18		Unknown	None	Unlikely		
MS 1.33	Found	Academy Hill Rd	11/2/2021	14:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes		66	45		21		Unknown	None	Unlikely		
MS 1.35	Found	Academy Hill Rd	11/2/2021	14:39	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	45	63	35	18	28	64.29	Yes	Floatables - Suds	Unlikely		
MS 1.36	Found	Academy Hill Rd	11/2/2021	14:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good	N/A	Good	Yes	42	63	38	21	25	84.00	Yes	None	Unlikely		
MS 1.37	Found	Academy Hill Rd	11/2/2021	14:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	52	58	39	6	19	31.58	No	None	Unlikely		
MS 1.38	Found	Academy Hill Rd	11/2/2021	14:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	29	49	31	20	18	100.00	Yes	None	Unlikely		

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE											
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	**Other Comments**
MS 1.39	Found	Academy Hill Rd	11/2/2021	14:31	Dry	Road/Curb	Asphalt	2x2	Square		No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes	40	54	36	14	18	77.78	Yes	None	Unlikely		
MS 1.40	Found	Academy Hill Rd	8/31/2021	9:38	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	55										
MS 1.8	Found	South St	10/29/2021	12:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	85	90	49	5	41	12.20	No	None	Unlikely		
MS 1.9	Found	South St	10/29/2021	12:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Excellent	Good	Good	Good	Good	Good	Yes	81	93	48.5	12	44.5	26.97	No	None	Unlikely		
NR 1.39	Found	N Common Rd	10/20/2021	10:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	40	50	31	10	19	52.63	Yes	None	N/A		
NR 1.41	Found	N Common Rd	10/20/2021	10:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	36	48	24	12	24	50.00	Yes	None	N/A		
NR 1.43	Found	N Common Rd	10/20/2021	10:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	44						No	None	N/A		CB not cleaned by contractor
NR 1.45	Found	N Common Rd	10/20/2021	10:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	45	51	35	6	16	37.50	No	None	N/A		
NR 1.47	Found	N Common Rd	10/20/2021	10:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	48	51	32	3	19	15.79	No	None	N/A		
NR 10.1	Not Found	Narrows Rd	11/4/2021	14:57	Dry																															No sign of catch basin
NR 12.1	Not Found	Narrows Rd	11/4/2021	14:52	Dry																															Mapped in a front yard, no sign of structure
NR 13.1	Not Found	Narrows Rd	11/4/2021	14:51	Dry																															
NR 14.1	Found	Narrows Rd	11/11/2021	10:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	65	73	48	8	25	32.00	No	None	N/A		
NR 14.2	Found	Narrows Rd	11/4/2021	14:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	69	73	51	4	22	18.18	No	None	N/A		
NR 14.3	Found	Narrows Rd	11/4/2021	14:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	41	54	37	13	17	76.47	Yes	None	N/A		
NR 15.1	Not Found	Narrows Rd																																		
NR 15.2	Not Found	Narrows Rd																																		
NR 3.1	Found	Narrows Rd	10/29/2021	13:20	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	57	63	48	6	15	40.00	No	None	N/A		
NR 3.2	Found	Narrows Rd	10/29/2021	13:20	Dry	Road/Curb	Asphalt	2x2	D-Shape	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	41	52	35.5	11	16.5	66.67	Yes	None	Unlikely		
NR 4.1	Found	Narrows Rd	7/30/2021	11:17	Dry	Road/Curb	Asphalt						N/A	N/A	N/A	Concrete	N/A	N/A	N/A	N/A	N/A	Fair	N/A	N/A	No	42										Drop inlet with 2 concrete slab covers
NR 4.2	Found	Narrows Rd	10/29/2021	13:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	51	57	40	6	17	35.29	No	None	Unlikely		
NR 42	Found	N Common Rd	10/20/2021	10:17	Dry	Road/Curb	Asphalt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	N/A	Fair	Fair	Fair	Fair	N/A	N/A	Yes	42	50	20	8	30	26.67	No	None	N/A		Dome top CB
NR 44	Found	N Common Rd	9/15/2021	9:08	Dry	Road/Curb	Grass/Dirt	2x2	Round	Circular	No		Cast Iron	Cast Iron	Brick	Brick	Brick	Brick	Good	Good	Good	Good	Good	Good	No	40								N/A		CB not cleaned by contractor
NR 46	Found	N Common Rd	9/15/2021	9:13	Dry	Ditch	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete	Concrete	Good	Good	Fair	Fair	Fair	Fair	No	36								N/A		CB not cleaned by contractor
NR 48	Found	N Common Rd	10/20/2021	10:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	48	58	28	10	30	33.33	No	None	N/A		
NR 5.1	Found	Narrows Rd	10/29/2021	13:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	49	57	30	8	27	29.63	No	None	N/A		
NR 5.1A	Not Found	N Common Rd	7/30/2021	11:05	Dry																															
NR 6.1	Not Found	N Common Rd	7/30/2021	11:03	Dry																															
NR-40	Found	N Common Rd	10/20/2021	10:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Cast Iron	Concrete	N/A		Fair	Fair	Fair	Fair	N/A	Fair	Yes	40	49	28	9	21	42.86	No	Odor - Other, Floatables - Other	Unlikely	Leaves and manure, could be from decaying organics	
NR-722-1	Found	Narrows Rd	11/11/2021	10:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	59	75	45	16	30	53.33	Yes	None	N/A		
NR-722-2	Found	Narrows Rd	11/11/2021	10:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	66	71	57	5	14	35.71	No	None	N/A		
OC 1.1	Found	Oakwood Ct	10/19/2021	9:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	79	85	58	6	27	22.22	No	None	N/A		
OC 1.2	Found	Oakwood Ct	10/19/2021	9:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	77	82	60	5	22	22.73	No	None	N/A		
OMI 1.1	Found	Old Mill Cir	9/10/2021	13:07	Dry	Road/Curb	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	90							Odor - Other	Unlikely	Laundry smell	CB not cleaned by contractor; Privately owned
OMI 1.10	Found	Old Mill Cir	9/10/2021	13:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	106							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.11	Found	Old Mill Cir	9/10/2021	13:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	115								N/A		CB not cleaned by contractor; Privately owned
OMI 1.12	Found	Old Mill Cir	9/10/2021	13:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Good	Good	Good	Good	No	116							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.13	Found	Old Mill Cir	9/10/2021	13:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	103								N/A		CB not cleaned by contractor; Privately owned
OMI 1.14	Found	Old Mill Cir	9/10/2021	13:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	102							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.15	Found	Old Mill Cir	9/10/2021	13:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Fair	Good	Good	Good	No	115								N/A		CB not cleaned by contractor; Privately owned
OMI 1.16	Found	Old Mill Cir	9/10/2021	13:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	117							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.17	Found	Old Mill Cir	9/10/2021	13:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	106							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.19	Found	Old Mill Cir	9/10/2021	13:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	114							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.2	Found	Old Mill Cir	9/10/2021	13:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	89							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.20	Found	Old Mill Cir	9/10/2021	13:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Excellent	No	114								N/A		CB not cleaned by contractor; Privately owned
OMI 1.21	Found	Old Mill Cir	9/10/2021	13:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	108							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.22	Found	Old Mill Cir	9/10/2021	13:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	99							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.23	Found	Old Mill Cir	9/10/2021	13:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	99							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.24	Found	Old Mill Cir	9/10/2021	13:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	100							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.3	Found	Old Mill Cir	9/10/2021	13:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	109								N/A		CB not cleaned by contractor; Privately owned
OMI 1.4	Found	Old Mill Cir	9/10/2021	13:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	110							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.5	Found	Old Mill Cir	9/10/2021	13:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete		Good	Good	Good	Good	Good	No	111							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.6	Found	Old Mill Cir	9/10/2021	13:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Fair	Good	Good	Good	No	113							None	Unlikely		CB not cleaned by contractor; Privately owned
OMI 1.7	Found	Old Mill Cir	9/10/2021	13:24	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	111							Other	N/A	Grass pile	CB not cleaned by contractor; Privately owned
OMI 1.8	Found	Old Mill Cir	9/10/2021	13:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Good	Good	Good	Good	No	111							None	N/A		CB not cleaned by contractor; Privately owned
OMI 1.9	Found	Old Mill Cir	9/10/2021	13:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Chimney corroded at inlet	Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Good	Good	Poor	Good	Good	Good	No	105							None	N/A		CB not cleaned by contractor; Privately owned
OTF 1.1	Found	Old Town Farm Rd	9/10/2021	11:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	85							None	N/A		CB not cleaned by contractor
OVR 1.1	Found	Overlook Rd	10/20/2021	11:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	46	56	40	10	16	62.50	Yes	None	N/A		
OWO 1.2	Found	Old Worcester Rd	11/2/2021	13:16	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	38	43	23	5	20	25.00	No	None	Unlikely		
OWO-1	Found	Old Worcester Rd	11/2/2021	13:18	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	46	55	38	9	17	52.94	Yes	None	Unlikely		
PAT 1.1	Found	Patricia Rd	11/4/2021	8:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	29	47	21	18	26	69.23	Yes	None	N/A		Full of standing water
PAT 1.2	Found	Patricia Rd	11/4/2021	8:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	41	60	23	19	37	51.35	Yes	None			Flow into catch basin, could not find top of invert so measured to top of water
PAT 1.3	Found	Patricia Rd	11/4/2021	8:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	59	80	48	21	32	65.63	Yes	None	N/A		
PAT 1.4	Found	Patricia Rd	11/4/2021	8:38	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	51	80	36	29	44	65.91	Yes	None	N/A		
RS 3.1	Not Found	Ridge St	7/30/2021	12:01	Dry																															
RS 3.2	Not Found	Ridge St	7/30/2021	12:00	Dry																															
RS 4.1	Found	Ridge St	10/20/2021	13:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	N/A		Yes	63	68	52	5	16	31.25	No	None	N/A		
RS-730-1	Found	Ridge St	10/20/2021	13:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	65	68	40	3	28	10.71	No	Floatables - Suds	Unlikely	Some suds on top of standing water	
RS-730-2	Found	Ridge St	10/20/2021	13:25	Dry	Road/Curb	Asphalt	2x2	Square	Square	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Fair	Fair	Fair	Fair	Fair		No	39	39	39	0	0			None	N/A		Asphalt bottom.
RS-730-3	Found	Ridge St	7/30/2021	12:05	Dry	Road/Curb	Asphalt	2x2	Square	Square	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	No	28										Not cleaned, bottom of “sediment” is actually asphalt so they couldn’t remove it anyways
SA 6.1	Found	Shady Ave	7/30/2021	12:35	Dry	Road/Curb	Asphalt	2x4	Double Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Good	Good	Good	Good	N/A		No	41										CB not cleaned by contractor
SAR 2.1	Not Found	S Ashburnham Rd	7/22/2021																																	
SAR 2.3	Found	S Ashburnham Rd	7/22/2021	11:50	Dry	Other	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	66										CB not cleaned by contractor
SAR 2.4	Found	S Ashburnham Rd	7/22/2021	11:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete	Concrete	Good	Good	Good	Good	N/A	Good	No	71										CB not cleaned by contractor
SAR 2.6	Found	S Ashburnham Rd	7/22/2021	10:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	38										CB not cleaned by contractor
SAR 2.7	Found	S Ashburnham Rd	7/22/2021	10:42	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	46										CB not cleaned by contractor
SAR 4.2	Not Found	S Ashburnham Rd																																		Could be covered by debris
SAR 4.3	Not Found	S Ashburnham Rd																																		
SAR 7.1	Found	S Ashburnham Rd	7/22/2021	10:33	Dry	Road/Curb	Asphalt	2x2																	No	32										Drop inlet with concrete slab top, some damage, filled with leaves
SAR 8.1	Found	S Ashburnham Rd	7/22/2021	10:27	Dry	Ditch	Asphalt	None	Other		No														No	39										Drop inlet with concrete slab top
SAR 9.1	Found	S Ashburnham Rd	10/19/2021	10:14	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	61	71	54	10	17	58.82	Yes	None	N/A		
SAR 9.3	Found	S Ashburnham Rd	10/19/2021	8:44	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	51	60	41	9	19	47.37	No	None	N/A		
SAR 9.4	Found	S Ashburnham Rd	10/19/2021	8:44	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	52	60	42	8	18	44.44	No	None	Unlikely		
SD 1.1	Found	Scenic Dr	10/22/2021	10:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Excellent	Excellent	Excellent	N/A		Yes	132	134	112	2	22	9.09	No	None	N/A		
SD 1.2	Found	Scenic Dr	10/22/2021	10:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	62	66	49	4	17	23.53	No	None	Unlikely		
SD 1.3	Found	Scenic Dr	10/22/2021	11:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Excellent	Excellent	Excellent	N/A		Yes	90	91	51	1	40	2.50	No	None	N/A		GPS coordinates far off
SD 1.4	Found	Scenic Dr	10/22/2021	11:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes		67	47		20		Unknown	None	Unlikely		Car parked over CB during initial inspection, unable to collect depth to sediment measurement.
SD 1.5	Found	Scenic Dr	10/22/2021	10:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	67	78	54	11	24	45.83	No		Unlikely		
SD 1.6	Found	Scenic Dr	10/22/2021	10:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Concrete	Concrete	Excellent	Excellent	Excellent	Excellent	N/A		Yes	75	75	47	0	28	0.00	No	None	N/A		
SFT 1.7	Found	Sargent Rd	11/2/2021	10:51	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	47	63	46	16	17	94.12	Yes	None	Unlikely		
SGT 1.1	Found	Sargent Rd	11/2/2021	10:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete			Excellent	Good	Good	Good			Yes	70	84	55	14	29	48.28	No	None	Unlikely		
SGT 1.2	Found	Sargent Rd	11/2/2021	10:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	N/A	Yes	63	77	43	14	34	41.18	No	None	Unlikely		
SGT 1.3	Found	Sargent Rd	11/2/2021	11:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	52	75	45	23	30	76.67	Yes	None	Unlikely		
SGT 1.5	Found	Sargent Rd	11/2/2021	10:56	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	52	60	44	8	16	50.00	Yes	None	Unlikely		
SGT 4	Found	Sargent Rd	11/2/2021	10:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	48	57	40	9	17	52.94	Yes	None	Unlikely		
SGT 6	Found	Sargent Rd	11/2/2021	10:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	54	59	43	5	16	31.25	No	None	Unlikely		
SHD 1.1	Found	Shady Ave	9/14/2021	14:01	Dry	Sidewalk	Gravel	2x4	Double Square	Circular	No		Cast Iron	Cast Iron	Brick	Brick	N/A		Good	Good	Good	Good	N/A	Good	No	47								N/A		Could not be located on second visit, may have been buried in leaves.
SHD 1.2	Found	Shady Ave	9/15/2021	12:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A		No	45							None	N/A		CB not cleaned by contractor
SHR 1.1	Not Found	Stone Hill Rd	11/4/2021	15:04	Dry																															
SHR 2.1	Not Found	Stone Hill Rd	11/4/2021	15:07	Dry																															
SHR 4.1	Not Found	Stone Hill Rd	11/4/2021	15:08	Dry																															
SHR-722-1	Found	Stone Hill Rd	11/4/2021	14:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	37	61	34	24	27	88.89	Yes	None	N/A		
SHR-722-2	Found	Stone Hill Rd	11/4/2021	15:05	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	41	60	41	19	19	100.00	Yes	Floatables - Suds	Unlikely		
SIM 1.1	Found	Simplex Dr	9/15/2021	10:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52							None	N/A		
SIM 1.10	Found	Simplex Dr	11/2/2021	11:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	No	82	92	46	10	46	21.74	No	None	Unlikely		
SIM 1.11	Found	Simplex Dr	11/2/2021	11:11	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete		Concrete	Excellent	Good	Good	Good		Good	No	55	60	42	5	18			None	Unlikely		
SIM 1.12	Found	Simplex Dr	11/2/2021	11:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	No	49	55	43	6	12			None	Unlikely		
SIM 1.3	Found	Simplex Dr	9/15/2021	10:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	77							None	N/A		
SIM 1.4	Found	Simplex Dr	11/2/2021	11:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	No	76	87	37	11	50			None	Unlikely		
SIM 1.5	Found	Simplex Dr	11/2/2021	11:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Excellent	Good	Good	Good	Good	Good	No	74	83	45	9	38			None	Unlikely		
SIM 1.6	Found	Simplex Dr	11/2/2021	11:33	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Excellent	Good	Good	Good	Good	Good	No	77	89	45	12	44			None	Unlikely		
SIM 1.7	Found	Simplex Dr	11/2/2021	11:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Excellent	Good	Good	Good	Good	Good	No	59	84	42	25	42			None	Unlikely		
SIM 1.8	Found	Simplex Dr	11/2/2021	11:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	Cast Iron	Concrete	Excellent	Good	Good	Good	Good	Good	No	71	86	45	15	41			None	Unlikely		No catch basins on street have been cleaned
SIM 1.9	Found	Simplex Dr	11/2/2021	11:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete	Concrete	Excellent	Good	Good	Good	Good	Good	No	59	84	43	25	41			None	Unlikely		Marked as not clean, significant amount of sediment
SIM 2	Found	Simplex Dr	11/11/2021	10:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Other	Concrete	Good	Good	Fair	Fair	Fair	Fair	Yes	53	66	56	13	10	100.00	Yes	None	N/A		Asphalt around CB collapsing in
SS 1.1	Found	South St	10/29/2021	11:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	68	83	58	15	25	60.00	Yes	None	N/A		
SS 1.2	Found	South St	10/29/2021	11:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A		Excellent	Good	Good	Good	N/A		Yes	84	93	51.5	9	41.5	21.69	No	None	N/A		
TFR 1.1	Found	Town Farm Rd	10/20/2021	9:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	53	66	46	13	20	65.00	Yes	None	N/A		Appears to have been cleaned but water is above pipe invert
TFR 1.2	Found	Town Farm Rd	10/20/2021	9:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	53	62	40	9	22	40.91	No	None	N/A		
TFR 1.3	Found	Town Farm Rd	10/20/2021	9:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	63	69	59	6	10	60.00	Yes	None	N/A		
TFR 1.4	Found	Town Farm Rd	10/20/2021	9:00	Dry	Road/Curb	Asphalt	2x4	Double Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	62	77	55	15	22	68.18	Yes	None	N/A		
TFR 1.5	Found	Town Farm Rd	10/20/2021	8:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	57	68	50	11	18	61.11	Yes	Odor - Other	Unlikely	Smells like something died in there	
TFR 1.6	Found	Town Farm Rd	10/20/2021	8:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	42	48	38	6	10	60.00	Yes	None	N/A		
TFR 1.7	Found	Town Farm Rd	10/20/2021	8:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Good	Good	N/A	Good	Yes	54	64	51	10	13	76.92	Yes	None	N/A		
THD 1.1	Could Not Access	Theodore Dr	9/10/2021	9:14	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.10	Could Not Access	Theodore Dr	9/10/2021	9:43	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.11	Could Not Access	Theodore Dr	9/10/2021	9:45	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.12	Found	Theodore Dr	9/10/2021	9:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	88							None	N/A		CB not cleaned by contractor
THD 1.13	Found	Theodore Dr	9/10/2021	9:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Poor		Good	N/A	Good	No	85							Floatables - Oil Sheen	Unlikely		Frame subsiding into asphalt. CB not cleaned by contractor.

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE											
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	Other Comments
THD 1.14	Could Not Access	Theodore Dr	9/10/2021	9:48	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.15	Found	Theodore Dr	9/10/2021	9:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Good	Good	N/A	Good	No	87							None	N/A		Frame subsiding into asphalt. CB not cleaned by contractor.
THD 1.16	Could Not Access	Theodore Dr	9/10/2021	9:50	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.17	Could Not Access	Theodore Dr	9/10/2021	9:54	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.18	Could Not Access	Theodore Dr	9/10/2021	9:53	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.19	Could Not Access	Theodore Dr	9/10/2021	9:56	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.2	Could Not Access	Theodore Dr	9/10/2021	9:14	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB during each inspection, cannot assess.
THD 1.20	Could Not Access	Theodore Dr	9/10/2021	9:57	Dry	Road/Curb	Asphalt	2x4	Double Square		No														No											Sediment trap in CB during each inspection, cannot assess.
THD 1.21	Could Not Access	Theodore Dr	10/19/2021	11:45	Dry	Road/Curb	Asphalt	2x2																	No											Sediment trap in CB, cannot assess
THD 1.22	Could Not Access	Theodore Dr	9/10/2021	10:09	Dry	Road/Curb	Asphalt	2x4	Double Square		No														No											Sediment trap in CB during each inspection, cannot assess.
THD 1.23	Found	Theodore Dr	9/10/2021	10:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	93							None	Unlikely		CB not cleaned by contractor
THD 1.24	Found	Theodore Dr	9/10/2021	10:14	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	Good	Good	No	95							None	Unlikely		CB not cleaned by contractor
THD 1.25	Found	Theodore Dr	9/10/2021	10:17	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	78							None	Unlikely		CB not cleaned by contractor
THD 1.26	Could Not Access	Theodore Dr	9/10/2021	10:15	Dry	Road/Curb	Asphalt	2x2	Square																											Sediment trap in CB during each inspection, cannot assess.
THD 1.3	Could Not Access	Theodore Dr	9/10/2021	9:31	Dry	Road/Curb	Asphalt	2x2																												Sediment trap in CB during each inspection, cannot assess.
THD 1.4	Could Not Access	Theodore Dr	9/10/2021	9:32	Dry	Road/Curb																														Sediment trap in CB during each inspection, cannot assess.
THD 1.5	Found	Theodore Dr	9/10/2021	9:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	Concrete	Concrete	Good	Good	Good	Good	Good	Good	No	88							Color, Turbid	Unlikely		CB not cleaned by contractor.
THD 1.6	Found	Theodore Dr	9/10/2021	9:35	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	91							None	N/A		CB not cleaned by contractor.
THD 1.7	Found	Theodore Dr	9/10/2021	9:38	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	89							None			CB not cleaned by contractor.
THD 1.8	Could Not Access	Theodore Dr	9/10/2021	9:40	Dry	Road/Curb	Asphalt	2x2																												Sediment trap in CB during each inspection, cannot assess.
THD 1.9	Found	Theodore Dr	9/10/2021	9:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	Good	Good	No	97.5							None	Unlikely		CB not cleaned by contractor.
TR 2.1	Not Found	Turnpike Rd																																		
TR 6.1	Found	Turnpike Rd	11/4/2021	11:29	Dry	Ditch	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes		70	31		39		Unknown	None	N/A		
TR 6.2	Found	Turnpike Rd	11/4/2021	11:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	64	76	43	12	33	36.36	No	None	N/A		
VIR 1.1	Found	Village Inn Rd	11/4/2021	10:38	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	70	77	52	7	25	28.00	No	None	N/A		
VIR 2.1	Found	Village Inn Rd	11/4/2021	13:24	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	16	18	18	2	0	0.00	No	None	N/A		
VIR 2.2	Found	Village Inn Rd	11/4/2021	13:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Broken corner	Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Fair	Good	Good	Good	N/A	Good	Yes	74	76	44	2	32	6.25	No	None	N/A		
VIR 3.1	Not Found	Village Inn Rd	7/30/2021	9:47																																
VIR 3.10	Found	Village Inn Rd	11/4/2021	13:29	Dry	Ditch	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	33	67	34	34	33	100.00	Yes	None	N/A		
VIR 3.2	Found	Village Inn Rd	11/4/2021	13:47	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	72	78	56	6	22	27.27	No	None	N/A		
VIR 3.3	Found	Village Inn Rd	11/4/2021	13:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	71	80	40	9	40	22.50	No	None	N/A		
VIR 3.4	Found	Village Inn Rd	11/4/2021	13:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Broken corner	Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Fair	Good	Good	Good	N/A	Good	Yes	81	85	58	4	27	14.81	No	None	N/A		
VIR 3.5	Found	Village Inn Rd	11/4/2021	13:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	74	82	60	8	22	36.36	No	None	N/A		
VIR 3.6	Found	Village Inn Rd	11/4/2021	13:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	70	73	54	3	19	15.79	No	None	N/A		
VIR 3.7	Found	Village Inn Rd	11/4/2021	13:33	Dry	Ditch	Grass/Dirt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	57	57	36	0	21	0.00	No	None	N/A		
VIR 3.8	Found	Village Inn Rd	11/4/2021	13:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	69	79	50	10	29	34.48	No	None	N/A		
VIR 3.9	Found	Village Inn Rd	11/4/2021	13:28	Dry	Ditch	Asphalt	2x4	Double Square	Rectangle	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	33	33	33	0	0	0.00	No	None	N/A		
VIR 4.1	Found	Village Inn Rd	11/4/2021	14:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	44	60	42	16	18	88.89	Yes	None	N/A		
VIR 4.2	Found	Village Inn Rd	11/4/2021	14:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	76	81	56	5	25	20.00	No	None	N/A		
VIR 4.3	Found	Village Inn Rd	11/4/2021	14:03	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	99	102	88	3	14	21.43	No	None	N/A		
VIR 4.4	Found	Village Inn Rd	11/4/2021	13:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	85	94	67	9	27	33.33	No	None	N/A		
VIR 4.5	Found	Village Inn Rd	11/4/2021	14:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	86	98	75	12	23	52.17	Yes	None	N/A		
VIR 4.6	Found	Village Inn Rd	11/4/2021	13:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	72	74	52	2	22	9.09	No	None	N/A		
VIR 4.7	Found	Village Inn Rd	11/4/2021	13:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	66	74	51	8	23	34.78	No	None	N/A		
VIR 6.1	Found	Village Inn Rd	11/4/2021	14:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	65	79	56	14	23	60.87	Yes	None	N/A		
VIR 6.2	Found	Village Inn Rd	11/4/2021	14:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	70	82	56	12	26	46.15	No	None	N/A		
VIR 6.3	Found	Village Inn Rd	11/4/2021	14:23	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	72	77	46	5	31	16.13	No	Floatables - Suds	Unlikely		
VIR 6.4	Found	Village Inn Rd	11/4/2021	14:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	67	80	46	13	34	38.24	No	None	N/A		
VIR 6.5	Found	Village Inn Rd	11/4/2021	14:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	65	85	55	20	30	66.67	Yes	Floatables - Suds	Unlikely		
VIR 6.6	Found	Village Inn Rd	11/4/2021	14:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	75	82	53	7	29	24.14	No	None	N/A		
VIR 6.7	Found	Village Inn Rd	11/4/2021	14:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	Yes	Broken corner	Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	35	65	39	30	26	100.00	Yes	None	N/A		
VIR 7.1	Found	Village Inn Rd	11/4/2021	14:33	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	60	75	56	15	19	78.95	Yes	None	N/A		
VIR 7.2	Found	Village Inn Rd	11/4/2021	14:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	55	72	50	17	22	77.27	Yes	None	N/A		
VIR 7.3	Not Found	Village Inn Rd	11/4/2021	14:30	Dry																															
VIR-730-1	Found	Village Inn Rd	11/4/2021	14:18	Dry	Ditch	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	48	51	36	3	15			Floatables - Suds	Unlikely		
VR 1.1	Found	Val Rd	10/29/2021	14:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Poor	Poor	N/A	Fair	Yes	80	82	80	2	2	100.00	Yes	None	N/A		
VR 1.2	Not Found	Val Rd																																		
VR 1.3	Not Found	Val Rd																																		
VR 1.4	Found	East Rd	10/29/2021	13:46	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Excellent	Good	Good	Good	N/A	Good	Yes	48	54	48	6	6	100.00	Yes	None	Unlikely		
WAD 1.1	Found	Wachusett Rd	11/11/2021	10:34	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	69	78	50	9	28	32.14	No	None	N/A		
WAD 1.2	Found	Wachusett Rd	11/11/2021	10:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	56	78	45	22	33	66.67	Yes	None	N/A		
WAD 2.1	Found	Wachusett Rd	11/11/2021	10:26	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	52	68	49	16	19	84.21	Yes	None	N/A		
WAD 2.2	Found	Wachusett Rd	11/11/2021	10:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	58	72	49	14	23	60.87	Yes	None	N/A		
WAD 2.3	Found	Wachusett Rd	11/11/2021	10:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	N/A	Fair	Yes	72	76	43	4	33	12.12	No	None	N/A		
WAT 1.0	Found	Waterman Ln	11/4/2021	11:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	84	120	98	36	22	100.00	Yes	None	N/A		
WAT 1.2	Found	Waterman Ln	11/4/2021	11:58	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	65	80	54	15	26	57.69	Yes	None	N/A		
WAT 1.3	Found	Waterman Ln	11/4/2021	11:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	75	77	52	2	25	8.00	No	None	N/A		
WAT 1.4	Found	Waterman Ln	9/14/2021	10:22	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	78								N/A		
WAT 1.5	Found	Waterman Ln	11/4/2021	11:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	63	75	42	12	33	36.36	No	None	N/A		
WAT 1.6	Found	Waterman Ln	11/4/2021	11:05	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	76	81	60	5	21	23.81	No	None	N/A		
WD 1.1	Found	Woodland Dr	10/19/2021	8:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	58	70	50	12	20	60.00	Yes	None	Unlikely		
WD 1.2	Found	Woodland Dr	10/19/2021	8:52	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Fair	N/A	Fair	Yes	46	67	42	21	25	84.00	Yes	None	N/A		
WD 2.1	Found	Woodland Dr	10/19/2021	8:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	58	65	50	7	15	46.67	No	None	Unlikely		
WD 2.2	Found	Woodland Dr	10/19/2021	8:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Good	N/A	Fair	Yes	57	70	43	13	27	48.15	No	None	N/A		
WD 3.1	Found	Woodland Dr	10/19/2021	9:01	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	60	72	48	12	24	50.00	Yes	None	N/A		
WD 3.2	Found	Woodland Dr	10/19/2021	9:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	57	62	42	5	20	25.00	No	None	N/A		
WD 4.1	Found	Woodland Dr	10/19/2021	9:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	65	72	55	7	17	41.18	No	None	N/A		
WD 4.2	Found	Woodland Dr	10/19/2021	9:06	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	67	72	45	5	27	18.52	No	None	N/A		
WD 4.3	Found	Woodland Dr	10/19/2021	9:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	61	70	41	9	29	31.03	No	None	N/A		
WD 4.4	Found	Woodland Dr	10/19/2021	9:10	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	75	81	39	6	42	14.29	No	None	N/A		
WD 4.5	Found	Woodland Dr	10/19/2021	9:14	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	50	62	44	12	18	66.67	Yes	None	N/A		
WD 4.6	Found	Woodland Dr	10/19/2021	9:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	63	73	45	10	28	35.71	No	None	N/A		
WD 5.1	Found	Woodland Dr	10/19/2021	9:27	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	48	70	37	22	33	66.67	Yes	None	N/A		
WD 5.2	Found	Woodland Dr	10/19/2021	9:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	60	64	35	4	29	13.79	No	None	N/A		
WD 5.3	Found	Woodland Dr	10/19/2021	9:24	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	52	60	36	8	24	33.33	No	None	N/A		
WD 5.4	Found	Taymax Rd	10/19/2021	9:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	49	69	39	20	30	66.67	Yes	None	N/A		
WD 5.5	Found	Taymax Rd	10/19/2021	9:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	52	58	38	6	20	30.00	No	None	N/A		
WD 5.6	Found	Taymax Rd	10/19/2021	9:21	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	47	57	35	10	22	45.45	No	None	N/A		
WD 5.7	Found	Taymax Rd	10/19/2021	9:18	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	70	80	33	10	47	21.28	No	None	N/A		
WD 5.8	Found	Woodland Dr	10/19/2021	9:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	52	74	46	22	28	78.57	Yes	None	N/A		
WD 5.9	Found	Woodland Dr	10/19/2021	9:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	77	81	64	4	17	23.53	No	None	N/A		
WD 6.1	Found	Woodland Dr	10/19/2021	9:49	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	59	68	48	9	20	45.00	No	None	N/A		
WD 6.2	Found	Woodland Dr	10/19/2021	9:48	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Fair	Fair	Good	N/A	Good	Yes	58	69	49	11	20	55.00	Yes	None	N/A		
WD 6.3	Found	Woodland Dr	10/19/2021	9:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	75	84	57	9	27	33.33	No	None	Unlikely		
WD 6.4	Found	Woodland Dr	10/19/2021	9:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	70	79	56	9	23	39.13	No	None	N/A		
WD 6.5	Found	Woodland Dr	10/19/2021	9:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	73	82	50	9	32	28.13	No	None	N/A		
WD 6.6	Found	Woodland Dr	10/19/2021	9:41	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	68	80	55	12	25	48.00	No	None	N/A		
WD 6.7	Not Found	Woodland Dr	8/11/2021	12:16	Dry																															
WD 6.8	Not Found	Woodland Dr	8/11/2021	12:16	Dry																															
WD 7.1	Found	Woodland Dr	10/19/2021	10:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	72	81		9			Unknown	None	N/A		
WD 7.2	Found	Woodland Dr	10/19/2021	10:00	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Fair	Yes	70	79	48	9	31	29.03	No	None	N/A		
WD 8.1	Found	Woodland Dr	10/19/2021	10:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	66	86	60	20	26	76.92	Yes	None	N/A		
WD 8.2	Found	Woodland Dr	10/19/2021	10:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	60	71	46	11	25	44.00	No	None	N/A		
WD 8.3	Found	Woodland Dr	10/19/2021	10:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Fair	Yes	57	69	46	12	23	52.17	Yes	None	N/A		
WD 8.4	Found	Woodland Dr	10/19/2021	10:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	62	80	52	18	28	64.29	Yes	None	N/A		
WD-6.1.1	Found	Woodland Dr	10/19/2021	9:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	67	75	42	8	33	24.24	No	None	N/A		
WD-6.21	Found	Woodland Dr	10/19/2021	9:53	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	68	71	48	3	23	13.04	No	None	N/A		
WH 1.1	Not Found	W Hill Dr																																		CB not cleaned by contractor; Privately owned
WH 1.2	Not Found	W Hill Dr																																		CB not cleaned by contractor; Privately owned
WH 1.3	Found	W Hill Dr	7/22/2021	11:40	Dry	Parking Lot	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52										CB not cleaned by contractor; Privately owned
WH 1.4	Found	W Hill Dr	7/22/2021	11:40	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	48										CB not cleaned by contractor; Privately owned
WH 1.5	Found	W Hill Dr	7/22/2021	11:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	56										CB not cleaned by contractor; Privately owned
WH 1.6	Found	W Hill Dr	7/22/2021	11:37	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	66										CB not cleaned by contractor; Privately owned
WH 2.1	Found	W Hill Dr	7/22/2021	11:32	Dry	Parking Lot	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	51										CB not cleaned by contractor; Privately owned
WH 2.10	Not Found	W Hill Dr	7/22/2021																																	CB not cleaned by contractor; Privately owned
WH 2.2	Found	W Hill Dr	7/22/2021	11:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	63										CB not cleaned by contractor; Privately owned
WH 2.3	Found	W Hill Dr	7/22/2021	11:30	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	50										CB not cleaned by contractor; Privately owned
WH 2.4	Found	W Hill Dr	7/22/2021	11:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	44										CB not cleaned by contractor; Privately owned
WH 2.6	Found	W Hill Dr	7/22/2021	11:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	63										CB not cleaned by contractor; Privately owned
WH 2.7	Found	W Hill Dr	7/22/2021	11:25	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	60										CB not cleaned by contractor; Privately owned
WH 2.75	Found	W Hill Dr	7/22/2021	11:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	58										CB not cleaned by contractor; Privately owned
WH 2.8	Found	W Hill Dr	7/22/2021	11:19	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	44										CB not cleaned by contractor; Privately owned
WH 2.9	Not Found	W Hill Dr																																		CB not cleaned by contractor; Privately owned
WH 3.1	Found	W Hill Dr	7/22/2021	10:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	55										CB not cleaned by contractor; Privately owned
WH 3.2	Found	W Hill Dr	7/22/2021	10:45	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	49										CB not cleaned by contractor; Privately owned
WH 3.3	Found	W Hill Dr	7/22/2021	10:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	No	36										CB not cleaned by contractor; Privately owned
WH 3.4	Found	W Hill Dr	7/22/2021	10:50	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52										CB not cleaned by contractor; Privately owned
WH 3.5	Found	W Hill Dr	7/22/2021	11:14	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	Good	Good	No	67										CB not cleaned by contractor; Privately owned
WH 3.6	Found	W Hill Dr	7/22/2021	11:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	66										CB not cleaned by contractor; Privately owned
WH-722-1	Found	W Hill Dr	7/22/2021	11:28	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	47										CB not cleaned by contractor; Privately owned
WHI 1.1	Found	Whitney St	10/20/2021	13:39	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	Yes	44	46	40	2	6	33.33	No	None	N/A		
WIL 1.1	Could Not Access	Willard Rd	11/4/2021	11:46	Dry	Ditch	Grass/Dirt	2x2																												Drop inlet
WIL 1.2	Found	Willard Rd	11/11/2021	11:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Good	N/A	Good	Yes	51	63	43	12	20	60.00	Yes	None	N/A		

Inspection Information						Catch Basin Information					Catch Basin Condition		Materials						Conditions						Sediment Depth (inches) and IDDE										Other Comments
Catch Basin ID	Catch Basin Located?	Street Location	Date of Inspection	Time of Inspection	Weather	Catch Basin Location	Surface Type	Grate Size (ft)	Grate Shape	Interior Catch Basin Configuration	Catch Basin Damage	Damage Comment	Grate Material	Frame Material	Chimney Material	Walls Material	Trap/Hood Material	Sump Material	Grate Condition	Frame Condition	Chimney Condition	Walls Condition	Trap/Hood Condition	Sump Condition	Catch Basin Cleaned	A. Depth from Rim to Top of Sediment (in)	B. Depth from Rim to Bottom (in)	C. Depth from Rim to Outlet Invert (in)	D. Depth of Sediment (in) (B-A)	E. Depth of Sump (in) (B-C)	Sediment Percent Full (%) (D/E)	More than 50% Full of Sediment?	IDDE Indicators	Illicit Discharge Potential	Illicit Discharge Indicator Comments	
WIL 1.3	Found	Willard Rd	11/11/2021	11:09	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Good	Good	Fair	Fair	N/A	Fair	Yes	48	59	41	11	18	61.11	Yes	None	N/A		
WL 1.1	Found	Waterman Ln	11/4/2021	10:32	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	77	77	55	0	22	0.00	No	None	N/A		
WL 1.2	Found	Waterman Ln	11/4/2021	10:29	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	79	80	52	1	28	3.57	No	None	N/A		
WL 1.3	Found	Waterman Ln	11/4/2021	10:54	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	69	76	49	7	27	25.93	No	None	N/A		
WL 2.1	Found	Waterman Ln	11/4/2021	10:36	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	82	85	63	3	22	13.64	No	None	N/A		
WM 10.1	Not Found	Wilson Dr	7/30/2021	13:57	Dry																															
WOS 1.3	Found	Worcester Rd	11/2/2021	13:07	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Excellent	Good	Good	Good		Good	Yes	67	69	37	2	32	6.25	No	None	Unlikely		
WR 1.1	Not Found	Wyman Rd	7/30/2021	10:31																																
WR 1.2	Found	Wyman Rd	11/4/2021	10:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	76	82	59	6	23	26.09	No	None	N/A		
WR 1.3	Found	Wyman Rd	11/4/2021	10:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	69	80	55	11	25	44.00	No	None	N/A		
WR 2.1	Not Found	Wyman Rd	7/30/2021	10:40	Dry																															
WR 3.1	Found	Wyman Rd	11/4/2021	10:31	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	72	80	43	8	37	21.62	No	None	N/A		
WR 4.1	Found	Wyman Rd	11/4/2021	9:55	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	76	80	58	4	22	18.18	No	None	N/A		
WR 4.2	Found	Wyman Rd	11/4/2021	9:59	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	76	82	57	6	25	24.00	No	None	N/A		
WR 4.3	Found	Wyman Rd	7/30/2021	11:12	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Good	Fair	Fair	N/A	Fair	No	57										
WR 4.4	Found	Wyman Rd	11/4/2021	9:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	Yes	60	70	45	10	25	40.00	No	None	N/A		
WR 5.1	Could Not Access	Wyman Rd	7/30/2021	10:53	Dry	Ditch	Grass/Dirt	2x2																												
WR 6.1	Found	Wyman Rd	11/4/2021	10:07	Dry	Parking Lot	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52	90	35	38	55			None	N/A		
WR 6.2	Found	Wyman Rd	11/4/2021	10:08	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	52	72	35	20	37			None	N/A		Potentially private?
WR 6.3	Found	Wyman Rd	11/4/2021	10:04	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete	N/A	Concrete	Good	Good	Good	Good	N/A	Good	No	32	55	28	23	27			None	N/A		Potentially private?
WR 7.1	Could Not Access	Wyman Rd	7/30/2021	10:52	Dry	Ditch	Grass/Dirt	2x2																												
WR 8.1	Could Not Access	Wyman Rd	7/30/2021	10:51	Dry	Parking Lot	Asphalt	2x2																												
WS 6.1	Found	Whitney St	7/30/2021	11:43	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	76										Catch basin not cleaned by contractor.
WS 6.2	Found	Whitney St	7/30/2021	11:57	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Concrete	Concrete	N/A	Concrete	Fair	Fair	Fair	Fair	N/A	Fair	No	42										Catch basin not cleaned by contractor.
WSS 1.1	Found	Academy Hill Rd	11/2/2021	15:02	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good	N/A	Good	Yes	103	107	60	4	47	8.51	No	None	Unlikely		
WSS 1.2	Found	Academy Hill Rd	11/2/2021	15:15	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good		Good	Yes		87	34		53		Unknown	None	Unlikely		CB not found during initial inspection.
WSS 1.3	Found	Academy Hill Rd	11/2/2021	15:13	Dry	Road/Curb	Asphalt	2x2	Square	Circular	No		Cast Iron	Cast Iron	Brick	Concrete		Concrete	Good	Good	Good	Good	N/A	Good	Yes		92	40		52		Unknown	None	Unlikely		CB not found during initial inspection.
WSS 1.4	Not Found	Academy Hill Rd	8/31/2021	9:43	Dry																															
WSS 1.5	Not Found	Academy Hill Rd	8/31/2021	9:25																																
WSS 1.6	Not Found	Academy Hill Rd	8/31/2021	9:33																																

Appendix E

Illicit Discharge Potential Results

Illicit Discharge Potential Results				
Catch Basin ID	Street Location	IDDE Indicators	Illicit Discharge Potential	Comments
810-ER-6	Ellis Rd	Floatables - Suds, Odor - Sewage	Unlikely	
831-ER-008	E Gardener Rd	Floatables - Suds	Unlikely	Some suds on water surface, could be from organic matter
831-NR-002	N Common Rd	Odor - Other	Unlikely	
831-School-004	Academy Hill Rd	Odor - Sewage	Unlikely	Faint sewage smell
AH 1.2	Academy Hill Rd	Floatables - Suds	Unlikely	
BAT 1.11	Bathrick Rd	Odor - Other	Unlikely	Perfumed laundry smell
BAT 1.17	Bathrick Rd	Excessive Sediment	Unlikely	
BAT 1.3	Bathrick Rd	Floatables - Oil Sheen	Unlikely	
BTL 1.1	Battles Rd	Floatables - Suds	Unlikely	
CS 2.1	Church St	Other	Unlikely	Irrigation pipe; Pipe runs under barn across street according to neighbor
ER 1.13	Ellis Rd	Floatables - Suds	Unlikely	Light suds
ER 1.15	Ellis Rd	Floatables - Suds	Unlikely	
ES 1.47	Ellis Rd	Odor - Sewage	Unlikely	
MS 1.35	Academy Hill Rd	Floatables - Suds	Unlikely	
NR-40	N Common Rd	Odor - Other, Floatables - Other	Unlikely	Leaves and manure, could be from decaying organics
RS-730-1	Ridge St	Floatables - Suds	Unlikely	Some suds on top of standing water
SHR-722-2	Stone Hill Rd	Floatables - Suds	Unlikely	
TFR 1.5	Town Farm Rd	Odor - Other	Unlikely	Smells like something died in there
THD 1.13	Theodore Dr	Floatables - Oil Sheen	Unlikely	
THD 1.5	Theodore Dr	Color, Turbid	Unlikely	
VIR 6.3	Village Inn Rd	Floatables - Suds	Unlikely	
VIR 6.5	Village Inn Rd	Floatables - Suds	Unlikely	
VIR-730-1	Village Inn Rd	Floatables - Suds	Unlikely	

Appendix F

Catch Basins > 50% Full

> 50% Full					
Catch Basin ID	Street Location	Sediment Percent Full (%)	Catch Basin ID	Street Location	Sediment Percent Full (%)
810-LS-4*	Lovell St	50.00	BA 1.19	Lovell St	88.89
811-CR-2	Carter Rd	100.00	BAS 1.3	Bacon St	50.00
811-CR-4	Carter Rd	100.00	BAS 1.4	Bacon St	52.78
811-CR-5	Carter Rd	100.00	BAS 1.8	Bacon St	63.41
831-AH-001	Academy Hill Rd	90.00	BAS 2.1	Bacon St	72.22
831-BS-001	Bacon St	53.85	BAT 1.1*	Bathrick Rd	66.67
831-BS-002	Bacon St	52.63	BAT 1.14*	Bathrick Rd	100.00
831-BS-003	Bacon St	83.33	BAT 1.17	Bathrick Rd	100.00
831-BS-010	Bacon St	100.00	BAT 1.2	Bathrick Rd	58.82
831-BS-011*	Bacon St	62.50	BAT 1.25	Bathrick Rd	59.09
831-BS-016	Bacon St	50.00	BAT 1.3	Bathrick Rd	58.82
831-BS-15	Bacon St	52.94	BAT 1.4	Bathrick Rd	90.91
831-ER-003	E Gardener Rd	75.00	BRS 1.1	Bridge St	78.95
831-ER-004	E Gardener Rd	65.00	BSR 2.1	Betty Spring Rd	59.52
831-ER-007	E Gardener Rd	100.00	BSR 3.7	Betty Spring Rd	50.00
831-ER-008	E Gardener Rd	63.64	CL 1.5	Carpenter Ln	50.00
831-MR-001	Mossman Rd	72.73	CL 1.7*	Carpenter Ln	57.14
831-MR-002	Mossman Rd	62.50	CR 1.1	Carter Rd	50.00
831-MR-003	Mossman Rd	50.00	CR 5.1	Carter Rd	94.74
831-MR-006	Mossman Rd	100.00	CR 6.1	Carter Rd	75.00
831-NR-000*	N Common Rd	60.00	CS 2.3	Church St	55.56
831-NR-001	N Common Rd	55.56	DAW 1.1	Dawley Rd	54.17
831-NR-002	N Common Rd	65.22	DAW 1.2	Dawley Rd	62.50
831-NR-003	N Common Rd	76.92	DPT 1.2	Depot Rd	100.00
831-NR-004	N Common Rd	83.33	DPT 1.3	Depot Rd	75.00
831-NR-006	N Common Rd	63.16	DPT 1.4	Depot Rd	58.82
831-NR-008	N Common Rd	70.00	DPT 1.6*	Depot Rd	50.00
831-NR-009	N Common Rd	53.85	DPT 1.7	Depot Rd	100.00
831-NR-010	N Common Rd	100.00	DR 1.7	Narrows Rd	58.62
831-NR-014	N Common Rd	50.00	DR 1.8*	Narrows Rd	100.00
831-NR-017	N Common Rd	55.56	EAR 6.1*	East Rd	85.71
831-NR-018	N Common Rd	80.00	EAR 7.1*	East Rd	100.00
831-NR-019*	N Common Rd	100.00	ELS 1.2	Elliott St	53.33
831-NR-021*	N Common Rd	100.00	ELS 3.1*	Elliott St	85.71
831-NR-024	N Common Rd	83.33	ER 1.10	Ellis Rd	52.63
831-NR-026	N Common Rd	60.00	ER 1.2	Ellis Rd	60.71
831-NR-027	N Common Rd	100.00	ER 1.3	Ellis Rd	60.00
831-NR-028	N Common Rd	68.75	ER 1.7	Ellis Rd	56.52
831-NR-029	N Common Rd	72.22	ES 1.17	Smith Ave	58.33
831-NR-030	N Common Rd	100.00	ES 1.18	Smith Ave	65.38
831-NR-031	N Common Rd	79.17	ES 1.20	Smith Ave	70.83
831-NR-032	N Common Rd	77.27	ES 1.29	Nichols St	56.25
831-NR-033	N Common Rd	93.75	ES 1.33	Nichols St	54.55
831-NR-034	N Common Rd	100.00	ES 1.34	Nichols St	51.06
831-NR-036	N Common Rd	71.43	ES 1.36	Nichols St	58.70
831-NR-038	N Common Rd	72.73	ES 1.44*	Ellis Rd	60.00
831-OA-001	Oakmont Ave	50.00	ES 1.47	Ellis Rd	62.07
831-School-006	Academy Hill Rd	91.67	ES 2.1*	Ellis Rd	100.00
833-BS-017	Bacon St	74.07	FD 1.1*	Fenno Dr	83.33
AH 1.7	Academy Hill Rd	61.11	FD 1.3*	Fenno Dr	50.00

> 50% Full					
Catch Basin ID	Street Location	Sediment Percent Full (%)	Catch Basin ID	Street Location	Sediment Percent Full (%)
HOW 1.1	Howard Ln	100.00	VR 1.4*	East Rd	100.00
HR 1.3	Hy Rd	72.73	WAD 1.2	Wachusett Rd	66.67
KC 1.4	Kendall Ct	66.67	WAD 2.1	Wachusett Rd	84.21
KC 2.1	Kendall Ct	56.76	WAD 2.2	Wachusett Rd	60.87
KR 1.1	Knower Rd	53.85	WAT 1.0	Waterman Ln	100.00
LAL 1.1	Laurie Ln	77.78	WAT 1.2	Waterman Ln	57.69
LAL 1.3	Laurie Ln	73.08	WD 1.1	Woodland Dr	60.00
LAL 1.5	Laurie Ln	56.52	WD 1.2	Woodland Dr	84.00
LS 1.2*	Leominster St	100.00	WD 3.1	Woodland Dr	50.00
LS 1.6*	Leominster St	100.00	WD 4.5	Woodland Dr	66.67
MS 1.15	Main Street	100.00	WD 5.1	Woodland Dr	66.67
MS 1.35	Academy Hill Rd	64.29	WD 5.4	Taymax Rd	66.67
MS 1.36	Academy Hill Rd	84.00	WD 5.8	Woodland Dr	78.57
MS 1.38	Academy Hill Rd	100.00	WD 6.2	Woodland Dr	55.00
MS 1.39	Academy Hill Rd	77.78	WD 8.1	Woodland Dr	76.92
NR 1.39	N Common Rd	52.63	WD 8.3	Woodland Dr	52.17
NR 1.41	N Common Rd	50.00	WD 8.4	Woodland Dr	64.29
NR 14.3	Narrows Rd	76.47	WIL 1.2	Willard Rd	60.00
NR 3.2	Narrows Rd	66.67	WIL 1.3	Willard Rd	61.11
NR-722-1	Narrows Rd	53.33			
OVR 1.1	Overlook Rd	62.50			
OWO-1	Old Worcester Rd	52.94			
PAT 1.1	Patricia Rd	69.23			
PAT 1.2	Patricia Rd	51.35			
PAT 1.3	Patricia Rd	65.63			
PAT 1.4	Patricia Rd	65.91			
SAR 9.1	S Ashburnham Rd	58.82			
SFT 1.7	Sargent Rd	94.12			
SGT 1.3	Sargent Rd	76.67			
SGT 1.5	Sargent Rd	50.00			
SGT 4	Sargent Rd	52.94			
SHR-722-1	Stone Hill Rd	88.89			
SHR-722-2	Stone Hill Rd	100.00			
SIM 2	Simplex Dr	100.00			
SS 1.1	South St	60.00			
TFR 1.1	Town Farm Rd	65.00			
TFR 1.3	Town Farm Rd	60.00			
TFR 1.4	Town Farm Rd	68.18			
TFR 1.5	Town Farm Rd	61.11			
TFR 1.6	Town Farm Rd	60.00			
TFR 1.7	Town Farm Rd	76.92			
VIR 3.10	Village Inn Rd	100.00			
VIR 4.1	Village Inn Rd	88.89			
VIR 4.5	Village Inn Rd	52.17			
VIR 6.1	Village Inn Rd	60.87			
VIR 6.5	Village Inn Rd	66.67			
VIR 6.7	Village Inn Rd	100.00			
VIR 7.1	Village Inn Rd	78.95			
VIR 7.2	Village Inn Rd	77.27			
VR 1.1*	Val Rd	100.00			

*Catch basins with small sumps, which likely contributes to the fullness

Appendix G

Catch Basins on Priority Streets

>50% Full CBs on Priority Streets		
Street Location	Catch Basin ID	
Bacon Street	831-BS-001	831-BS-15
	831-BS-002	833-BS-017
	831-BS-003	BAS 1.3
	831-BS-010	BAS 1.4
	831-BS-011	BAS 1.8
	831-BS-016	BAS 2.1
E Gardener Road	831-ER-003	831-ER-007
	831-ER-004	831-ER-008
Mossman Road	831-MR-001	831-MR-003
	831-MR-002	831-MR-006
N Common Road	831-NR-000	831-NR-021
	831-NR-001	831-NR-024
	831-NR-002	831-NR-026
	831-NR-003	831-NR-027
	831-NR-004	831-NR-028
	831-NR-006	831-NR-029
	831-NR-008	831-NR-030
	831-NR-009	831-NR-031
	831-NR-010	831-NR-032
	831-NR-014	831-NR-033
	831-NR-017	831-NR-034
	831-NR-018	831-NR-036
	831-NR-019	831-NR-038
	NR 1.39	NR 1.41
Sargent Road	SFT 1.7	SGT 1.5
	SGT 1.3	SGT 4
Town Farm Road	TFR 1.1	TFR 1.5
	TFR 1.3	TFR 1.6
	TFR 1.4	TFR 1.7

Appendix H

Complete List of Priority Catch Basins

Priority Catch Basins								
1- Full		2- 50% to 100% Full				3- Remaining Catch Basins on Priority Streets	
Catch Basin ID	Street Location	Catch Basin ID	Street Location	Catch Basin ID	Street Location	Catch Basin ID	Street Location
811-CR-2	Carter Rd	810-LS-4	Lovell St	ER 1.7	Ellis Rd	831-BS-004	Bacon Street
811-CR-4	Carter Rd	831-AH-001	Academy Hill Rd	ES 1.17	Smith Ave	831-BS-005	
811-CR-5	Carter Rd	831-BS-001	Bacon St	ES 1.18	Smith Ave	831-BS-007	
831-BS-010	Bacon St	831-BS-002	Bacon St	ES 1.20	Smith Ave	831-BS-008	
831-ER-007	E Gardener Rd	831-BS-003	Bacon St	ES 1.29	Nichols St	831-BS-009	
831-MR-006	Mossman Rd	831-BS-011	Bacon St	ES 1.33	Nichols St	831-BS-012	
831-NR-010	N Common Rd	831-BS-016	Bacon St	ES 1.34	Nichols St	831-BS-013	
831-NR-019	N Common Rd	831-BS-15	Bacon St	ES 1.36	Nichols St	831-BS-014	
831-NR-021	N Common Rd	831-ER-003	E Gardener Rd	ES 1.44	Ellis Rd	833-BS-006	
831-NR-027	N Common Rd	831-ER-004	E Gardener Rd	ES 1.47	Ellis Rd	BAS 1.1	
831-NR-030	N Common Rd	831-ER-008	E Gardener Rd	FD 1.1	Fenno Dr	BAS 1.10	
831-NR-034	N Common Rd	831-MR-001	Mossman Rd	FD 1.3	Fenno Dr	BAS 1.11	
BAT 1.14	Bathrick Rd	831-MR-002	Mossman Rd	HR 1.3	Hy Rd	BAS 1.2	
BAT 1.17	Bathrick Rd	831-MR-003	Mossman Rd	KC 1.4	Kendall Ct	BAS 1.5	
DPT 1.2	Depot Rd	831-NR-000	N Common Rd	KC 2.1	Kendall Ct	BAS 1.6	
DPT 1.7	Depot Rd	831-NR-001	N Common Rd	KR 1.1	Knower Rd	BAS 1.7	
DR 1.8	Narrows Rd	831-NR-002	N Common Rd	LAL 1.1	Laurie Ln	BAS 1.9	
EAR 7.1	East Rd	831-NR-003	N Common Rd	LAL 1.3	Laurie Ln	BAS 2.2	
ES 2.1	Ellis Rd	831-NR-004	N Common Rd	LAL 1.5	Laurie Ln	831-ER-001	E Gardener Road
HOW 1.1	Howard Ln	831-NR-006	N Common Rd	MS 1.35	Academy Hill Rd	831-ER-002	
LS 1.2	Leominster St	831-NR-008	N Common Rd	MS 1.36	Academy Hill Rd	831-ER-005	
LS 1.6	Leominster St	831-NR-009	N Common Rd	MS 1.39	Academy Hill Rd	831-ER-006	
MS 1.15	Main Street	831-NR-014	N Common Rd	NR 1.39	N Common Rd	831-ER-009	
MS 1.38	Academy Hill Rd	831-NR-017	N Common Rd	NR 1.41	N Common Rd	831-MR-004	Mossman Road
SHR-722-2	Stone Hill Rd	831-NR-018	N Common Rd	NR 14.3	Narrows Rd	831-MR-005	
SIM 2	Simplex Dr	831-NR-024	N Common Rd	NR 3.2	Narrows Rd	831-MR-007	
VIR 3.10	Village Inn Rd	831-NR-026	N Common Rd	NR-722-1	Narrows Rd	831-MR-008	
VIR 6.7	Village Inn Rd	831-NR-028	N Common Rd	OVR 1.1	Overlook Rd	831-NR-005	N Common Road
VR 1.1	Val Rd	831-NR-029	N Common Rd	OWO-1	Old Worcester Rd	831-NR-007	
VR 1.4	East Rd	831-NR-031	N Common Rd	PAT 1.1	Patricia Rd	831-NR-011	
WAT 1.0	Waterman Ln	831-NR-032	N Common Rd	PAT 1.2	Patricia Rd	831-NR-013	
		831-NR-033	N Common Rd	PAT 1.3	Patricia Rd	831-NR-015	
		831-NR-036	N Common Rd	PAT 1.4	Patricia Rd	831-NR-016	
		831-NR-038	N Common Rd	SAR 9.1	S Ashburnham Rd	831-NR-018	
		831-OA-001	Oakmont Ave	SFT 1.7	Sargent Rd	831-NR-020	
		831-School-006	Academy Hill Rd	SGT 1.3	Sargent Rd	831-NR-022	
		833-BS-017	Bacon St	SGT 1.5	Sargent Rd	831-NR-023	
		AH 1.7	Academy Hill Rd	SGT 4	Sargent Rd	831-NR-025	
		BA 1.19	Lovell St	SHR-722-1	Stone Hill Rd	831-NR-035	
		BAS 1.3	Bacon St	SS 1.1	South St	831-NR-037	
		BAS 1.4	Bacon St	TFR 1.1	Town Farm Rd	831-NR-12	
		BAS 1.8	Bacon St	TFR 1.3	Town Farm Rd	NR 1.43	
		BAS 2.1	Bacon St	TFR 1.4	Town Farm Rd	NR 1.45	
		BAT 1.1	Bathrick Rd	TFR 1.5	Town Farm Rd	NR 1.47	
		BAT 1.2	Bathrick Rd	TFR 1.6	Town Farm Rd	NR 42	
		BAT 1.25	Bathrick Rd	TFR 1.7	Town Farm Rd	NR 44	
		BAT 1.3	Bathrick Rd	VIR 4.1	Village Inn Rd	NR 46	
		BAT 1.4	Bathrick Rd	VIR 4.5	Village Inn Rd	NR 48	
		BRS 1.1	Bridge St	VIR 6.1	Village Inn Rd	NR 5.1A	
		BSR 2.1	Betty Spring Rd	VIR 6.5	Village Inn Rd	NR 6.1	
		BSR 3.7	Betty Spring Rd	VIR 7.1	Village Inn Rd	NR-40	
		CL 1.5	Carpenter Ln	VIR 7.2	Village Inn Rd	SGT 1.1	Sargent Road
		CL 1.7	Carpenter Ln	WAD 1.2	Wachusett Rd	SGT 1.2	
		CR 1.1	Carter Rd	WAD 2.1	Wachusett Rd	SGT 6	
		CR 5.1	Carter Rd	WAD 2.2	Wachusett Rd	TFR 1.2	Town Farm Road
		CR 6.1	Carter Rd	WAT 1.2	Waterman Ln		
		CS 2.3	Church St	WD 1.1	Woodland Dr		
		DAW 1.1	Dawley Rd	WD 1.2	Woodland Dr		
		DAW 1.2	Dawley Rd	WD 3.1	Woodland Dr		
		DPT 1.3	Depot Rd	WD 4.5	Woodland Dr		
		DPT 1.4	Depot Rd	WD 5.1	Woodland Dr		
		DPT 1.6	Depot Rd	WD 5.4	Taymax Rd		
		DR 1.7	Narrows Rd	WD 5.8	Woodland Dr		
		EAR 6.1	East Rd	WD 6.2	Woodland Dr		
		ELS 1.2	Elliott St	WD 8.1	Woodland Dr		
		ELS 3.1	Elliott St	WD 8.3	Woodland Dr		
		ER 1.10	Ellis Rd	WD 8.4	Woodland Dr		
		ER 1.2	Ellis Rd	WIL 1.2	Willard Rd		
		ER 1.3	Ellis Rd	WIL 1.3	Willard Rd		

Appendix I

Maps of Priority Basins and Streets

GARDNER

BSR 3.7
BSR 2.1
BSR 3.2
COLONY ROAD
WEST MAIN STREET
SGT 1.2
SARGENT ROAD
SGT 1.1
SIM
SIM 1
ROUTE 2
RAMP-RT 140 TO RT 2 WB
SUNSET ROAD
SD 1.2
SD 1.4
SD 1.3
SD 1.1
CL 1.7
CL 1.8
CL 1.9
CL 1.6
SHADY AVENUE
Greenwood Pond
Tophet Swamp
STATE ROAD WEST
LIVERMORE HILL ROAD
RIDGE STREET
RS-730-1
RS-730-2
RS 4.1
OLD COUNTY ROAD
Wrights Reservoir
ELLIS ROAD
PARTRIDGE HILL ROAD
LAKE DRIVE WEST
LAKE DRIVE EAST
WHITNEY STREET
WHI 1.1
MINOTT ROAD
Minott Pond
KURIKKA PLACE
BOURGEOIS TERRACE
Cedar Swamp

Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Priority Roads
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W E
S

Sheet: A1

0 1,000
Feet

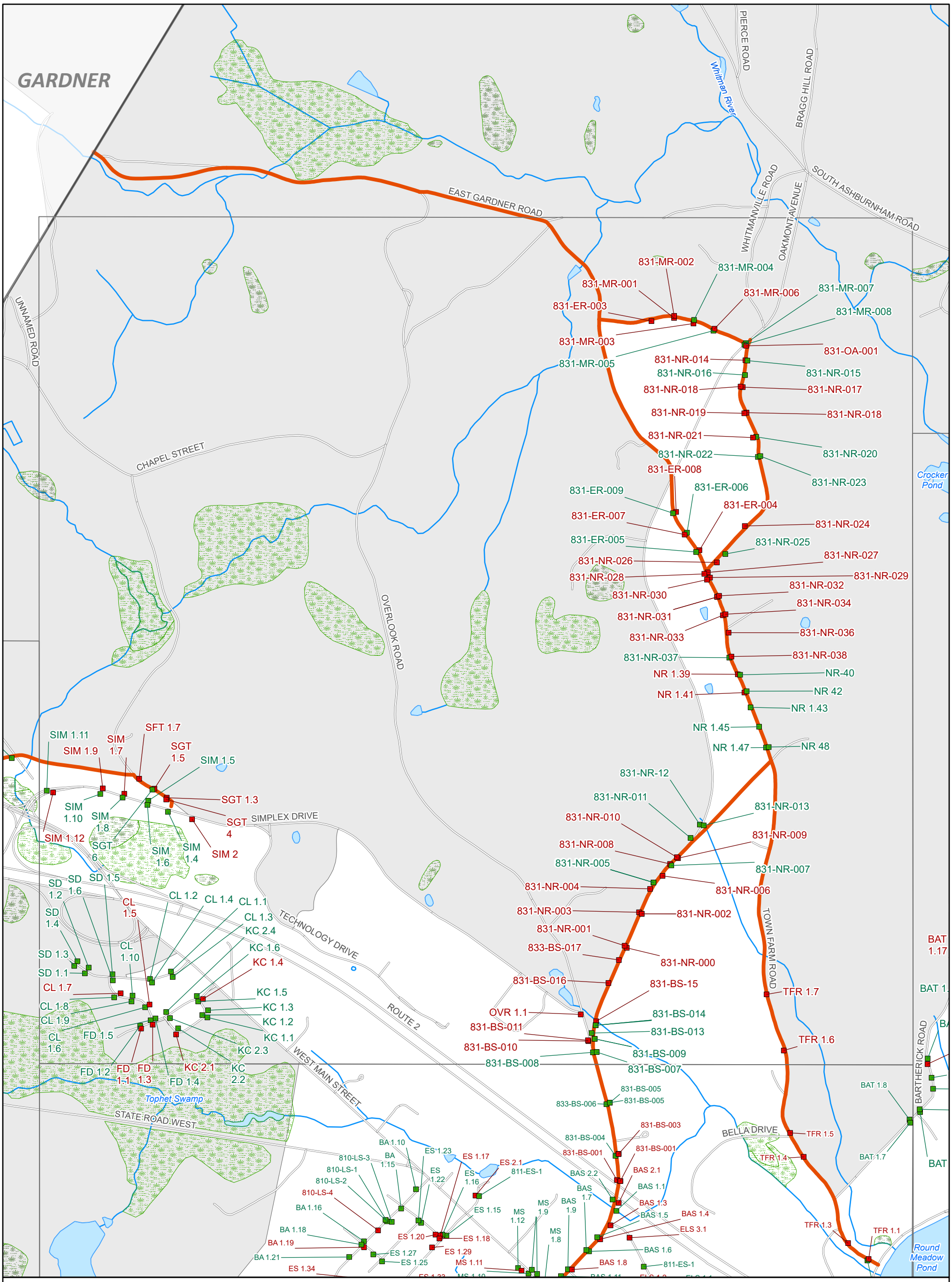
Full Catch Basin and Priority Roadways

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Priority Roads
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W E
S

Sheet: A2

0 1,000
Feet

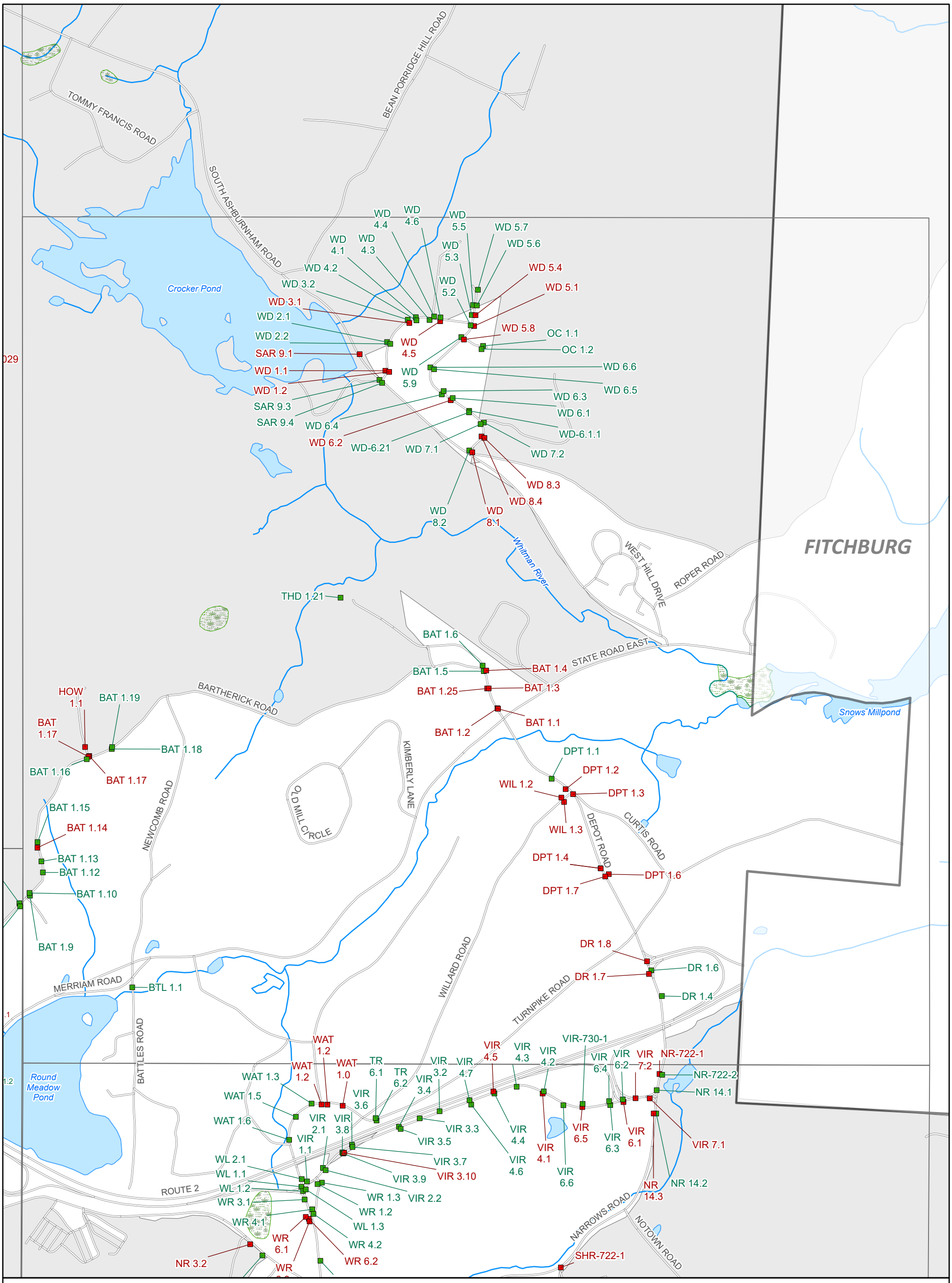
Full Catch Basin and Priority Roadways

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Priority Roads
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: A3

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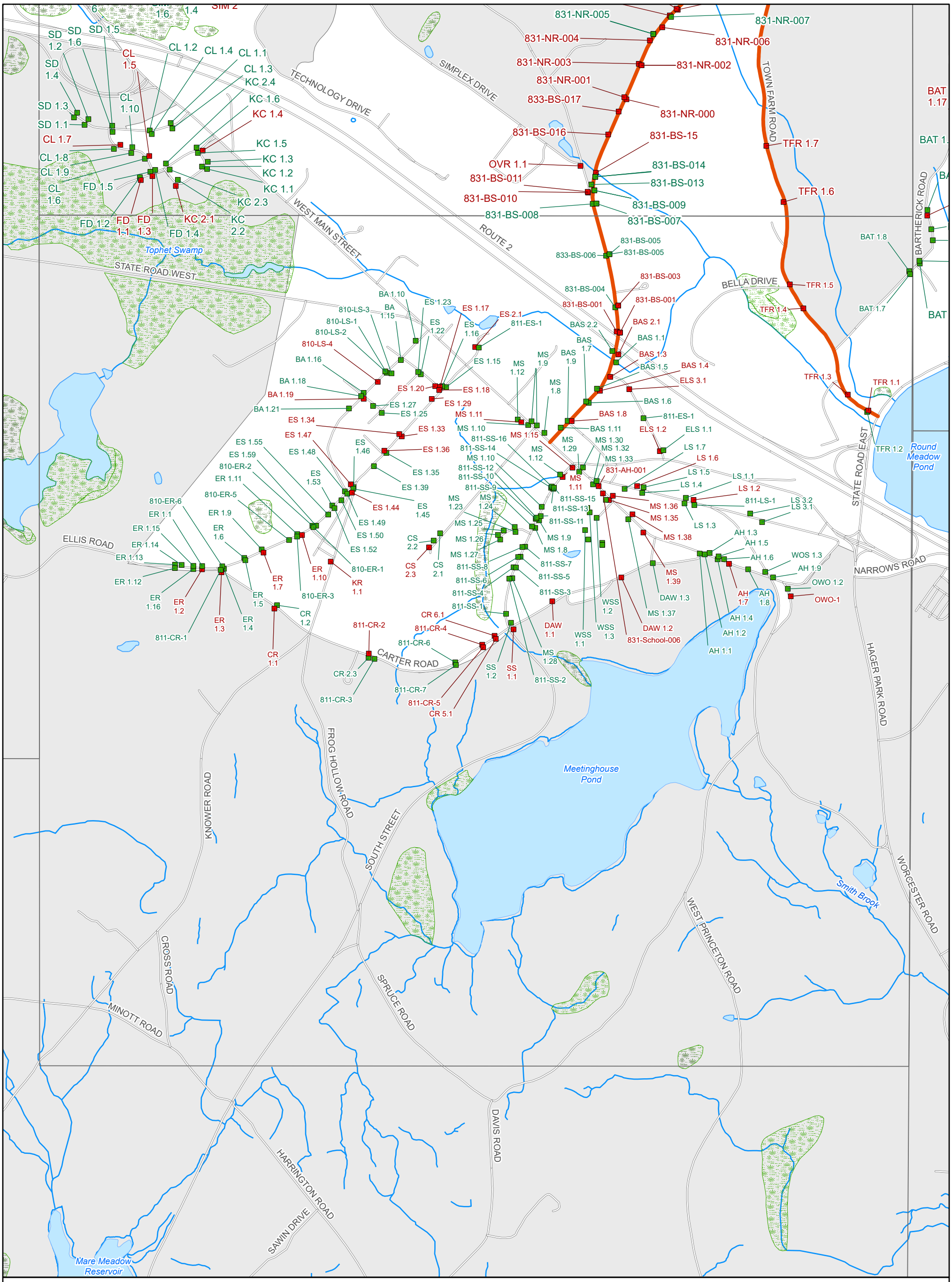
Full Catch Basin and Priority Roadways

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Priority Roads
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W E
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Sheet: B2

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Feet

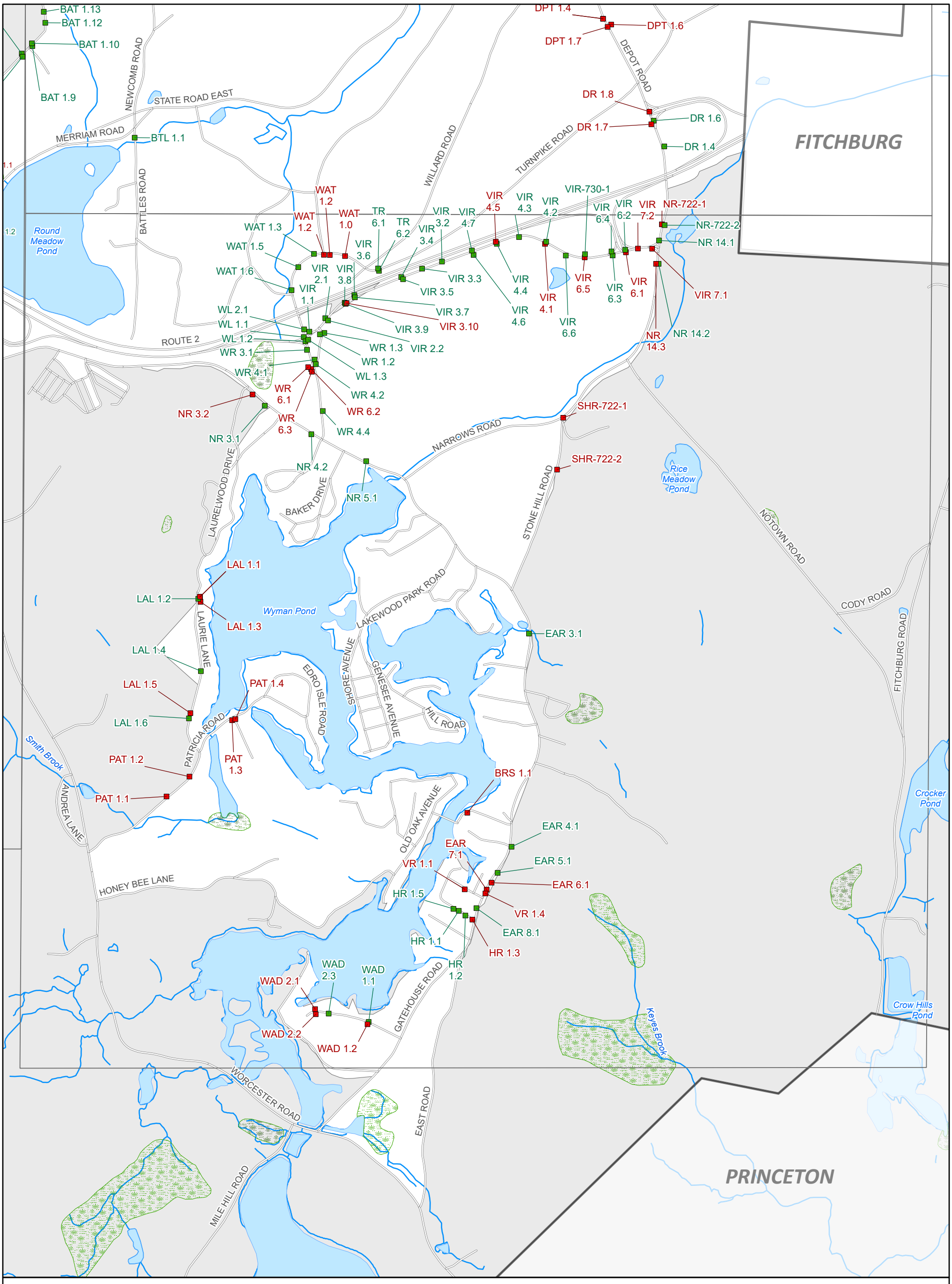
Full Catch Basin and Priority Roadways

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022



Legend

- Catch Basin >50% Full
- Catch Basin <50% Full
- Priority Roads
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

Sheet: B3

0 1,000

Feet

Full Catch Basin and Priority Roadways

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

2/21/2022

Appendix H

List of Stormwater BMPs and Inspection/Ranking Records

STORMWATER INSPECTION REPORT

To:	Mr. Josh Hall, P.E., DPW Director
From:	Nick Cristofori, P.E., Comprehensive Environmental Inc.
Date:	June 17, 2019
Locations:	Amber Road, Bathrick Road, Rebanna Road, Rock Maple Lane, Senior Center, Sawin Drive, Tommy Francis Road, Woodland Drive
Town:	Westminster, MA
Inspectors:	Sara Nelson, CEI
Inspection Dates:	June 16, 2020

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Westminster are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on June 16, 2020 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Westminster DPW identified 15 different BMPs that required inspections in order to meet permit requirements. BMP locations are identified by street name, with locations shown on a town-wide GIS map. Table 1 below details the locations and individual BMPs that were inspected, while Table 2 summarizes maintenance needs for each location. Table 3 at the end of the report provides additional inspection results and details of maintenance needs. BMP inspection results are detailed in the attached inspection sheets attached to this report, along with representative photo documentation.

At the time of the inspections, the weather was approximately 60 to 80 degrees and sunny for both days. Weather over a three-day period leading up to May 20th and May 21st was between 60 and 80 degrees and dry. Sara Nelson of CEI performed the inspections and noted the following general condition and maintenance needs:

Table 1 – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
Amber Road	AR-1	Detention Basin	Fair	Yes (minor)
Bathrick Road	BR-1	Detention Pond	Good	No
Rebanna Road	RR-1	Detention Pond	Good	No
Rocky Maple Lane	RM-1	Detention Basin	Good	No
Sawin Drive	SD-1	Detention Basin	Fair	Yes (minor)
Senior Center (east)	SC-1	Detention Basin	Good	No
Senior Center (west)	SC-2	Detention Basin	Good	No
Tommy Francis Road	TF-1	Detention Pond	Good	No

Table 1 (continued) – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
Tommy Francis Road	TF-2	Detention Basin	Fair	Yes (minor)
Woodland Drive	WD-1	Water Quality Swale	Fair	Yes (minor)
Woodland Drive	WD-2	Water Quality Swale	Fair	Yes (minor)
Woodland Drive	WD-3	Water Quality Swale	Fair	Yes (minor)
Woodland Drive	WD-4	Detention Pond	Good	No
Woodland Drive	WD-5	Detention Basin	Fair	Yes (minor)
Woodland Drive	WD-6	Detention Basin	Fair	Yes (minor)

Recommendations

Seven of the BMPs are in good operating order while the remaining eight are in fair condition and require minor maintenance as noted on the attached inspection sheets. Minor maintenance generally includes removal of plant material buildup, sediment vacuuming, trimming back or removal of vegetation, curb or edge of road maintenance, and general landscaping.

Table 2 below provides a brief summary of maintenance requirements for each BMP, while Table 3 provides additional information on inspection results. Based on CEI's inspections, the maintenance items identified in Table 2 below should be completed in order to improve BMP functionality.

Table 2 – BMP Maintenance Recommendations

BMP ID / Location	Recommendations
AR-1 Amber Road	• Jet and clean inlet pipe.
SD-1 Sawin Drive	• Cut and remove overgrown woody vegetation on earthen embankment and side slopes to maintain function and storage capacity.
TF-2 Tommy Francis Road	• Cut and remove vegetation on side slopes to maintain function and storage capacity.
WD-1 Woodland Drive	• Remove dead vegetation and replace as need to maintain function and storage capacity.
WD-2 Woodland Drive	• Remove sediment and debris to maintain storage capacity. • Remove floatables to prevent clogging. • Jet and clean inlet pipe. • Repair erosion with compacted fill and stabilize with fabric and stone armoring. • Remove dead vegetation and replace as need to maintain function and storage capacity.
WD-3 Woodland Drive	• Jet and clean inlet pipe. • Cut and remove overgrown woody vegetation on earthen embankment.
WD-5 Woodland Drive	• Repair erosion with compacted fill and stabilize with fabric and stone armoring.
WD-6 Woodland Drive	• Jet and clean inlet pipe. • Cut and remove overgrown woody vegetation on earthen embankment and side slopes to maintain function and storage capacity.

STORMWATER INSPECTION REPORT

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x303 or ncristofori@ceiengineers.com. Thank you.

Nick Cristofori, P.E.
Principal, Project Manager

Attachments:

- Stormwater inspection reports and photograph

Table 3 – Stormwater Infrastructure Inspected and Maintenance Recommendations

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
BMPs requiring routine inspection with no immediate follow up action required						
Bathrick Road	BR-1	Detention Pond	6/16/2020	Sediment accumulation	Less than ½ depth from bottom to invert**.**	No immediate action. Inspect annually.
				Clogged inlet pipe.	Any portion of pipe clogged <1/4 capacity.	No immediate action. Inspect annually.
				Overgrown vegetation on side slopes and bottom.	Vegetation not impacting function/ capacity	No immediate actions. Inspect annually and remove vegetation as needed.
Rebanna Road	RR-1	Detention Pond	6/16/2020	Overgrown woody vegetation on earthen embankment.	Woody vegetation <3" calipers and covering <50% embankment surface area.	No immediate actions. Inspect annually.
Rocky Maple Lane	RM-1	Detention Basin	6/16/2020	Clogged inlet pipe.	Any portion of pipe clogged <1/4 capacity.	No immediate action. Inspect annually.
Senior Center	SC-1	Detention Basin – east	6/16/2020	System in good condition.	NA	No immediate action. Inspect annually.
Senior Center	SC-2	Detention Basin – west	6/16/2020	Overgrowth of vegetation on bottom.	Vegetation not impacting function/capacity.	No immediate action. Inspect annually.
Tommy Francis	TF-1	Detention Pond	6/16/2020	Floatable buildup.	Floatable cover <50% of surface area.	No immediate action. Inspect annually.
				Blocked outlet grate.	Blockage covering <25% of surface area of grate.	No immediate action. Inspect annually.
Woodland Drive	WD-4	Detention Pond	6/16/2020	Sediment accumulation	Less than ½ depth from bottom to invert**.**	No immediate action. Inspect annually.
				Clogged inlet pipe.	Any portion of pipe clogged <1/4 capacity.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
BMPs Requiring Minor Maintenance						
Amber Road	AR-1	Detention Basin	6/16/2020	Sediment accumulation	Less than ½ depth from bottom to invert**.**	No immediate action. Inspect annually.
				Debris Accumulation.	Less than ½ depth from bottom to invert**.**	No immediate action. Inspect annually.
				Clogged inlet pipe.	Any portion of pipe clogged >1/4 capacity.	**Jet and clean pipe.**
				Overgrown woody vegetation in emergency spillway.	Woody vegetation blocking <25% of spillway.	No immediate actions. Inspect annually.
				Overgrown vegetation on side slopes and bottom.	Vegetation not impacting function / capacity or access.	No immediate action. Inspect annually.
Sawin Drive	SD-1	Detention Basin	6/16/2020	Sediment accumulation	Less than ½ depth from bottom to invert**.**	No immediate action. Inspect annually.
				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering >50% embankment surface area.	**Cut and remove vegetation.**
				Overgrown woody vegetation in emergency spillway.	Woody vegetation <3” caliper.	No immediate action. Inspect annually.
				Overgrown vegetation on side slopes.	Vegetation impacting function/capacity and access.	**Cut and remove vegetation on side slopes as needed to maintain function and storage capacity.**
	TF-2	Detention Basin	6/16/2020	Clogged inlet pipes.	Any portion of pipes clogged <1/4 capacity.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
BMPs Requiring Minor Maintenance						
Tommy Francis Road				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering <50% embankment surface area.	No immediate action. Inspect annually.
				Erosion on earthen embankment.	Gully or rill erosion <12" in any dimension.	No immediate action. Inspect annually.
				Overgrown of vegetation on side slopes and bottom.	Vegetation impacting function/capacity	**Cut and remove vegetation on side slopes as needed to maintain function and storage capacity.**
				Erosion on bottom.	Erosion not causing excess sedimentation or undermining.	No immediate action. Inspect annually.
Woodland Drive	WD-1	Water Quality Swale	6/16/2020	Sediment accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually and remove sediment to restore storage capacity.
				Debris accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually.
				Bottom of infiltration area clogged.	Less than ¾ of bottom area covered by sediment.	No immediate actions. Inspect annually.
				Dead vegetation.	Loss of vegetation and dead vegetation impacting function.	**Remove and replace vegetation as needed to maintain function.**
Woodland Drive	WD-2	Water Quality Swale	6/16/2020	Sediment accumulation.	Greater than ½ depth from bottom to invert.	**Remove sediment to restore storage capacity.**
				Debris accumulation.	Greater than ½ depth from bottom to invert.	**Remove debris to restore storage capacity.**
				Bottom of infiltration area clogged.	Less than ¾ of bottom area covered by sediment.	No immediate actions. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
BMPs Requiring Minor Maintenance						
				Floatable buildup.	Floatables cover >50% of surface area.	**Remove floatables to prevent clogging.**
				Clogged inlet pipe.	Pipe clogged >1/4 capacity.	**Jet and clean pipe.**
				Erosion on side slopes and bottom.	Erosion causing excess sedimentation and undermining.	**Repair erosion with compacted fill and stabilize with fabric and stone armoring.**
				Dead vegetation.	Dead vegetation impacting swale function.	**Remove and replace vegetation as needed to maintain function.**
Woodland Drive	WD-3	Water Quality Swale	6/16/2020	Sediment accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually and remove sediment to restore storage capacity.
				Debris accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually.
				Floatables buildup.	Floatables cover <50% of surface area.	No immediate action. Inspect annually.
				Clogged inlet.	Pipe clogged >1/4 capacity.	**Jet and clean pipe.**
				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering >50% embankment surface area.	**Cut and remove vegetation.**
				Overgrown woody vegetation in emergency spillway.	Woody vegetation <3" calipers.	No immediate actions. Inspect annually.
				Overgrown vegetation on side slopes.	Vegetation not impacting function/capacity.	No immediate actions. Inspect annually.
Woodland Drive	WD-5	Detention Basin	6/16/2020	Sediment accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually and remove sediment to restore storage capacity.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
BMPs Requiring Minor Maintenance						
				Debris accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually.
				Erosion on bottom.	Erosion causing excess sedimentation and channeling.	**Repair erosion with compacted fill and stabilize with fabric and stone armoring.**
Woodland Drive	WD-6	Detention Basin	6/16/2020	Sediment accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually and remove sediment to restore storage capacity.
				Debris accumulation.	Less than ½ depth from bottom to invert.	No immediate actions. Inspect annually.
				Clogged inlet pipe.	Pipe clogged >1/4 capacity.	**Jet and clean pipe.**
				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering >50% embankment surface area.	**Cut and remove vegetation.**
				Overgrown woody vegetation in emergency spillway.	Woody vegetation <3" caliper.	No immediate actions. Inspect annually.
				Overgrown of vegetation on side slopes and bottom.	Vegetation impacting function/capacity	**Cut and remove vegetation on side slopes as needed to maintain function and storage capacity.**

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BEAN PORRIDGE HILL ROAD
BARREL ROAD
Whitman River
Whitmanville Reservoir
Muddy Pond
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
RM-1
EAST GARDNER ROAD
TF-1
TF-2
AR-1
WD-2
WD-4
WD-5
WD-1
WD-6
WD-3
RR-1
CHAPEL STREET
OAKMONT AVENUE
OVERLOOK ROAD
Crocker Pond
SARGENT ROAD
WEST MAIN STREET
TECHNOLOGY DRIVE
SIMPLEX DRIVE
NORTH COMMON ROAD
TOWN FARM ROAD
BR-1
BARTHERICK ROAD
Snows Millpond
Greenwood Pond
STATE ROAD WEST
SC-2
Tophet Swamp
NEWCOMB ROAD
DEPOT ROAD
TURNPIKE ROAD
MAIN STREET
BACON STREET
ROUTE 2
STATE ROAD EAST
WILLARD ROAD
SC-1
Round Meadow Pond
BATTLES ROAD
VILLAGE INN ROAD
Wrights Reservoir
ELLIS ROAD
CARTER ROAD
HAGER PARK ROAD
Sawmill Pond
NARROWS ROAD
NOTOWN ROAD
Minott Pond
Partridge Pond
Rice Meadow Pond
FITCHBURG ROAD
Meetinghouse Pond
Wyman Pond
Cedar Swamp
Smith Brook
SPRUCE ROAD
DAVIS ROAD
MINOTT ROAD
KNOWER ROAD
HONEY BEE LANE
Crocker Pond
SOUTH STREET
WORCESTER ROAD
EAST ROAD
Keyes Brook
SD-1
Lovewell Pond
WEST PRINCETON ROAD
BOLTON ROAD
MILE HILL ROAD
Mare Meadow Reservoir
Noyes Pond
East Branch Ware River
LANES ROAD
Bickford Pond

Legend

- BMPs
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

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Stormwater BMP Map

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

6/29/2020

STORMWATER INSPECTION REPORT

To:	Mr. Josh Hall, P.E., DPW Director
From:	Nick Cristofori, P.E., Comprehensive Environmental Inc.
Date:	June 1, 2021
Locations:	Amber Road, Bathrick Road, Rebanna Road, Rock Maple Lane, Senior Center, Sawin Drive, Tommy Francis Road, Woodland Drive
Town:	Westminster, MA
Inspectors:	Nicole Haggerty, CEI
Inspection Dates:	May 24, 2021

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Westminster are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on May 24, 2021 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Westminster DPW identified 15 different BMPs that required inspections in order to meet permit requirements. BMP locations are identified by street name, with locations shown on a town-wide GIS map. Table 1 below details the locations and individual BMPs that were inspected, while Table 2 summarizes maintenance needs for each location. Table 3 at the end of the report provides additional inspection results and details of maintenance needs. BMP inspection results are detailed in the attached inspection sheets attached to this report, along with representative photo documentation.

At the time of the inspections, the weather was approximately 55 to 65 degrees and sunny. Weather over a three-day period leading up to May 24th was between 60 and 80 degrees and dry. Nicole Haggerty of CEI performed the inspections and noted the following general condition and maintenance needs:

Table 1 – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
8 Amber Road	AR-1	Forebay & Detention Basin	Fair	Yes (minor)
141 Bathrick Road	BR-1	Detention Basin	Good	No
3 Rebanna Road	RR-1	Detention Basin	Good	No
23 Rocky Maple Lane	RM-1	Detention Basin	Good	No
20 Sawin Drive	SD-1	Detention Basin	Fair	Yes (minor).
Senior Center (east)	SC-1	Detention Basin	Good	No
Senior Center (west)	SC-2	Detention Basin	Good	No
10 Tommy Francis Road	TF-1	Detention Basin	Fair	Yes (minor)

Table 1 (continued) – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
40 Tommy Francis Road	TF-2	Detention Basin	Fair	Yes (minor)
39 Woodland Drive	WD-1	Grass Swale	Fair	Yes (minor)
35 Woodland Drive	WD-2	Grass Swale	Fair	Yes (minor)
1 Woodland Drive	WD-3	Grass Swale	Fair	Yes (minor)
31 Woodland Drive	WD-4	Detention Basin	Good	No
23 Woodland Drive	WD-5	Detention Basin	Fair	Yes (minor)
5 Woodland Drive	WD-6	Detention Basin	Fair	Yes (minor)

Recommendations

Six of the BMPs are in good operating order while the remaining nine are in fair condition and require minor maintenance as noted on the attached inspection sheets. Minor maintenance generally includes removal of plant material buildup, sediment vacuuming, trimming back or removal of vegetation, curb or edge of road maintenance, and general landscaping. Table 2 below provides a brief summary of maintenance requirements for each BMP, while Table 3 provides additional information on inspection results. Based on CEI's inspections, the maintenance items identified in Table 2 below should be completed in order to improve BMP functionality.

Table 2 – BMP Maintenance Recommendations

BMP ID / Location	Recommendations
AR-1 / Amber Road	• Remove and replace vegetation as needed to maintain function or aesthetics. • Remove sediment accumulation from within pipe.
SD-1 / Sawin Drive	• Cut and remove overgrown woody vegetation on earthen embankment and side slopes to maintain function and capacity.
TF-1 / Tommy Francis Road	• Patch/repair holes or replace outlet control structure.
TF-2 / Tommy Francis Road	• Cut and remove excess vegetation to maintain function and capacity.
WD-1 / Woodland Drive	• Cut and remove excess vegetation to maintain function and capacity. • Remove dead vegetation and replace as needed to maintain function or aesthetics.
WD-2 / Woodland Drive	• Remove and replace vegetation as needed to maintain function or aesthetics. • Remove sediment accumulation from within pipe.
WD-3 / Woodland Drive	• Cut and remove excess vegetation as needed to maintain function and capacity. • Remove dead vegetation and replace as needed to maintain function or aesthetics. • Jet and clean pipe to establish location and condition.
WD-5 / Woodland Drive	• Remove and replace vegetation as needed to maintain function or aesthetics.
WD-6 / Woodland Drive	• Cut and remove excess vegetation on side slopes as needed to maintain function and capacity.

BMPs should be maintained as outlined above and inspections should continue annually. The BMP inspection for 2022 is scheduled to occur in the spring. If additional Town-owned BMPs are identified, they should also be maintained as needed and inspected annually. BMP maps and inventories should also be updated to reflect all BMPs, and as-built plans should be retained on file where possible to aid in future inspections.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x303 or ncristofori@ceiengineers.com. Thank you.

Nick Cristofori, P.E.
Principal, Project Manager

Attachments:

- Table 3 – Stormwater Infrastructure Inspected and Maintenance Recommendations
- Stormwater BMP map
- Stormwater inspection reports and photograph

STORMWATER INSPECTION REPORT

Table 3 – Stormwater Infrastructure Inspected and Maintenance Recommendations

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
Amber Road	AR-1	Detention Basin	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Displaced riprap at inlet.	Loss of stone <12" in any dimension.	No immediate action. Inspect annually.
				Dead vegetation.	Dead vegetation impacting function or aesthetics.	**Remove and replace vegetation as needed to maintain function or aesthetics.**
				Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Clogged inlet piping.	Any portion of pipe clogged <1/4 capacity.	No immediate action. Inspect annually.
Bathrick Road	BR-1	Detention Pond	5/24/2021	Clogged inlet/ outlet piping.	Any portion of pipe clogged <1/4 capacity.	No immediate action. Inspect annually.
				Displaced riprap on emergency spillway.	Loss of stone <12" in any dimension.	No immediate action. Inspect annually.
Rebenna Road	RR-1	Detention Pond	5/24/2021	Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
Rocky Maple Lane	RM-1	Detention Basin	5/24/2021	Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
Sawin Drive	SD-1	Detention Basin	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Overgrown woody vegetation on earthen embankment.	Woody vegetation >3 inches caliper and covering >50% embankment surface area.	**Cut and remove vegetation.**
				Overgrown woody vegetation in emergency spillway.	Woody vegetation blocking <25% of spillway width.	No immediate action. Inspect annually.
Senior Center (east)	SC-1	Detention Basin	5/24/2021	Displaced riprap on emergency spillway.	Loss of stone <12" in any dimension.	No immediate action. Inspect annually.
				Blocked outlet grate.	Blockage covering <25% of surface area of grate.	No immediate action. Inspect annually.
Senior Center (west)	SC-2	Detention Basin	5/24/2021	System in good condition.	N/A	No immediate action. Inspect annually.
Tommy Francis Road	TF-1	Detention Pond	5/24/2021	Overgrown vegetation on side slopes.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Holes on side slopes.	Holes not causing excess sedimentation or undermining of BMP components.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
				Structural damage.	Holes >3" in any dimension and rusting/ deterioration.	**Patch/ repair hole.**
Tommy Francis Road	TF-2	Detention Basin	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation impacting BMP function and capacity.	**Cut and remove vegetation as needed to maintain function and storage capacity.**
				Erosion on bottom.	Erosion not causing excess sedimentation or undermining of BMP components.	No immediate action. Inspect annually.
				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering <50% embankment surface area.	No immediate action. Inspect annually.
				Overgrown woody vegetation in emergency spillway.	Woody vegetation blocking >25% of spillway width.	**Cut and remove vegetation.**
Woodland Drive	WD-1	Water Quality Swale	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation impacting BMP function and capacity.	**Cut and remove vegetation as needed to maintain function and storage capacity.**
				Dead vegetation.	Dead vegetation impacting function or aesthetics.	**Remove and replace vegetation as needed to maintain function or aesthetics.**
				Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
				Infiltration area clogged.	<3/4 of bottom area covered by sediment.	No immediate action. Inspect annually.
				Overgrown woody vegetation in emergency spillway.	Woody vegetation blocking <25% of spillway width.	No immediate action. Inspect annually.
Woodland Drive	WD-2	Water Quality Swale	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Dead vegetation.	Dead vegetation impacting function or aesthetics.	**Remove and replace vegetation as needed to maintain function or aesthetics.**
				Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Floatables buildup.	Floatables cover <50% of surface area.	No immediate action. Inspect annually.
				Clogged inlet piping.	Any portion of pipe clogged >1/4 capacity.	**Jet and clean pipe.**
				Infiltration area clogged.	<3/4 of bottom area covered by sediment.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
Woodland Drive	WD-3	Water Quality Swale	5/24/2021	Overgrown vegetation on side slopes/ bottom.	Vegetation impacting BMP function and capacity.	**Cut and remove vegetation as needed to maintain function and storage capacity.**
				Dead vegetation.	Dead vegetation impacting function or aesthetics.	**Remove and replace vegetation as needed to maintain function or aesthetics.**
				Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Debris accumulation.	Accumulation >1/2 depth from bottom to invert.	**Remove debris to restore storage capacity.**
				Clogged inlet piping.	Any portion of pipe clogged >1/4 capacity.	**Jet and clean pipe.**
Woodland Drive	WD-4	Detention Pond	5/24/2021	Overgrown vegetation on side slopes.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Floatables buildup.	Floatables cover <50% of surface area.	No immediate action. Inspect annually.
Woodland Drive	WD-5	Detention Basin	5/24/2021	Overgrown vegetation on side slopes.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Displaced riprap at inlet.	Loss of stone <12” any dimension.	No immediate action. Inspect annually.

STORMWATER INSPECTION REPORT

Location	BMP ID	Stormwater BMP Type	Inspection Date	Field Observations	Action Standard	Inspection or Maintenance Action
				Dead vegetation.	Dead vegetation impacting function or aesthetics.	**Remove and replace vegetation as needed to maintain function or aesthetics.**
				Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Floatables buildup.	Floatables cover <50% of surface area.	No immediate action. Inspect annually.
Woodland Drive	WD-6	Detention Basin	5/24/2021	Overgrown vegetation on side slopes.	Vegetation not impacting BMP function or capacity.	No immediate action. Inspect annually.
				Sediment accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Debris accumulation.	Accumulation <1/2 depth from bottom to invert.	No immediate action. Inspect annually.
				Overgrown woody vegetation on earthen embankment.	Woody vegetation covering >50% embankment surface area.	**Cut and remove vegetation.**
				Displaced riprap on emergency spillway.	Loss of stone <12” in any dimension.	No immediate action. Inspect annually.
				Overgrown woody vegetation in emergency spillway.	Woody vegetation blocking <25% of spillway width.	No immediate action. Inspect annually.

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BEAN PORRIDGE HILL ROAD
BARREL ROAD
Whitman River
Whitmanville Reservoir
Muddy Pond
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
RM-1
EAST GARDNER ROAD
TF-1
TF-2
AR-1
WD-2
WD-4
WD-5
WD-1
WD-6
WD-3
RR-1
CHAPEL STREET
OAKMONT AVENUE
OVERLOOK ROAD
Crocker Pond
SARGENT ROAD
WEST MAIN STREET
TECHNOLOGY DRIVE
SIMPLEX DRIVE
NORTH COMMON ROAD
TOWN FARM ROAD
BR-1
BARTHERICK ROAD
Snows Millpond
Greenwood Pond
STATE ROAD WEST
SC-2
Tophet Swamp
NEWCOMB ROAD
DEPOT ROAD
TURNPIKE ROAD
MAIN STREET
BACON STREET
ROUTE 2
STATE ROAD EAST
WILLARD ROAD
SC-1
Round Meadow Pond
BATTLES ROAD
VILLAGE INN ROAD
Wrights Reservoir
ELLIS ROAD
CARTER ROAD
HAGER PARK ROAD
Sawmill Pond
NARROWS ROAD
NOTOWN ROAD
Minott Pond
Partridge Pond
Rice Meadow Pond
FITCHBURG ROAD
Meetinghouse Pond
Wyman Pond
Cedar Swamp
Smith Brook
SPRUCE ROAD
DAVIS ROAD
MINOTT ROAD
KNOWER ROAD
HONEY BEE LANE
Crocker Pond
SOUTH STREET
WORCESTER ROAD
EAST ROAD
Keyes Brook
SD-1
Lovewell Pond
WEST PRINCETON ROAD
BOLTON ROAD
MILE HILL ROAD
Mare Meadow Reservoir
Noyes Pond
East Branch Ware River
LANES ROAD
Bickford Pond

Legend

- BMPs
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

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Stormwater BMP Map

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

6/29/2020

STORMWATER BMP INSPECTION REPORT

To:	Mr. Josh Hall, P.E., DPW Director
From:	Nick Cristofori, P.E., Comprehensive Environmental Inc.
Date:	June 1, 2021
Locations:	Amber Road, Bathrick Road, Rebanna Road, Rock Maple Lane, Senior Center, Sawin Drive, Tommy Francis Road, Woodland Drive
Town:	Westminster, MA
Inspectors:	Iain Church, CEI
Inspection Dates:	April 29, 2022

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Westminster are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on April 29, 2022 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Westminster DPW identified 15 different BMPs that required inspections in order to meet permit requirements. BMP locations are identified by street name, with locations shown on a town-wide GIS map. Table 1 below details the locations and individual BMPs that were inspected, while Table 2 summarizes maintenance needs for each location. Table 3 at the end of the report provides additional inspection results and details of maintenance needs. BMP inspection results are detailed in the attached inspection sheets attached to this report, along with representative photo documentation.

At the time of the inspections, the weather was approximately 34 to 53 degrees and sunny. Weather over a three-day period leading up to April 29th was between 36 and 52 degrees and dry. Iain Church of CEI performed the inspections and noted the following general condition and maintenance needs:

Table 1 – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
8 Amber Road	AR-1	Forebay & Detention Basin	Good	No
141 Bathrick Road	BR-1	Detention Basin	Good	No
23 Rocky Maple Lane	RM-1	Detention Basin	Good	No

Table 1 (continued) – Stormwater Infrastructure Inspected

Location	BMP ID	Stormwater BMP Type	Overall Condition	Requires Maintenance
3 Rebanna Road	RR-1	Detention Basin	Good	No
Senior Center (east)	SC-1	Detention Basin	Good	No
Senior Center (west)	SC-2	Detention Basin	Good	No
20 Sawin Drive	SD-1	Detention Basin	Good	No
10 Tommy Francis Road	TF-1	Detention Basin	Good	No
40 Tommy Francis Road	TF-2	Detention Basin	Fair	Yes (minor)
39 Woodland Drive	WD-1	Grass Swale	Fair	Yes (minor)
35 Woodland Drive	WD-2	Grass Swale	Fair	Yes (minor)
1 Woodland Drive	WD-3	Grass Swale	Fair	Yes (minor)
31 Woodland Drive	WD-4	Detention Basin	Good	No
23 Woodland Drive	WD-5	Detention Basin	Good	No
5 Woodland Drive	WD-6	Detention Basin	Fair	Yes (minor)

Recommendations

Ten of the BMPs are in good operating order while the remaining five are in fair condition and require minor maintenance as noted on the attached inspection sheets. Minor maintenance generally includes removal of plant material buildup, sediment vacuuming, trimming back or removal of vegetation, and general landscaping. Table 2 below provides a brief summary of maintenance requirements for each BMP, while Table 3 provides additional information on inspection results. Based on CEI's inspections, the maintenance items identified in Table 2 below should be completed in order to improve BMP functionality.

Table 2 – BMP Maintenance Recommendations

BMP ID / Location	Recommendations
TF-2 / Tommy Francis Road	• Cut and remove excess woody vegetation on emergency spillway to maintain function and capacity.
WD-1 / Woodland Drive	• Cut and remove excess vegetation to maintain function and capacity. • Remove dead vegetation and replace as needed to maintain function or aesthetics.
WD-2 / Woodland Drive	• Remove sediment accumulation from within pipe to maintain function and capacity.
WD-3 / Woodland Drive	• Remove dead trees and woody vegetation on emergency spillway as needed to maintain function or aesthetics.
WD-6 / Woodland Drive	• Remove sediment accumulation from within pipe to maintain function and capacity. • Cut and remove excess woody vegetation to maintain function and capacity.

BMPs should be maintained as outlined above and inspections should continue annually. The BMP

inspection for 2023 is scheduled to occur in the spring. If additional Town-owned BMPs are identified, they should also be maintained as needed and inspected annually. BMP maps and inventories should also be updated to reflect all BMPs, and as-built plans should be retained on file where possible to aid in future inspections.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x303 or ncristofori@ceiengineers.com. Thank you.

Nick Cristofori, P.E.
Principal, Project Manager

Attachments:

- Stormwater BMP map
- Stormwater inspection reports and photograph

ASHBURNHAM
GARDNER
FITCHBURG
HUBBARDSTON
PRINCETON
ASHBURNHAM STATE ROAD
DEAN HILL ROAD
FRED SMITH ROAD
BEAN PORRIDGE HILL ROAD
BARREL ROAD
Whitman River
Whitmanville Reservoir
Muddy Pond
SOUTH ASHBURNHAM ROAD
BRAGG HILL ROAD
RM-1
EAST GARDNER ROAD
TF-1
TF-2
AR-1
WD-2
WD-4
WD-5
WD-1
WD-6
WD-3
RR-1
CHAPEL STREET
OAKMONT AVENUE
OVERLOOK ROAD
Crocker Pond
SARGENT ROAD
WEST MAIN STREET
TECHNOLOGY DRIVE
SIMPLEX DRIVE
NORTH COMMON ROAD
TOWN FARM ROAD
BR-1
BARTHERICK ROAD
Snows Millpond
Greenwood Pond
STATE ROAD WEST
SC-2
Tophet Swamp
NEWCOMB ROAD
DEPOT ROAD
TURNPIKE ROAD
MAIN STREET
BACON STREET
ROUTE 2
STATE ROAD EAST
WILLARD ROAD
SC-1
Round Meadow Pond
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VILLAGE INN ROAD
Wrights Reservoir
ELLIS ROAD
CARTER ROAD
HAGER PARK ROAD
Sawmill Pond
NARROWS ROAD
NOTOWN ROAD
Minott Pond
Partridge Pond
Rice Meadow Pond
FITCHBURG ROAD
Meetinghouse Pond
Wyman Pond
Cedar Swamp
Smith Brook
SPRUCE ROAD
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Legend

- BMPs
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

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Stormwater BMP Map

Westminster, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Westminster, CEI

6/29/2020

Appendix I

Annual Reports

Year 1 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: May 1, 2018-June 30, 2019

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed.

Part I: Contact Information

Name of Municipality or Organization: Town of Westminster

EPA NPDES Permit Number: MAR041233

Primary MS4 Program Manager Contact Information

Name: Joshua W. Hall, PE Title: Director of Public Works

Street Address Line 1: 2 Oakmont Avenue

Street Address Line 2: na

City: Westminster State: MA Zip Code: 01473

Email: jhall@westminster-ma.gov Phone Number: (978) 874-5572

Fax Number: na

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.westminster-ma.gov/stormwater-management

Date SWMP was Last Updated: June 30, 2019

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

Part II: Self Assessment

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

Impairment(s)

☐ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☐ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☐ Charles River Watershed Phosphorus ☒ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 1 Requirements

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

    https://www.westminster-ma.gov/stormwater-management; IDDE Plan, Appendix B
- ☒ Develop written IDDE plan including a procedure for screening and sampling outfalls
- ☒ IDDE ordinance complete
- ☒ Identify each outfall and interconnection discharging from MS4, classify into the relevant category, and priority rank each catchment for investigation
  - ○ The priority ranking of outfalls/interconnections is attached to the email submission
  - ◉ The priority ranking of outfalls/interconnections can be found at the following website:

    https://www.westminster-ma.gov/stormwater-management; IDDE Plan, Appendix C
- ☐ Construction/ Erosion and Sediment Control (ESC) ordinance complete
- ☐ Develop written procedures for site inspections and enforcement of sediment and erosion control measures
- ☒ Develop written procedures for site plan review
- ☐ Keep a log of catch basins cleaned or inspected
- ☐ Complete inspection of all stormwater treatment structures

Annual Requirements

- ☒ Annual opportunity for public participation in review and implementation of SWMP
- ☒ Comply with State Public Notice requirements
- ☒ Keep records relating to the permit available for 5 years and make available to the public
- ☒ Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- ☐ Annual training to employees involved in IDDE program
- ☒ All curbed roadways have been swept a minimum of one time per year

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

Annual Requirements

*Public Education and Outreach**

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

- ☐ Any structural BMPs listed in 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. Document 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 in each each annual report

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

Annual Requirements

*Public Education and Outreach**

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs listed in Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix H. Document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each each annual report

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

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

Lake and Pond Phosphorus TMDL

☐ Begin Phase 1 Lake Phosphorus Control Plan (LPCP)

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

Public Education and Outreach - The Town developed a comprehensive public education program during Year 1. In part, this program consisted of assembling numerous outreach flyers with specific messages and topics for each of the required four audiences and tailored specifically to the Town. During Year 2, this program will be expanded to include a detailed schedule for material distribution, including seasonal messages for nitrogen and phosphorus TMDL and impaired waters requirements. Seasonal message outreach will start during fall 2019.

Construction/Erosion and Sediment Control Bylaw - Requirements are partially met in the existing Town regulations which in part require erosion and sediment controls and site plan review, however, these do not provide a comprehensive program that applies to all sites that disturb one acre or more. The Town has been actively revising its existing regulations in August and September 2019. and currently anticipates revising its bylaws and regulations, along with the post-construction bylaw updates required during Year 2, in fall 2019.

Procedures for Site Inspections and Sediment and Erosion Control Enforcement - In conjunction with the regulatory and bylaw updates outlined above, the Town will incorporate comprehensive requirements for site inspections and construction site enforcement actions. This is also anticipated to occur in fall 2019.

Catch Basin Tracking - The Town has not yet begun to track catch basin cleanings or inspections, however has developed a comprehensive Catch Basin Cleaning Optimization Plan that in part includes procedures and forms for tracking maintenance activities. Tracking will begin during Year 2.

Stormwater BMP Inspections - The Town is currently developing an inventory of its town-owned Stormwater BMPs. Inspections are expected to begin during Year 2.

IDDE Training - An employee IDDE Training program will be developed during Year 2, with annual training to be performed starting in Year 2.

Nitrogen/Phosphorus Structural BMP Tracking - The Town will begin evaluation of its permittee-owned stormwater BMPs during future years in conjunction with preparing the nutrient source identification reports. It is expected this task will not start until at least Year 3.

Increased Sweeping for High Pollutant Loads - This was determined not to be necessary for the Town as these areas are not observed to accumulate more sediment and debris than other areas within the Town.

LPCP Phase 1 - The Town will begin preparation of its LPCP during Year 2, beginning with a legal analysis in accordance with permit schedule requirements.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

Yes ☒ No ☐

If yes, describe below, including any relevant impairments or TMDLs:

Part III of the NOI should be amended as follows:

Actions for Meeting Total Maximum Daily Load (TMDL) Requirements:
- Add Millers Basin Lakes (phosphorus); Adhere to requirements in part A.II of Appendix F.

Actions for Meeting Requirements Related to Water Quality Limited Waters:
- Add MA81098 Partridge Pond (turbidity); Adhere to requirements in part V of Appendix H.

The above changes have been reflected in the Town's SWMP Plan.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed during the reporting period: 2

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

BMP: Stormwater Website

Message Description and Distribution Method:

Develop a town stormwater website with a links to external sites such as EPA and MassDEP, as well as provide numerous stormwater brochures for download and audience-specific messages.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology, Department of Public Works

Measurable Goal(s):

Continue to update and maintain the website.

Message Date(s): Ongoing

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

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

If yes, describe why the change was made:

BMP: Social Media Outreach

Message Description and Distribution Method:

Post messages related to stormwater on the Town's Facebook page.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology

Measurable Goal(s):

Post stormwater-related information on the Town's Facebook page.

Message Date(s): June 21, 2019 during FY 2019

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

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

If yes, describe why the change was made:

While the NOI was limited to following the statewide ThinkBlue campaign, the Town has since expanded the program to also include posting information pertaining to a local audience.

Add an Educational Message

MCM2: Public Participation

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

SWMP Plan for Download - The Town has posted the SWMP Plan on Town website along with contact information to allow for public comment.

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

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

Household Hazardous Waste (HHW) Day - In partnership with two nearby communities, residents may dispose of household hazardous waste at four events throughout the year, with two held every November and two held every June at both the Fitchburg/Westminster Landfill and Gardner Landfill..

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

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

Number of SSOs identified: 0

Number of SSOs removed: 0

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

Total number of SSOs identified: 0

Total number of SSOs removed: 0

MS4 System Mapping

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

The Town has completed multiple Phase I mapping requirements under the 2016 Permit. Outfalls and receiving waters within the Town's urbanized area, along with catchment delineations, have been located and included in the Town's GIS database. Impaired waters have also been mapped. The Town will work toward identifying its stormwater treatment structures, interconnections with other towns, and open channel conveyances in Permit Year 2.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- ○ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

N/A, none completed to date

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

Number of outfalls screened: 0

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

Percent of total outfalls screened: 0%

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

N/A, none completed to date

Below, report on the number of catchment investigations completed during this reporting period.

Number of catchment investigations completed this reporting period: 0

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

Percent of total catchments investigated: 0%

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

N/A, not yet started

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ○ The illicit discharge removal report is attached to the email submission
- ◉ The illicit discharge removal report can be found at the following website:

  N/A, none found to date

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 [UNITS]

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit.

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

N/A, none found to date

Employee Training

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

An employee IDDE Training program will be developed during Year 2, with annual training to be performed starting in Year 2.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed during this reporting period.

Number of site plan reviews completed: 30

Number of inspections completed: 42

Number of enforcement actions taken: 0

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

Ordinance Development

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

The current Town bylaws and regulations are partially in compliance with the Year 2 requirements, however do not meet all requirements pertaining to new development and redevelopment. The Town is currently in the process of finalizing a revised bylaw and accompanying regulations to meet all Year 2 requirements. It is anticipated that revisions will be put up for vote at the fall 2019 town meeting.

As-built Drawings

Describe the status of the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites required to be complete in year 2 of the permit term:

As part of the regulatory updates to be performed during Year 2, procedures for submittal of as-built drawings and long term operation and maintenance will be developed.

Street Design and Parking Lots Report

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

N/A, to be completed during future permit years.

Green Infrastructure Report

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

N/A, to be completed during future permit years.

Retrofit Properties Inventory

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

The Town is currently developing an inventory of its permittee-owned properties. Once completed, facilities will be evaluated for potential BMP retrofit opportunities during future permit years.

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

The Town developed a Catch Basin Cleaning Optimization Plan during Permit Year 1 as a component of its SV

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

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

https://www.westminster-ma.gov/stormwater-management; SWMP Plan, Appendix G

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

Number of catch basins inspected: 496

Number of catch basins cleaned: 496

Total volume or mass of material removed from all catch basins: 111 Tons

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

Total number of catch basins: 496

If applicable:

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

Not yet applicable, pending collection of a second round of catch basin inspections.

Street Sweeping

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

The Town developed a Street Sweeping Optimization Plan during Permit Year 1 as a component of its SWMP Plan. This consists of a map displaying sweeping requirements throughout the Town and a Standard Operating Procedure (SOP) for completing the sweeping.

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

○ Number of miles cleaned:		
○ Volume of material removed:		[UNITS]
◉ Weight of material removed:	143	Tons

If applicable:

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

DPW personnel observe all regulated town-owned roadways for maintenance needs, including street sweeping, during routine operations. Personnel also observe known trouble areas, such as projects with large-scale construction projects or projects with substantial land disturbance, for evidence of runoff-laden sediment onto roadways that may require more frequent sweeping in addition to that outlined under the Street Sweeping Optimization Plan. In addition, town residents periodically call the DPW to report localized areas needing sweeping that DPW personnel then visit to inspect. Should areas in need of additional sweeping be observed, the Town documents these areas as part of its Street Sweeping Optimization Plan and schedules areas for sweeping during the next upcoming round. With the exception of some rural areas of Tow, the Town does not apply sand to roadways during winter operations, and thus observed sweeping needs are typically minimal. Inspections of rural uncurbed roadways conducted to date have not yet observed any needs for additional sweeping within regulated urbanized area roadways.

Winter Road Maintenance

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

The Town developed SOPs for winter road maintenance during Permit Year 1. These SOPs will be included as part of a larger comprehensive Operation and Maintenance (O&M) Plan during Year 2 that covers other facilities and stormwater infrastructure.

Inventory of Permittee-Owned Properties

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

The Town is currently developing an inventory of its permittee-owned properties, to be completed by the end of Year 2.

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

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

The Town is currently developing O&M Procedures for its Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment, to be completed by the end of Year 2.

Stormwater Pollution Prevention Plan (SWPPP)

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

The Town is currently working towards completing SWPPPs for applicable facilities. The Town completed a preliminary review of its facilities during Year 1 and determined that facilities potentially covered under the 2016 Permit are located outside of the urbanized area. During Year 2, the Town will complete a more comprehensive facility assessment and complete SWPPPs for applicable facilities by the end of Year 2, if required.

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

Number of site inspections completed: 0

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

N/A, not yet started.

O&M Procedures for Stormwater Treatment Structures

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

The Town is currently developing an inventory of its town-owned Stormwater BMPs. Once complete, the Town will inspect all regulated stormwater BMPs annually and perform maintenance as needed.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

◉ Not applicable

○ The results from additional reports or studies are attached to the email submission

○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

N/A, not yet started.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Activities performed during Year 1 include submittal of a Notice of Intent, development of a comprehensive Stormwater Management Program (SWMP) Plan which in part also included development of a Catch Basin Cleaning Optimization Plan and Street Sweeping Optimization Plan, development of a comprehensive Illicit Discharge Detection and Elimination (IDDE) Plan which in part included creation of procedures for identifying and removing illicit discharges along with classifying, prioritizing, and delineating catchment areas. Other activities completed included development of winter operation and maintenance procedures and completing an assessment of existing stormwater-related regulatory mechanisms.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 2 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

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

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

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually

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

As dry weather inspections are required for all regulated outfalls by the end of Year 3, the Town anticipates beginning these inspections during Year 2 to get a head start on sampling requirements. This will allow the Town more time to complete the inspections by the Year 3 deadline.

Part V: Certification of Small MS4 Annual Report 2019

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Karen Murphy	Title:	Town Administrator
Signature:	Karen Murphy	Date:	09/16/19

[Signatory may be a duly authorized representative]

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

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Westminster

EPA NPDES Permit Number: MAR041233

Primary MS4 Program Manager Contact Information

Name: Joshua W. Hall, PE Title: Director of Public Works

Street Address Line 1: 2 Oakmont Avenue

Street Address Line 2: N/A

City: Westminster State: MA Zip Code: 01473

Email: jhall@westminster-ma.gov Phone Number: (978) 874-5572

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.westminster-ma.gov/sites/g/files/vyhlif1431/f/uploads/2019_westminster_swmp_plan.pdf

Date SWMP was Last Updated: June 30, 2019

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☐ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☐ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☐ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☐ Charles River Watershed Phosphorus ☒ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 2 Requirements

☐ Completed Phase I of system mapping

☒ Developed a written catchment investigation procedure and added the procedure to the SWMP

☐ Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP

☒ Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes

☒ Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP

☒ Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP

☒ Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Phase I Mapping - mapping of open channel conveyances and any newly located outfalls is ongoing. Mapping interconnections with other MS4s (e.g. DOT) is ongoing, and it is expected that this will continue as part of DOT's own mapping efforts to be completed under a future TS4 permit.

As-Builts and Long-Term O&M - the Town has incorporated procedures for submittal of as-builts and require long term operation and maintenance as part of its stormwater regulatory updates. A Stormwater Management Bylaw was passed at town meeting on July 20, 2020 and accompanying Stormwater Management Rules and Regulations were passed by the Planning Board on July 21, 2020. Both occurred after Year 2 but prior to filing this Annual Report.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ◉ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ○ The updated SSO inventory can be found at the following website:
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☐ Provided training to employees involved in IDDE program within the reporting period
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

IDDE Training - training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

Outfall Inventory and Ranking - the outfall and interconnection inventory is updated on an ongoing basis as dry weather screening is performed. The priority ranking will be updated after dry weather inspections are completed and before catchment investigations commence.

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

Annual Requirements

*Public Education and Outreach**

- ☒ Distributed an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers
- ☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Public Education - the DPW posted 68 messages to the DPW Facebook page throughout Year 2 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, proper car washing, household hazardous waste, illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Street Sweeping - streets were swept only once during Year 2.

Structural BMPs - BMPs pollutant removal has not yet been computed, however, it is expected that this will be completed during Year 3.

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

☒ Prioritized inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Cleaned catch basins more frequently if inspection and maintenance activities indicated excessive sediment or debris loadings

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

Street Sweeping - all streets were swept once during Year 2.

Increased Sweeping for High Pollutant Loads - This was determined not to be necessary for the Town as these

areas are not observed to accumulate more sediment and debris than other areas within the Town.

Lake and Pond Phosphorus TMDL

☒ Completed Legal Analysis

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

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

Dry Weather Outfall Screening - The Town attempted to inspect a total of 56 known stormwater outfalls during dry weather for potential illicit discharges. Of the 56 known stormwater outfalls that were inspected, 31 were located and 2 of which were flowing. Both flowing outfalls were sampled and neither met the permit criteria for being highly likely to contain illicit discharges. The Town will attempt to locate and inspect the 25 outfalls that could not be located, as well as an additional 99 known outfalls that have not yet been visited, for dry weather flows during Year 3.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

Westminster has determined it is subject to the following additional TMDL and Impaired Waters requirements:

-Greenwood Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond South, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Wrights Reservoir, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Partridge Pond, Turbidity impaired waters requirements (Appendix H, Part V)
-Millers River (MA35-04, Phosphorus (Total) impaired requirements removed

The following changes were made that do not affect TMDL and Impaired Waters requirements:

-Millers River (MA35-03), PCBs in Fish Tissue impairment added to 303(d) list

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 2

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

BMP: Stormwater Website

Message Description and Distribution Method:

Develop a town stormwater website with a links to external sites such as EPA and MassDEP, as well as provide numerous stormwater brochures for download and audience-specific messages.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology, Department of Public Works

Measurable Goal(s):

Continue to update and maintain the website.

Message Date(s): Ongoing

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

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

If yes, describe why the change was made:

BMP: Social Media Outreach

Message Description and Distribution Method:

Post messages related to stormwater on the Town's Facebook page.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology

Measurable Goal(s):

Post stormwater-related information on the Town's Facebook page. A total of 68 messages were posted to the DPW Facebook page throughout Year 2 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, e proper car washing, household hazardous waste,

illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Message Date(s):

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

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

If yes, describe why the change was made:

While the NOI was limited to following the statewide ThinkBlue campaign, the Town has since expanded the program to also include posting information pertaining to a local audience.

Add an Educational Message

MCM2: Public Participation

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

SWMP Plan for Download - The Town has posted the SWMP Plan and other relevant information on Town website along with contact information to allow for public comment.

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

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

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Below, check all that apply.

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

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

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

Phase I Mapping - all known outfalls, stormwater BMPs, and receiving waterbodies with impairments have been mapped to date. Initial catchment delineations have also been completed based on topographic mapping and available stormwater system information. Mapping of open channel conveyances and any newly located outfalls is ongoing. Mapping interconnections with other MS4s (e.g. DOT) is ongoing, and it is expected that this will continue as part of DOT's own mapping efforts to be completed under a future TS4 permit.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

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

Number of outfalls screened: 31

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

N/A, none completed to date

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 0

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

Percent of total catchments investigated: 0

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

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

N/A, none found to date

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed ***during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed ***since the effective date of the permit (July 1, 2018)****.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

Training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period**.*

Number of site plan reviews completed: 2

Number of inspections completed: 0

Number of enforcement actions taken: 0

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

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

Ordinance or Regulatory Mechanism

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

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

As-built Drawings

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

As-built drawings are required to be submitted as part of Westminster's Stormwater Management Rules and Regulations, adopted July 21, 2020. As part of this requirement, "after the stormwater management system has been constructed, and before any surety is released, the Applicant must submit a record as-built plan detailing the actual stormwater management system as installed" to the Planning Board. Regulations also have procedures and requirements in place to ensure that long-term operation and maintenance is carried out by the system owner. Note that the above states that the bylaw and regulations have been updated but not yet adopted because this Annual Report only covers activities through June 30, 2020. Adoption of the bylaw and regulations was completed during Permit Year 3 and before submittal of this Year 2 Annual Report.

Street Design and Parking Lots Report

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

N/A, to be completed during future permit years.

Green Infrastructure Report

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

N/A, to be completed during future permit years.

Retrofit Properties Inventory

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

The Town completed an inventory of its permittee-owned properties during this permit year. Facilities will be evaluated for potential BMP retrofit opportunities during future permit years.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 230

Number of catch basins cleaned: 896

Total volume or mass of material removed from all catch basins: 78 tons

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

Total number of catch basins: 496

If applicable:

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

Street Sweeping

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

- ○ Number of miles cleaned:
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 306 tons

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

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

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

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

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 0

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

Not applicable, no corrective actions have been taken to date. Note that a SWPPP for the DPW Garage was completed on June 30, 2020. Quarterly site inspections will begin during Year 3.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- ◉ Not applicable
- ○ The results from additional reports or studies are attached to the email submission
- ○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

N/A, not started yet.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Structural BMP Inspections - all known structural BMPs were inspected in June 2020. Any required maintenance will be performed during Year 3.

COVID-19 Impacts

Optional: If any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

IDDE Training - training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

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

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP

- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

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

The SWMP Plan and IDDE Plan will be updated during FY-21 to address all work performed through Year 3. This will include incorporating the above items into the SWMP Plan and/or IDDE Plan as necessary, incorporate results from outfall dry weather screening, as well as documenting results of other annual activities below such as BMP inspections.

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

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Westminster

EPA NPDES Permit Number: MAR041233

Primary MS4 Program Manager Contact Information

Name: Joshua W. Hall, PE Title: Director of Public Works

Street Address Line 1: 2 Oakmont Avenue

Street Address Line 2: N/A

City: Westminster State: MA Zip Code: 01473

Email: jhall@westminster-ma.gov Phone Number: (978) 874-5572

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.westminster-ma.gov/sites/g/files/vyhlif1431/f/uploads/2019_westminster_swmp_plan.pdf

Date SWMP was Last Updated: June 30, 2019

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☐ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☐ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☐ Charles River Watershed Phosphorus ☒ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 2 Requirements

☐ Completed Phase I of system mapping

☒ Developed a written catchment investigation procedure and added the procedure to the SWMP

☐ Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP

☒ Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes

☒ Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP

☒ Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP

☒ Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Phase I Mapping - mapping of open channel conveyances and any newly located outfalls is ongoing. Mapping interconnections with other MS4s (e.g. DOT) is ongoing, and it is expected that this will continue as part of DOT's own mapping efforts to be completed under a future TS4 permit.

As-Builts and Long-Term O&M - the Town has incorporated procedures for submittal of as-builts and require long term operation and maintenance as part of its stormwater regulatory updates. A Stormwater Management Bylaw was passed at town meeting on July 20, 2020 and accompanying Stormwater Management Rules and Regulations were passed by the Planning Board on July 21, 2020. Both occurred after Year 2 but prior to filing this Annual Report.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ◉ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ○ The updated SSO inventory can be found at the following website:
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☐ Provided training to employees involved in IDDE program within the reporting period
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

IDDE Training - training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

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

Annual Requirements

*Public Education and Outreach**

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Public Education - the DPW posted 68 messages to the DPW Facebook page throughout Year 2 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, proper car washing, household hazardous waste, illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Street Sweeping - streets were swept only once during Year 2.

Structural BMPs - BMPs pollutant removal has not yet been computed, however, it is expected that this will be completed during Year 3.

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

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Public Education - the DPW posted 68 messages to the DPW Facebook page thoughout Year 2 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, e proper car washing, household hazardous waste, illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Street Sweeping - streets were swept only once during Year 2.

Structural BMPs - BMPs pollutant removal has not yet been computed, however, it is expected that this will be completed during Year 3.

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

☒ Prioritized inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Cleaned catch basins more frequently if inspection and maintenance activities indicated excessive sediment or debris loadings

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

Street Sweeping - all streets were swept once during Year 2.

Increased Sweeping for High Pollutant Loads - This was determined not to be necessary for the Town as these areas are not observed to accumulate more sediment and debris than other areas within the Town.

Lake and Pond Phosphorus TMDL

☒ Completed Legal Analysis

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

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

Dry Weather Outfall Screening - The Town attempted to inspect a total of 56 known stormwater outfalls during dry weather for potential illicit discharges. Of the 56 known stormwater outfalls that were inspected, 31 were located and 2 of which were flowing. Both flowing outfalls were sampled and neither met the permit criteria for being highly likely to contain illicit discharges. The Town will attempt to locate and inspect the 25 outfalls that could not be located, as well as an additional 99 known outfalls that have not yet been visited, for dry weather flows during Year 3.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

Westminster has determined it is subject to the following additional TMDL and Impaired Waters requirements:
-Greenwood Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond South, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Wrights Reservoir, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Partridge Pond, Turbidity impaired waters requirements (Appendix H, Part V)

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 2

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

BMP: Stormwater Website

Message Description and Distribution Method:

Develop a town stormwater website with a links to external sites such as EPA and MassDEP, as well as provide numerous stormwater brochures for download and audience-specific messages.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology, Department of Public Works

Measurable Goal(s):

Continue to update and maintain the website.

Message Date(s): Ongoing

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

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

If yes, describe why the change was made:

BMP: Social Media Outreach

Message Description and Distribution Method:

Post messages related to stormwater on the Town's Facebook page.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology

Measurable Goal(s):

Post stormwater-related information on the Town's Facebook page. A total of 68 messages were posted to the DPW Facebook page throughout Year 2 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, e proper car washing, household hazardous waste,

illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Message Date(s):

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

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

If yes, describe why the change was made:

While the NOI was limited to following the statewide ThinkBlue campaign, the Town has since expanded the program to also include posting information pertaining to a local audience.

Add an Educational Message

MCM2: Public Participation

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

SWMP Plan for Download - The Town has posted the SWMP Plan and other relevant information on Town website along with contact information to allow for public comment.

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

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

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Below, check all that apply.

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

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

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

Phase I Mapping - all known outfalls, stormwater BMPs, and receiving waterbodies with impairments have been mapped to date. Initial catchment delineations have also been completed based on topographic mapping and available stormwater system information. Mapping of open channel conveyances and any newly located outfalls is ongoing. Mapping interconnections with other MS4s (e.g. DOT) is ongoing, and it is expected that this will continue as part of DOT's own mapping efforts to be completed under a future TS4 permit.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

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

Number of outfalls screened: 31

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

N/A, none completed to date

*Below, report on the number of catchment investigations completed **during this reporting period.***

Number of catchment investigations completed this reporting period: 0

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

Percent of total catchments investigated: 0

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

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

N/A, none found to date

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed ***during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed ***since the effective date of the permit (July 1, 2018)****.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

Training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed ***during this reporting period.***

Number of site plan reviews completed: 2

Number of inspections completed: 0

Number of enforcement actions taken: 0

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

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

Ordinance or Regulatory Mechanism

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

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

As-built Drawings

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

As-built drawings are required to be submitted as part of Westminster's Stormwater Management Rules and Regulations, adopted July 21, 2020. As part of this requirement, "after the stormwater management system has been constructed, and before any surety is released, the Applicant must submit a record as-built plan detailing the actual stormwater management system as installed" to the Planning Board. Regulations also have procedures and requirements in place to ensure that long-term operation and maintenance is carried out by the system owner. Note that the above states that the bylaw and regulations have been updated but not yet adopted because this Annual Report only covers activities through June 30, 2020. Adoption of the bylaw and regulations was completed during Permit Year 3 and before submittal of this Year 2 Annual Report.

Street Design and Parking Lots Report

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

N/A, to be completed during future permit years.

Green Infrastructure Report

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

N/A, to be completed during future permit years.

Retrofit Properties Inventory

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

The Town completed an inventory of its permittee-owned properties during this permit year. Facilities will be evaluated for potential BMP retrofit opportunities during future permit years.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 230

Number of catch basins cleaned: 896

Total volume or mass of material removed from all catch basins: 78 tons

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

Total number of catch basins: 496

If applicable:

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

Street Sweeping

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

- ○ Number of miles cleaned:
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 306 tons

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

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

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

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

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 0

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

Not applicable, no corrective actions have been taken to date. Note that a SWPPP for the DPW Garage was completed on June 30, 2020. Quarterly site inspections will begin during Year 3.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- ◉ Not applicable
- ○ The results from additional reports or studies are attached to the email submission
- ○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

N/A, not started yet.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

IDDE Training - training was not performed during this permit year due to COVID-19 social distancing requirements and limited staff availability; however was completed on August 14, 2020 prior to submittal of this Annual Report.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

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

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP

- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

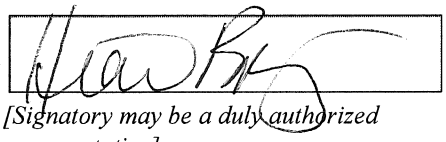
Provide any additional details on activities planned for permit year 3 below:

The SWMP Plan and IDDE Plan will be updated during FY-21 to address all work performed through Year 3. This will include incorporating the above items into the SWMP Plan and/or IDDE Plan as necessary, incorporate results from outfall dry weather screening, as well as documenting results of other annual activities below such as BMP inspections.

Part V: Certification of Small MS4 Annual Report 2020

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Heather M. Billings	Title:	Chair, Board of Selectmen
Signature:		Date:	Sept. 1, 2020

[Signatory may be a duly authorized representative]

Year 3 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2020-June 30, 2021

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2020 and June 30, 2021 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Westminster

EPA NPDES Permit Number: MAR041233

Primary MS4 Program Manager Contact Information

Name: Joshua W. Hall, PE Title: Director of Public Works

Street Address Line 1: 2 Oakmont Avenue

Street Address Line 2: N/A

City: Westminster State: MA Zip Code: 01473

Email: jhall@westminster-ma.gov Phone Number: (978) 874-5572

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.westminster-ma.gov/highway-department

Date SWMP was Last Updated: June 30, 2021

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☐ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☐ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☐ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☐ Charles River Watershed Phosphorus ☐ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 3 Requirements

☐ Inspected and screened all outfalls/interconnections (excluding Problem and Excluded outfalls)

☒ Updated outfall/interconnection priority ranking based on the information collected during the dry weather inspections as necessary

☒ Post-construction bylaw, ordinance, or other regulatory mechanism was updated and adopted consistent with permit requirements

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Dry Weather Outfall Screening - During 2019 and 2020, the Town attempted to inspect all 170 known stormwater outfalls within the urbanized area during dry weather to investigate for potential illicit discharges. Of the 170 known stormwater outfalls that were attempted to be inspected, 88 were located and 2 of which were flowing. The Town attempted to locate the remaining 82 outfalls, however, they could not be found or accessed. Outfalls will be inspected for dry weather flows and/or evaluated at the next upgradient structure. The Town has hired a consultant to assist with this task. Note, numbers above represent all outfall screening completed to date. Numerous outfalls were revisited between Year 2 and Year 3 and thus it is difficult to quantify the number of outfalls screened in individual years.

Update Outfall Inventory and Priority Ranking - Outfall inventory and priority ranking was conducted concurrent with a comprehensive update of the SWMP and IDDE Plans, completed on June 30, 2021. The Town will continue to locate and inspect additional stormwater infrastructure during future permit years.

Construction and Post-Construction Bylaw - The Town established a "Stormwater Management Bylaw" under Chapter 137 of the Town's general bylaws (adopted June 20, 2020) and accompanying "Stormwater Management Rules and Regulations" (adopted July 21, 2020) which regulate construction projects greater than 1 acre. This bylaw and accompanying regulations meet all permit requirements for construction and post-construction requirements, including provisions for new/redevelopment to remove 90%/80% of total phosphorus and 60%/50% of total suspended solid, respectively.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ◉ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ○ The updated SSO inventory can be found at the following website:
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☒ Provided training to employees involved in IDDE program within the reporting period
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Updated system map due in year 2 as necessary
- ☒ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- ☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- ☒ Updated inventory of all permittee owned facilities as necessary
- ☒ O&M programs for all permittee owned facilities have been completed and updated as necessary
- ☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- ☒ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- ☒ Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

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

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☒ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- ◉ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Public Education - the DPW posted messages to the DPW Facebook page throughout Year 3 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, proper car washing, household hazardous waste, illicit discharges, proper material storage, salt application and storage, and a number of other topics.

Street Sweeping - streets were swept only once during Year 3.

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

☒ Prioritized inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Cleaned catch basins more frequently if inspection and maintenance activities indicated excessive sediment or debris loadings

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

Street Sweeping - all streets were swept once during Year 3.

Increased Sweeping for High Pollutant Loads - this was determined not to be necessary for the Town as these areas are not observed to accumulate more sediment and debris than other areas within the Town.

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

Westminster is listed in the 2016 MS4 Permit as being subject to the Millers Basin Lakes phosphorus TMDL for the following waterbodies:
• Greenwood Pond (MA35025);
• Minott Pond South (MA35045);
• Minott Pond (MA35046); and
• Wrights Reservoir (MA35104).

Per correspondence with EPA in August 2021, the above waterbodies have a 0% reduction and thus no further action is required. Westminster is therefore not required to prepare a Lakes and Ponds Phosphorus Control Plan (LPCP) for any of these waterbodies.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

Westminster has determined it is subject to the following additional TMDL and Impaired Waters requirements:
-Partridge Pond, Turbidity impaired waters requirements (Appendix H, Part V)

Per recent correspondence with EPA, Westminster has determined it is no longer subject to the following additional TMDL requirements, as these waterbodies have a 0% phosphorus reduction requirement:
-Greenwood Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond South, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Minott Pond, Phosphorus TMDL requirements (Appendix F, Part A.II)
-Wrights Reservoir, Phosphorus TMDL requirements (Appendix F, Part A.II)

Westminster has determined it is no longer subject to the following additional Impaired Waters requirements:
-Millers River (MA35-04, Phosphorus (Total) impaired requirements removed

The Town also updated its list of outfalls and receiving waters as new outfalls were found during the dry weather screening. The inspection results are attached to this annual report and a list and updated prioritization are also kept with the Town's IDDE Plan.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 2

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

BMP: Stormwater Website

Message Description and Distribution Method:

Develop a town stormwater website with a links to external sites such as EPA and MassDEP, as well as provide numerous stormwater brochures for download and audience-specific messages.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology, Department of Public Works

Measurable Goal(s):

Continue to update and maintain the website.

Message Date(s): Ongoing

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

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

If yes, describe why the change was made:

BMP: Social Media Outreach

Message Description and Distribution Method:

Post messages related to stormwater on the Town's Facebook page.

Targeted Audience: Residents, Businesses, institutions and commercial, Developers, Industrial

Responsible Department/Parties: Information Technology

Measurable Goal(s):

Post stormwater-related information on the Town's Facebook page. Messages were posted to the DPW Facebook page throughout Year 3 on a variety of topics, including yard maintenance, pet waste disposal, leaf litter cleanup, septic system maintenance, e proper car washing, household hazardous waste, illicit discharges,

proper material storage, salt application and storage, and a number of other topics.

Message Date(s):

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

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

If yes, describe why the change was made:

While the NOI was limited to following the statewide ThinkBlue campaign, the Town has since expanded the program to also include posting information pertaining to a local audience.

Add an Educational Message

MCM2: Public Participation

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

SWMP Plan for Download - The Town has posted the SWMP Plan and other relevant information on Town website along with contact information to allow for public comment.

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

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

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Optional: Provide additional status information regarding your map:

All known outfalls, stormwater BMPs, and receiving waterbodies with impairments have been mapped to date. Initial catchment delineations have also been completed based on topographic mapping and available stormwater system information. Mapping of open channel conveyances and any newly located outfalls is ongoing. Mapping interconnections with other MS4s (e.g. DOT) is ongoing, and it is expected that this will continue as part of DOT's own mapping efforts to be completed under a future TS4 permit.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- ○ No outfalls were inspected
- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

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

Number of outfalls screened: 88

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

Percent of outfalls screened: 52

Optional: Provide additional information regarding your outfall/interconnection screening:

During 2019 and 2020, the Town attempted to inspect all 170 known stormwater outfalls within the urbanized area during dry weather to investigate for potential illicit discharges. Of the 170 known stormwater outfalls that were attempted to be inspected, 88 were located and 2 of which were flowing. The Town attempted to locate the remaining 82 outfalls, however, they could not be found or accessed. Outfalls will be inspected for dry weather flows and/or evaluated at the next upgradient structure. The Town has hired a consultant to assist with this task. Note, numbers above represent all outfall screening completed to date. Numerous outfalls were revisited between Year 2 and Year 3 and thus it is difficult to quantify the number of outfalls screened in individual years.

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ◉ No catchment investigations were conducted
- ○ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 0

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

Percent of total catchments investigated: 0

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

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- (•) No illicit discharges were found
- ( ) The illicit discharge removal report is attached to the email submission
- ( ) The illicit discharge removal report can be found at the following website:

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed **since the effective date of the permit (July 1, 2018)**.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

An on-site IDDE training session was held on June 23, 2021 with applicable DPW staff. This session also provided training on Stormwater Pollution Prevention Plan (SWPPP) implementation and inspections at the DPW Garage.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period**.*

Number of site plan reviews completed: 3

Number of inspections completed: 120

Number of enforcement actions taken: 5

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

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

As-built Drawings

*Below, report on the number of as-built drawings received **during this reporting period**.*

Number of as-built drawings received: 7

Optional: Enter any additional information relevant to the submission of as-built drawings:

Street Design and Parking Lots Report

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

N/A, to be completed during Permit Year 4.

Green Infrastructure Report

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

N/A, to be completed during Permit Year 4.

Retrofit Properties Inventory

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

The Town completed an inventory of its permittee-owned properties during this permit year. Facilities will be evaluated for potential BMP retrofit opportunities during Permit Year 4.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 0

Number of catch basins cleaned: 853

Total volume or mass of material removed from all catch basins: 179 tons

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

Total number of catch basins: 339

If applicable:

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

Street Sweeping

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

- ○ Number of miles cleaned:
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 343 tons

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 4

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

The Town recently installed a series of straw wattles and bales along with silt fence around two sides of the DPW Garage where storage areas abuts an adjacent wetland area. These controls were installed behind a series of concrete barriers which further serve to limit stormwater migration offsite. These controls have helped to contain potential offsite migration of pollutants from the DPW facility.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- ◉ Not applicable
- ○ The results from additional reports or studies are attached to the email submission
- ○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 4 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Develop a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover
- Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist
- Identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually

- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)

Provide any additional details on activities planned for permit year 4 below:

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	James A. DeLisle	Title:	Chair, Select Board
Signature:	James D Lisle	Date:	9/8/21

[Signatory may be a duly authorized representative]