



TOWN OF NEWMARKET, NEW HAMPSHIRE

EPA NPDES Permit Number: NHRo41040

UPDATED:

JUNE 2023
JUNE 2022
JUNE 2021
JUNE 2020
JUNE 2019

Stormwater Management Program (SWMP)



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ANNUAL REVISIONS

This document was finalized in June 2019, in accordance with NH MS₄ General Permit requirements for Year 1. This document was updated in June 2020, June 2021, June 2022 and June 2023 to reflect accomplishments during Permit Years 2, 3, 4 and 5 respectively. The SWMP Team roles and responsibilities have changed with staff turnover in recent years. This version of the SWMP has been reorganized and some sections (i.e. Town Profile and Water Resources) have been expanded. Updates include current SWMP Team information, an updated list of outfalls and receiving waters, modifications to some of the planned BMPs to better reflect current practices and comments on public education and public engagement efforts that have been completed to date. The IDDE Program and Town-Wide Operation and Maintenance (O&M) Program documents are appended to the SWMP.

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STORMWATER MANAGEMENT PROGRAM

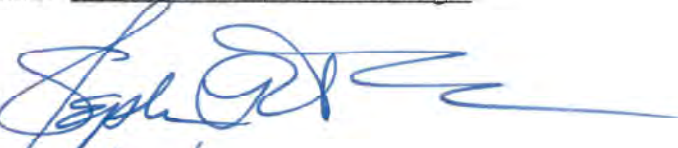
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CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Printed Name: Steve Fournier, Town Manager

Signature: 

Date: 6/28/23

Revision History:

No.	Description	Date	Printed Name	Title	Initials
0	Year 1	6/2019	Diane Hardy	Town Planner	
1	Year 2 ¹ Updates	6/2020	Diane Hardy	Town Planner	
2	Year 3 Updates	6/2021	Diane Hardy	Town Planner	
3	Year 4 Updates	6/2022	Sean Greig	Dir. Of Env. Services	
4	Year 5 Updates	6/2023	Lyndsay Butler, PE	Town Engineer	<i>LB</i>

¹ Year 2 Requirements presented in this Stormwater Management Plan were updated based on the proposed modifications to the 2017 New Hampshire Small MS4 General Permit. The proposed modifications are available in "New Hampshire Exhibit A: Proposed Permit Modifications, December 9, 2019" document: <https://www.regulations.gov/document?D=EPA-HQ-OGC-2019-0685-0003>.

1.0 INTRODUCTION / OVERVIEW

1.1 Regulatory Summary and Purpose

The Federal Water Pollution Control Act (WPCA), initially enacted in 1948, established ambient water quality standards to specify acceptable levels of pollution in lieu of preventing the causes of water pollution. The 1972 amendments to the WPCA, referred to as the Clean Water Act (CWA), implemented measures which were focused on establishing effluent limitations on point sources, or 'any discernable, confined, and discrete conveyance... from which pollutants are or may be discharged.'

The 1972 CWA introduced the National Pollutant Discharge Elimination System (NPDES). The NPDES program was established as the fundamental regulatory mechanism of the CWA, requiring direct dischargers of pollutants into waters of the United States to obtain a NPDES permit. Between 1972 and 1987, the NPDES permit program focused on improving surface water quality by reducing pollutants of industrial process wastewater and municipal sewage. During this period, several nationwide studies on water quality, most notably the United States Environmental Protection Agency (EPA) National Urban Runoff Plan (NURP), identified stormwater discharges as a significant source of water pollution.

The findings of the NURP and similar studies, resulted in the reauthorization of the CWA in 1987 with the passage of the Water Quality Act (WQA). The WQA established a legal framework and required EPA to develop a comprehensive phased program for regulating municipal and industrial stormwater discharges under the NPDES permit program.

The NPDES Phase 1 Rule, which was issued in November 1990, addressed stormwater discharges from medium to large municipal separate storm sewer systems (MS4s), which were communities serving a population of at least 100,000 people, as well as stormwater discharges from 11 categories of industrial activity. The NPDES Phase 2 Rule, which was promulgated in December 1999 and was the next step after the Phase 1 Rule, addressed small MS4s serving a population of less than 100,000 people in urbanized areas and expanded EPA's effort to preserve, protect, and improve the Nation's water resources. The Phase 2 Rule requires nationwide coverage of all operators of small MS4s that are located within the boundaries of the Bureau of the Census-defined "urbanized area" (UA) based on the latest decennial census. The Phase 2 Rule requires that all MS4s located within "urbanized areas" automatically comply with the Phase 2 stormwater regulations through implementation of programs and practices to control polluted stormwater runoff. Appendix B of this report provides a map of the Phase II stormwater "permit compliance area" for Newmarket as determined by the EPA using decennial census data from 2000 and 2010. Since Newmarket is located within an urbanized area, the EPA has designated the Town of Newmarket as a Phase 2 Community, which must comply with the NPDES regulations. In the State of New Hampshire, the EPA retains primacy as the NPDES permitting authority.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 Small MS4 Permit) consistent with the Phase 2 Rule. The 2003 Small MS4 General Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2017 New Hampshire Small MS4 General Permit for Stormwater Discharges (NH MS4 General Permit), which became effective on July 1, 2018. The NH MS4 General Permit was modified during 2020, and the modifications became effective on January 6, 2021. A copy of the NH MS4 General Permit can be found here: <https://www.epa.gov/npdes-permits/new-hampshire-small-ms4-general-permit>. On October 1, 2018, the Town submitted a Notice of Intent to EPA to obtain coverage under the NH MS4 General Permit. A copy of this Notice of Intent (NOI) is included in Appendix C. The Town received authorization from EPA to discharge

under the NH MS₄ General Permit on May 14, 2019. A copy of the Town's Authorization to Discharge is also included in Appendix C. In March 2023, EPA Region 1 issued notices to permittees currently authorized under the 2017 NH MS₄ General Permit, which will expire on July 1, 2023, stating that permit coverage will be administratively continued. A Copy of this notice is also included in Appendix C. The NH MS₄ General Permit will remain in effect for discharges that were authorized prior to July 1, 2023 until such discharges are authorized under a reissued general permit, an individual permit, or other alternative permit.

The NH MS₄ General Permit required the Town of Newmarket to develop, implement, and enforce a Stormwater Management Program (SWMP). The objectives of the SWMP are to reduce the discharge of pollutants from the MS₄ to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA.

The SWMP describes and details the programs, policies, practices and measures that will be implemented to meet the terms and conditions of the NH MS₄ General Permit. The objectives of the NH MS₄ General Permit are accomplished through the implementation of Best Management Practices (BMPs) for each of the following six minimum control measures.

- Public education and outreach
- Public involvement / participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control
- Post-construction stormwater management in new development or redevelopment
- Pollution prevention/good housekeeping

The Town's efforts to comply with these BMPs, as outlined in its NOI, are included in Section 2.0.

1.2 Town Profile

Government:

Type:	Town Council and Town Manager
Address:	Town of Newmarket 186 Main Street Newmarket, NH 03857
County:	Rockingham

The Town Council, which is comprised of five (7) councilors, serves as the legislative and governing body for the Town of Newmarket. The Town Manager, hired by the Town Council, serves as the Chief Executive Officer of the Town and is responsible for the day-to-day operations of the town and all employees that work for the Town. The Department of Public Works (DPW), through its Director, is responsible for maintaining local roads, public stormwater infrastructure, and municipal buildings and facilities. The Department of Environmental Services (ES), through its Director, is responsible for maintaining public wastewater and water infrastructure.

Demographics:

Population:	9,430 (2020)
Land Area:	14.2 square miles
Significant Local Waters:	Listed in Section 1.4
MS ₄ Interconnections:	NH Department of Transportation Town of Durham Town of Newfields (waiver granted)

Newmarket is located in northeast Rockingham County and has a total area of 14.2 square miles (37 square kilometers). As of the 2020 census, the population was 9,430 people with a population density of 749 per square mile. The Town is comprised of 12.6 square miles of land and 1.6 square miles of water. The Lamprey and Piscassic Rivers run through the heart of Town and Great Bay is on the eastern boundary.

Territory comprised of densely settled tracts and adjacent urban developed areas that meet the minimum population requirements set forth by the EPA, according to the 2000 and 2010 census data, shall be referred to as urbanized area. Rural land uses and sparsely populated tracts shall be categorized as non-regulated for the purposes of the NH MS₄ General Permit. Newmarket has an urbanized area (UA), in the eastern part of Town, as shown in the regulated area map in Appendix B. There is a large area in the western part of town that borders Newfields, Epping, Lee and Durham that is not urbanized and therefore not included in the NH MS₄ General Permit regulated area.

Principal highways located within the boundaries of Newmarket include New Hampshire Route 108, which follows Exeter Road through the downtown central business district, becoming North Main Street in the northern part of town; and New Hampshire Route 152, which begins in Newmarket at New Hampshire Route 108 and goes west/northwest into the Town of Lee.

1.3 Stormwater Management Program Team

Several entities within the Town are involved in stormwater management from implementation of controls during development to general maintenance of stormwater infrastructure. The SWMP Team is illustrated in the SWMP team Chart and is comprised of Town personnel from various Departments as listed in Table 1.1. A large area of Newmarket, to the west of Ash Swamp Road, is located outside of the NH MS₄ General Permit regulated area. Many of the policies and regulations adopted under the SWMP will be applied town-wide in efforts to protect or improve the quality of water bodies and natural resources throughout the town. Due to limited staff and funding, data collection and record keeping will focus on the regulated area first, to ensure compliance with the requirements of the NH MS₄ General Permit. As time, funds, and staff availability allow, the Town will continue data collection and SWMP implementation in areas throughout the Town.



Table 1.1 SWMP Team Personnel (latest revision 06/2023)

Name	Title	Affiliation
Stephen R. Fournier	Town Manager	Town Government
Lyndsay R. Butler, PE	Town Engineer	Engineering
Rick Malasky	Public Works Director	Department of Public Works (DPW)
David Chase	Highway Superintendent	DPW
Karen Bloom	Buildings & Grounds Superintendent	DPW
Sean Greig	Environmental Services Director	Department of Environmental Services (ES)
Bart McDonough	Director of Planning & Community Development	Planning & Community Development (PCD)
David Evans	Building Official	Code Enforcement / Public Health

1.4 Water Resources

The quality of water bodies in Seacoast New Hampshire, fresh and marine alike, have been at the forefront of discussions across the Great Bay region for many years. The Town of Newmarket has taken an active role in these discussions and will continue to do so into the future. The Town has made a concerted effort to minimize stormwater impacts and reduce pollutants discharged to its water bodies and resource areas through implementation of regulatory policies, participation in collaborative workgroups, and completion of various studies and construction projects.

All water bodies within the town boundary, including those receiving stormwater discharges from the MS₄, are listed in Table 1.2 on the following pages. Additionally, a map showing these receiving water bodies, impairment category, and the Regulated Area for Newmarket was prepared by the Rockingham and Strafford Regional Planning Commissions as part of a collaborative mapping effort led by the Seacoast Stormwater Coalition. A copy of this map is included in Appendix D.

The Town of Newmarket has been studying the Lamprey River and Great Bay estuary because of a condition set in the Wastewater Treatment Facility (WWTF) discharge permit. That permit imposes stringent discharge limits on nitrogen and requires development of a nitrogen control Plan, and description of activities conducted which affect nitrogen in the Lamprey River. The Nitrogen Control Plan for the Town of Newmarket, prepared by Wright-Pierce, was completed in September 2018 and can be found at the following web address:

https://www.newmarketnh.gov/sites/g/files/vyhlf3536/f/pages/final_newmarket_nitrogen_control_plan_o.pdf.

The Town of Newmarket participated in the Great Bay Pollution Tracking and Accounting Pilot Program (PTAPP) facilitated by the New Hampshire Department of Environmental Services (NHDES). The purpose of PTAPP is to enable coordination on nitrogen tracking and accounting for the Great Bay region. The Town is still using this program to track changes in land use and development.

In addition, it is important to consider public drinking water supply sources in the development and implementation of the SWMP. The public water supply for the Town of Newmarket is sourced from various groundwater wells that are owned and operated by the Newmarket Department of Environmental Services (ES). Discharges to public drinking water supply sources and their protection areas must provide pretreatment and spill control suitable to protect drinking water sources to the extent feasible. The Town must ensure discharges near protection areas of groundwater supply wells comply with the applicable state requirements. Stormwater systems shall meet the minimum discharge setback requirements of N.H. Code Admin. R. Part Env-Wq 1500 unless exempt under N.H. Code Admin. R. Part Env-Wq 1508.02(c). In groundwater protection areas, infiltration and filtration practices shall provide additional vertical separation to the seasonal high-water table in accordance with N.H. Code Admin. R. Part Env-Wq 1500 or within local regulations for projects not subject to N.H. Code Admin. R. Part Env-Wq 1500.

Table 1.2 Municipal Public Water Systems

Town-Owned Public Water System	EPA PWS #	System Category	Source Type
Bennett Well	1731010	Major CWS	Groundwater
Sewall Well	1731010	Major CWS	Groundwater
MacIntosh Well	1731010	Major CWS	Groundwater
Tucker Well	1731010	Major CWS	Groundwater

The Town has a comprehensive Emergency Management Plan in place to notify public water suppliers in the event of an emergency which has the potential to impact water supply. This plan includes detailed chain of command responsibilities for staff, as well as command structure; emergency contact information; public notice guidelines; processed for threat evaluation; and a comprehensive emergency action plan for handling any potential water system contamination.

Table 1.3 RECEIVING WATERS AND IMPAIRMENTS

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
Lamprey River North (NHEST600030709-01-01)	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Aluminum, Anthracene, Arsenic, Benzo[a]anthracene, Cadmium, Chrysene (C1-C4), Copper, DDD, DDE, DDT, Diben[a,h]anthracene, Dioxin (including 2,3,7,8-TCDD), Fluoranthene, Fluorene, Lead, Mercury, Naphthalene, Nickel, pH, Polychlorinated Biphenyls, Phenanthrene, Pyrene, trans-Nonachlor, BOD, Biochemical oxygen demand
Lamprey River South (NHEST600030709-01-02)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, Polychlorinated Biphenyls
Great Bay Prohib Sz1 (NHEST600030904-02)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, pH, Polychlorinated Biphenyls
Great Bay Prohib Sz2 (NHEST600030904-03)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, Polychlorinated biphenyls
Wildlife Pond Dam (NHIMP600030708-02)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Piscassic River (NHIMP600030708-03)	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – Conservation Pond Dam (NHIMP600030708-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Lamprey River - Macallen Dam (NHIMP600060709-03)	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – Recreation Pond Dam (NHIMP600030709-06)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – Fire Pond Dam (NHIMP600030806-05)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Piscassic River (NHRIV600030708-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury

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Unnamed Brook – To Wildlife Pond (NHRIV600030708-05)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Piscassic River (NHRIV600030708-06)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Piscassic River (NHRIV600030708-07)	8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Folletts Brook – Unnamed Brook (NHRIV600030708-08)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030708-15)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – Thru Tuttle Swamp (NHRIV600030709-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Moonlight Brook (NHRIV600030709-13)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – To Piscassic River (NHRIV600030709-14)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030709-18)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Great Bay (NHRIV600030806-13)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030806-16)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030806-21)	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Great Bay (NHRIV600030904-03)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Lubberland Creek (NHRIV600030904-04)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Total Outfalls	37	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.5 Endangered Species and Historic Properties Determination

The NH MS₄ General Permit requires the Town of Newmarket to demonstrate that all activities regulated under the permit will not adversely affect endangered and threatened species or critical habitat, or impact federal historic properties on the National Register of Historic Places (NRHP). The Town must demonstrate that there are no critical habitat or endangered species within its boundaries, or that if such a habitat or species does exist, that outfall discharges and any associated best management practices shall not interfere with that habitat or species. The Town of Newmarket must also certify that no discharge will affect a property that is listed or eligible for listing on the NRHP, that any such effects have written acknowledgements from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other representative that such effects shall be mitigated, and written proof that any best management practices constructed under this permit will include measures to minimize harmful effects on these properties.

Through consultation with the US Fish & Wildlife Service (USFWS), it was determined that the only threatened species within Newmarket town boundaries are the northern long-eared bat and the small whorled pogonia. There is no federally designated critical habitat in Rockingham County, New Hampshire, therefore, there is no designated critical habitat within the MS₄ regulated area of the Town of Newmarket. Correspondence with USFWS is appended to the Town's Notice of Intent included in Appendix C. Actions currently included in this SWMP will not affect these species. Therefore, the Town was able to certify eligibility under USFWS Criterion C for coverage under the permit. Prior to construction of any structural BMPs, the Town will consult with USFWS to confirm that the proposed project will not impact the northern long-eared bat, small whorled pogonia, or any other endangered or threatened species that may be identified in the future.

The Town of Newmarket has completed the screening for historic properties within the MS₄ regulated area in accordance with the procedures outlined in Appendix D of the NH MS₄ General Permit. The New Hampshire Division of Historical Resources (NHDHR) determined that "projects have potential to have effect on historic properties." Therefore the Town certified eligibility under the National Historic Preservation Act (NHPA) Criterion C for coverage under the permit. Correspondence with NHDHR is appended to the Town's Notice of Intent included in Appendix C. During annual updates to the Stormwater Management Program, the Town may develop a plan to construct or install a new structural BMP. When new structural BMPs are proposed, the Town will consult with the NHDHR to confirm that the proposed project will not adversely impact historic properties.

1.6 Increased Discharges

Any increased discharges (including increased pollutant loadings) through the MS₄ to waters of the State of New Hampshire or of the United States are subject to New Hampshire antidegradation regulations. Section 2.1.2 of the NH MS₄ General Permit requires the Town of Newmarket to comply with the provisions of N.H. Code Admin. R. Part Env-Wq 1708.04 and 1708.06 including information submittal requirements and obtaining authorization for increased discharges where appropriate. Any authorization by NHDES for an increased discharge is required to be incorporated into this SWMP.

The Town understands that there shall be no increased discharges, including increased pollutant loadings from the MS₄ to impaired waters listed in categories 5 or 4b on the most recent EPA-approved New Hampshire Integrated Report of Waters listed pursuant to Clean Water Act section 303(d) and 305(b) unless the Town demonstrates that there is no net increase in loading from the MS₄ to the impaired water of the pollutant(s) for which the water body is impaired. If necessary, the Town of Newmarket will demonstrate compliance with this provision by either:

- Documenting that the pollutant(s) for which the water body is impaired is not present in the MS₄'s discharge and retaining documentation of this finding with the SWMP; or
- Documenting that the total load of the pollutant(s) of concern from the MS₄ to any impaired portion of the receiving water will not increase as a result of the activity and retain documentation of this finding in the SWMP. Unless otherwise determined by the Permittee, EPA or by NHDES that additional demonstration is necessary, compliance with the requirements of Part 2.2.2 and Part 2.3.6 of the MS₄ permit, including all reporting and documentation requirements, shall be considered as demonstrating no net increase as required by this part.

2.0 MINIMUM CONTROL MEASURES

2.1 Introduction

As part of the requirements of the Notice of Intent submitted to EPA on October 1, 2018, as included in Appendix C, the Town of Newmarket has established a list of the Best Management Practices (BMPs) that it plans to implement or currently employs to comply with each of the six Minimum Control Measures (MCMs). These BMPs will be implemented over the permit term; however, the Town will have up to 10 years to implement some of the permit requirements as indicated. The Town's progress with respect to implementation of these BMPs, and other stormwater related activities, will be summarized in annual reports submitted to EPA in accordance with the NH MS4 General Permit.

The BMPs selected for each minimum control measure are summarized and briefly described in this section. Specific details for each BMP including measurable goals, implementation timeframes and party responsible for implementation are stated in each of the respective sections for each control measure in this plan. The Departments of Public Works, Engineering, Environmental Services, Planning & Community Development and Building Safety/Public Health will be responsible for implementation and/or future enforcement of the BMPs for each of the six minimum control measures.

2.2 Permit Requirements and Implementation Timeframes

2.2.1 MCM1: Public Education and Outreach

Section 2.3.2 of the NH MS4 General Permit requires permittees to "implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that pollutants in stormwater are reduced."

The type and number of educational messages that need to be disseminated each year to the targeted audiences depends on whether there are water bodies with water quality impairments in the MS4 regulated area. If there are no water quality impairments, the Town is required to deliver at least two messages to each of the four target audiences over the five-year permit term. The target audiences include:

1. Residents
2. Businesses, Institutions and Commercial Facilities
3. Developers, Engineers and Construction Contractors
4. Industrial Facilities

Additionally, since the Town of Newmarket has water bodies impaired for both bacteria and nitrogen, according to the 2016 state 303(d) list of impaired water bodies, the Town is required to deliver four different annual messages to promote best practices to reduce bacteria or nitrogen source contributions, as outlined in Appendix H of the NH MS4 General Permit.

The Town will rely on assistance from the Seacoast Stormwater Coalition (SSC) to help implement the BMPs for MCM1; however, the Town will ultimately be the responsible party. Distribution of the public education messages will be via the Town newsletter, which is published weekly, the Town website, dog license registration and commercial mailing. It has been determined that there are no industrial facilities in the Town Newmarket and this target audience has not been included in the SWMP.

Table 2.1 MCM1 – BMP/Activity Tracking							
BMP Number	BMP Topic	Target Audience	Date Message Distributed or BMP Updated				
1-1	Fertilizer Reduction	R, B			X	X	05/23
1-2	Pet Waste Handling	R, B			X	X	04/23
1-3	Yard Waste Handling	R, B			X	X	10/22
1-4	Septic Systems	R, B			X	X	09/22
1-5	SW Management at Construction Sites	D				X	X
1-6	General SW Management	R, B, D					X

R = Residents; B = Businesses, Institutions and Commercial Facilities; D = Developers, Engineers and Construction Contractors

Fertilizer Reduction

BMP 1-1

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Web Address: Green Grass Clear Water

Description: Distribution and promotion of a flyer produced by UNH Cooperative Extension and NH Sea Grant outlining simple recommendations to keep a healthy lawn while reducing water quality impacts. This activity is part of the Town's program to meet MCM1 requirements for nitrogen impaired water bodies (Appendix H, Part I). Flyer will be posted to the Town website and published in the Town newsletter.

Target Audience: Residents; Businesses, Institutions and Commercial Facilities

Responsible Department/Parties: Engineering

Measurable Goal(s): Lawn care enthusiasts are aware of the potential water quality impacts from fertilizer use and improper disposal of grass clippings and learn how to employ proper lawn management techniques for reducing those impacts.

Implementation Timeframe: Spring 2021, 2022, 2023

Pet Waste Handling

BMP 1-2

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Web Address: Every Drop Pet Waste Campaign

Description: Distribution and promotion of "Every Drop" post cards with information about proper pet waste management, impacts of improper management, and local ordinances. This activity is part of the Town's program to meet MCM1 requirements for nitrogen impaired water bodies (Appendix H, Part I) and water bodies with a bacteria TMDL (Appendix F, Part II). Post cards or flyers will be posted to the Town

website and posted on the bulletin board in the Town Clerk's office for viewing when renewing dog licenses.

Targeted Audience: Residents; Businesses, Institutions and Commercial Facilities

Responsible Department/Parties: Engineering, Planning & Community Development

Measurable Goal(s): Dog owners and/or dog walkers are aware of the potential water quality impacts from pet waste, and understand the importance of proper pet waste disposal. If pledges are signed, there will be an increase in awareness and commitment to proper pet waste handling/disposal. The number of pledges received will be reported annually.

Implementation Timeframe: Spring 2021, 2022, 2023

Yard Waste Handling

BMP 1-3

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Web Address: Leaf and Yard Waste Handling

Description: Distribution of flyer with information about proper yard waste management, impacts of improper management, and options for disposal including drop off at the Transfer Station. This activity is part of the Town's program to meet MCM1 requirements for nitrogen impaired water bodies (Appendix H, Part I). Flyer will be posted to the Town website and published in the Town newsletter.

Targeted Audience: Residents; Businesses, Institutions and Commercial Facilities

Responsible Department/Parties: Engineering

Measurable Goal(s): Residents and business owners are aware of the water quality impacts of dumping yard waste in or near water bodies, understand the importance of proper yard waste disposal and dispose of yard waste using one of the alternative methods outlined in the flyer.

Implementation Timeframe: Fall 2021, 2022, 2023

Septic Systems

BMP 1-4

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Web Address: Get Pumped! New Hampshire

Description: Distribution and promotion of flyer with information about septic systems; how they work; how to find them; and how to maintain them. This activity is part of the Town's program to meet MCM1 requirements for water bodies with a bacteria TMDL (Appendix F, Part II). Flyer will be posted to the Town website and published in the Town newsletter.

Targeted Audience: Residents; Businesses, Institutions and Commercial Facilities

Responsible Department/ Parties: Engineering

Measurable Goal(s): Residents and business owners are aware of the water quality impacts of septic systems, understand the importance of maintaining them and perform necessary maintenance.

Implementation Timeframe: Summer 2021, 2022, 2023

Stormwater Management at Construction Sites

BMP 1-5

Completed PY3 ☒

Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** MS4 Fact Sheet - Developers**Description:** The Town will provide educational materials/fact sheets to developers when submitting applications for subdivisions, site plan review, and building permits and at “pre-construction” conferences. Materials provided can include: “Stormwater – What you can do as a Developer”, “2022 Construction General Permit (CGP) Fact Sheet” and “Protecting Water Quality from Urban Runoff”. Materials/fact sheets will be posted to the Town website.**Targeted Audience:** Developers**Responsible Department/Parties:** Engineering, Planning & Community Development**Measurable Goal(s):** 100% of construction sites are in compliance with local regulations for stormwater management.**Implementation Timeframe:** On-going activity beginning Spring 2021**General Stormwater Management****BMP 1-5**Completed PY5 ☒Completed PY6 ☐Completed PY7 ☐**Website:** <https://www.newmarketnh.gov/engineering/pages/stormwater-resources>**Description:** Update the Town website to include information on general stormwater management including lawn care, chemical/fertilizer use, pet waste, yard waste, septic systems, winter road maintenance, pool draining. Materials/fact sheets will be posted to the Town website and periodically published in the Town newsletter.**Targeted Audience:** Residents; Businesses, Institutions and Commercial Facilities; Developers**Responsible Department/Parties:** Engineering, Planning & Community Development**Measurable Goal(s):** Update the website and track the number of visitors to the website.**Implementation Timeframe:** On-going activity beginning PY5**2.2.2 MCM2: Public Involvement / Participation**

Section 2.3.3 of the NH MS4 General Permit requires the permittee to “provide opportunities to engage the public to participate in the review and implementation of the permittee’s SWMP.” Public participation benefits the program by increasing public support, including additional expertise and involving community groups/organizations to strengthen the overall program.

The Town of Newmarket has been proactive in providing opportunities for public participation and involvement in stormwater management activities. The Town holds a Household Hazardous Waste Collection Day every two years in November for residents to drop off hazardous waste for proper disposal. Flyers advertising the collection day, including a list of hazardous chemicals accepted, are posted at Town Hall, the Town Library, the transfer station and the Town website. The Town also supports a roadside littler clean-up, typically held in the spring, where volunteers work together to collect and properly dispose of litter along many rural streets throughout Town.

In addition to continuing the above practices, the Town will also allow for public review of this stormwater management plan by posting on the Town’s website, along with a form for submitting comments.

Table 2.2 MCM2 – BMP/Activity Tracking						
BMP Number	BMP/Activity	Date BMP Completed or Updated				
2-1	Public Review of SWMP		X	X	X	X
2-2	Public Participation Event	X	X	X	X	X

Public Review of SWMP**BMP 2-1**

Completed PY2 ☒

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Website: <https://www.newmarketnh.gov/engineering/pages/stormwater-management-program-swmp>

Description: The Town will make the SWMP, Annual Reports, and other NH MS4 General Permit related documents available to the public by posting to the Town website.

Responsible Department/Parties: Engineering

Measurable Goal(s): The public will have access to the SWMP and other program related documents through the Town website. People will submit questions and/or comments on the SWMP to the SWMP Team Coordinator via a webform link. Questions/comments will be received, logged and addressed when applicable.

Implementation Timeframe: On-going activity beginning in PY2

Public Participation Event**BMP 2-2**

Completed PY1 ☒

Completed PY2 ☒

Completed PY3 ☒

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Website: N/A

Description: Once per year, the Town will hold a duly noticed public information meeting on the SWMP. The purpose of this meeting will be to inform the public on progress made in meeting the goals and objectives of the program and to solicit input from the public on the SWMP.

As the program evolves, the Town will consider presenting other opportunities for public participation, such as Household Hazardous Waste Collection Day and Roadside Cleanups. There is currently a grassroots volunteer effort conducting annual roadside clean-ups. These cleanups have been supported by various Town departments. The Town will continue to support these efforts and work with volunteers to expand the program and track success with tangible data.

Responsible Department/Parties: Engineering; Town Manager/Administration

Measurable Goal(s): The public will have annual opportunities to provide feedback on the SWMP and contribute to efforts to keep litter and pollutants out of local water bodies.

Implementation Timeframe: On-going activity beginning in PY1

2.2.3 MCM₃: Illicit Discharge Detection and Elimination

Section 2.3.4 of the NH MS₄ General Permit requires the permittee to develop a written Illicit Discharge Detection and Elimination (IDDE) program. The IDDE program is designed to “systematically find and eliminate sources of non-stormwater discharges to the municipal separate storm sewer system and implement procedures to prevent such discharges.”

The Town reviewed existing municipal codes and regulations to determine whether they prohibit non-stormwater discharges to the municipal storm drain system and include appropriate enforcement procedures and actions for non-compliance. Town of Newmarket – Code of Ordinances, Chapter 14: Environment and Natural Resources, governs the use of public sewers and prohibits the discharge of wastewater and other polluted waters to any natural outlet (Article III, Division 2, Section 14-44). The Town inspects all new and updated sewer connections to ensure proper connection to the Town’s sanitary sewer as required in Chapter 14, Article III. In addition, this chapter outlines procedures and penalties for violations. The Town is working on updates to the Code of Ordinances that may relocate the language pertaining to illicit discharges to a different chapter and clarify enforcement procedures. If this happens, the SWMP and IDDE Plan will be updated accordingly.

The Town developed a map of the municipal storm drain system that meets the requirements outlined in the NH MS₄ General Permit. The Town is working to develop a comprehensive GIS database of public infrastructure, which is updated periodically to incorporate mapping of outfalls, drain manholes, catch basins and storm drains associated with new construction and road reconstruction projects. The Town is actively working to collect additional asset information for components of the municipal storm drain system including invert elevations, size, material, and condition.

The Town is required to develop the written plan and then continue to implement the plan throughout the permit term. The Town developed their IDDE Plan during Permit Year 4 and continues to update the plan as new information becomes available. Additionally, the Town will continue efforts to extend IDDE educational outreach by making information available to the public through the Town website, and continue to train employees on the IDDE Program annually.

Table 2.3
MCM₃ – BMP/Activity Tracking

BMP Number	BMP/Activity	Date BMP Completed or Updated				
3-1	Legal Authority			X	X	X
3-2	SSO Inventory	X	X	X	X	X
3-3	Municipal Storm Drain System Map					X
3-4	IDDE Program				X	X
3-5	Employee Training				X	X
3-6	Conduct Dry Weather Screening					
3-7	Conduct Catchment Investigations					
3-8	Conduct On-going Screening					

Legal Authority**BMP 3-1**Completed PY3 ☒**Website:** https://library.municode.com/nh/newmarket/codes/code_of_ordinances**Description:** Establish legal authority to: prohibit illicit discharges; investigate suspected illicit discharges; eliminate illicit discharges, including discharges from properties not owned by or controlled by the Town that discharge into the municipal storm drain system; and implement appropriate enforcement procedures and actions.**Responsible Department/Parties:** Planning & Community Development; Environmental Services; Engineering; Public Works**Implementation Timeframe:** Completed by end of PY3Sanitary Sewer Overflow (SSO) Inventory**BMP 3-2**Completed PY1 ☒Completed PY2 ☒Completed PY3 ☒Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** N/A**Description:** Maintain an inventory of all SSOs that have discharged to the MS4 within the previous five years. NH MS4 General Permit, Part 2.3.4.4**Responsible Department/Parties:** Environmental Services; Engineering**Measurable Goal(s):** Annually track and report the following SSO information: the location; a clear statement of whether the discharge entered a surface water directly or entered the municipal storm drain system; 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.**SSO Reporting:** In the event of an SSO or bypass, a notification must be reported within 24 hours by phone to EPA. Follow the verbal notification with a written notification to EPA and NHDES within five days of becoming aware of the SSO occurrence.**EPA Contact:** EPA Region 1 – New England, (617)918-1510, 5 Post Office Square, Boston, MA 02109**NHDES Contact:** (603)271-3503, PO Box 95, Concord, NH 03302-0095**Implementation Timeframe:** Update inventory as needed. Report SSOs as required.Municipal Storm Drain System Map**BMP 3-3**Phase I Completed PY5 ☒Phase II Completed PY13 ☐**Document Name and/or Website:** N/A**Description:** Maintain and update a map depicting the municipal storm drain system.**Responsible Department/Parties:** Engineering; Public Works; Environmental Services**Measurable Goal(s):**

Phase I: Map 100% of known outfalls and interconnections with other storm drain systems, open channel conveyances, municipally-owned stormwater treatment structures, water bodies identified by name and indication of use impairments, and initial catchment delineations.

Phase II: Map 100% of known outfall spatial locations, pipes/storm drains, drain manholes, catch basins, refined catchment delineations, municipal sanitary sewer system (if available), and municipal combined sewer system (if applicable) by the end of PY13.

Implementation Timeframe: Phase I completed PY5. Update map as new data becomes available.

IDDE Program

BMP 3-4

Completed PY4 ☒

Updated PY5 ☒

Document Name and/or Website: Illicit Discharge Detection and Elimination (IDDE) Plan (Appendix E)

Description: A written plan referencing the existing legal authority, summarizing the IDDE program responsibilities, and outlining procedures (including outfall and interconnection screening and sampling procedures) to implement the requirements of the NH MS4 General Permit, Parts 2.3.4.7 and 2.3.4.8.

Responsible Department/Parties: Engineering; Public Works; Environmental Services; Planning and Community Development

Measurable Goal(s): Conduct 100% of outfall screening on High and Low Priority Outfalls within six years of the effective date of the permit. Complete catchment investigations for 100% of the Problem Outfalls within 10 years of the effective date of the permit. Complete 100% of all catchment investigations within 13 years of the effective date of the permit.

Implementation Timeframe: Written plan completed June 2022. Updated annually.

Employee Training

BMP 3-5

Completed PY4 ☒

Completed PY5 ☒

Document Name and/or Website: N/A

Description: Annual training provided to employees involved in the IDDE Program including how to recognize illicit discharged and SSOs. Training may also include elements specific to particular personnel and their functions within the framework of the IDDE Program. Report on the frequency and type of employee training in the Annual Report.

Responsible Department/Parties: Engineering

Measurable Goal(s): Training occurs annually.

Implementation Timeframe: On-going activity beginning in PY4

Conduct Dry Weather Screening

BMP 3-6

Completed PY6 ☐

Description: Conduct dry weather screening of all regulated outfalls and interconnections (excluding Problem Outfalls and Excluded Outfalls) in accordance with outfall screening procedures in IDDE Plan and NH MS4 General Permit requirements.

Responsible Department/Parties: Engineering

Measurable Goal(s): Conduct 100% of outfall screening on High and Low Priority Outfalls within six years of the effective date of the permit. Track the number of outfalls that are screened and sampled annually and update priority ranking based on results of dry weather screening.

Implementation Timeframe: Screening to be completed by end of PY6.

Conduct Catchment Investigations**BMP 3-7****Completed PY13** ☐

Description: Conduct wet weather screening and sampling of all regulated outfalls and interconnections in catchments where a minimum of one System Vulnerability Factors (SVFs) are present in accordance with procedures in IDDE Plan and NH MS4 General Permit requirements. Conduct catchment investigations for all regulated outfalls and interconnections in accordance with procedures in IDDE Plan and NH MS4 General Permit requirements.

Responsible Department/Parties: Engineering

Measurable Goal(s): Complete wet weather screening and sampling for 100% of the Problem Outfalls within 10 years of the effective date of the permit. Complete 100% of all catchment investigations within 13 years of the effective date of the permit. Track the number of outfalls that are screened and sampled annually. Track the number of catchment investigations completed annually.

Implementation Timeframe: Begin wet weather screening and sampling after dry weather screening is complete, and complete catchment investigations no later than the end of PY13.

Conduct On-Going Screening**BMP 3-8****Completed PY14** ☐

Description: Conduct dry and wet weather screening (as necessary) in accordance with outfall screening procedures in IDDE Plan and NH MS4 General Permit requirements.

Responsible Department/Parties: Engineering

Measurable Goal(s): Conduct on-going outfall screening upon completion of 100% of catchment investigations. Track the number of outfalls that are screened and sampled annually and update priority ranking based on results.

Implementation Timeframe: Begin when all catchments have been investigated.

2.2.4 MCM₄: Construction Site Stormwater Runoff Control

Section 2.3.5 of the NH MS4 General Permit requires the permittee to create a program to “minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the US through the permittee’s MS4.” The permittee will conduct site plan reviews, site inspections and include procedures for public involvement.

The Town of Newmarket – Code of Ordinances, Chapter 32 includes Appendices that regulate Subdivisions, Site Plans and Stormwater. Specifically, Appendix C – Stormwater Management Regulations, was recently updated to meet the requirements outlined in the NH MS4 General Permit, including references to applicable state and federal requirements.

Table 2.4
MCM₄ – BMP/Activity Tracking

BMP Number	BMP/Activity	Date BMP Completed or Updated				
4-1	Erosion and Sedimentation Control (ESC) Ordinance			X	X	X
4-2	Site Inspection and Enforcement of ESC Procedures			X	X	X
4-3	Site Plan Review Procedures			X	X	X

Erosion and Sedimentation Control (ESC) Ordinance

BMP 4-1

Completed PY₃ ☒

Completed PY₄ ☒

Completed PY₅ ☒

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendix C https://library.municode.com/nh/newmarket/codes/code_of_ordinances

Description: Continue to require construction site operators to implement a sediment and erosion control program that includes submittal of a sediment and erosion control plan and reflects the recommendations of the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire. Update existing regulations as needed for compliance with the permit.

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Implementation Timeframe: Completed by end of PY₃, update as needed.

Site Inspection and Enforcement of ESC Procedures

BMP 4-2

Completed PY₄ ☒

Completed PY₅ ☒

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendix C https://library.municode.com/nh/newmarket/codes/code_of_ordinances

Description: Update existing regulations, as needed, to include written procedures for site inspections and enforcement, identifying the parties responsible. Track the number of site inspections completed and enforcement actions taken annually.

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Measurable Goal(s): Inspect 100% of active construction sites as outlined in Chapter 32, Appendix C, and take enforcement actions as needed.

Implementation Timeframe: On-going activity beginning in PY₄

Site Plan Review Procedures

BMP 4-3

Completed PY₄ ☒

Completed PY₅ ☒

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendix C https://library.municode.com/nh/newmarket/codes/code_of_ordinances

Description: Update existing regulations, as needed, to include written procedures for site plan

reviews. Track the number of site plan reviews completed annually.

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Measurable Goal(s): Conduct site plan reviews for 100% of applicable projects as outlined in Chapter 32, Appendix B and C, and take enforcement actions as needed.

Implementation Timeframe: On-going activity beginning in PY4

2.2.5 MCM5: Post-Construction Stormwater Management

Section 2.3.6 of the NH MS4 General Permit requires the permittee to require developers to “reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites.”

In this case, a site is defined as the “area extent of construction activities which includes but is not limited to the creation of new impervious cover and improvement of existing impervious cover.”

The Town of Newmarket – Code of Ordinances, Chapter 32 includes Appendices that regulate Subdivisions, Site Plans and Stormwater. Specifically, Appendix C – Stormwater Management Regulations, was recently updated to meet the requirements outlined in the NH MS4 General Permit, including references to applicable state and federal requirements.

Table 2.5 MCM5 – BMP/Activity Tracking						
BMP Number	BMP/Activity	Date BMP Completed or Updated				
5-1	Post-Construction Ordinance			X	X	X
5-2	Street Design and Parking Lot Guidelines					
5-3	Green Infrastructure					
5-4	List of Municipal Retrofit Opportunities				X	
5-5	Track BMP Retrofit Implementation					

Post-Construction Ordinance

BMP 5-1

Completed PY3 ☒

Updated PY4 ☒

Updated PY5 ☒

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendices https://library.municode.com/nh/newmarket/codes/code_of_ordinances

Description: The Department of Planning and Community Development, along with Public Works and Engineering, will work with the Planning Board in updating and adopting new stormwater management regulations to reduce water quality impacts from new development and redevelopment under the Town of Newmarket – Code of Ordinances, Chapter 32, Appendix A, B and C. These regulations will be consistent with the latest version of Elements C and D of the Southeast Watershed Alliance’s Model Stormwater Standards for Coastal Watershed Communities as required in the NH MS4 General Permit. These regulations will generally apply to such projects that disturb one or more acres and discharge into the municipal storm drain system and will address the following.

- 1) Ensure Low Impact Development (LID) site planning and design strategies are used to the maximum extent feasible to reduce the discharge of stormwater from new development.
- 2) Require salt storage areas on new and redeveloped commercial and industrial sites to be covered, and loading/offloading areas are properly designed, and maintained so there are no untreated discharges to receiving waters. Snow and salt storage areas shall be located so there are no direct untreated discharges. All such runoff shall be properly treated before being discharged to receiving waters.
- 3) Ensure the selection and design of treatment and infiltration practices follow Volume 2 of the New Hampshire Stormwater Manual, as applicable.
- 4) Ensure that post-construction runoff from new development sites is controlled by appropriate retention or treatment and there are provisions for the long term maintenance of BMPs.
- 5) Ensure that post-construction runoff from redevelopment sites is controlled by appropriate retention and treatment, and there are provisions for the long term maintenance of BMPs with options for off-site mitigation to meet pollution removal equivalents and exemptions for such projects disturbing areas greater than one acre and involving the maintenance and improvement of existing roads with no increase in impervious area.
- 6) Require the submission of "as-built" drawings from developers within no less than 2 years from the time of construction completion.
- 7) Require all new development and redevelopment projects to have measures in place to ensure adequate long term operations and maintenance.
- 8) Require such projects to be subject to an annual certification, inspection and enforcement program after completion to ensure compliance.
- 9) Require any regulated sites located in catchment areas that drain to waters impaired by nitrogen, per the most recent EPA approved 303(d) list, implement stormwater management BMPs optimized for nitrogen removal.
- 10) Require any regulated commercial or industrial properties located in catchment areas that drain to waters impaired by solids, oils & grease or metals, per the most recent EPA approved 303(d) list, shall incorporate BMPs designed to allow for shutdown and containment to isolate the system in the event of an emergency spill or other unexpected event.

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Measurable Goal(s): The Town will have adopted new regulations incorporating the requirements outlined above; be performing the necessary design reviews; be instituting practices, policies and procedures to ensure development compliance; and have staff and resources to enforce such compliance.

Implementation Timeframe: Completed by end of PY3, update as needed.

Street Design and Parking Lot Guidelines

BMP 5-2

Completed PY6 ☐

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendices https://library.municode.com/nh/newmarket/codes/code_of_ordinances

Description: Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if design standards for streets and parking lots can be modified to support low impact designs and minimize impervious cover.

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Measurable Goal(s): Completed assessment and implement recommendations, where feasible.

Implementation Timeframe: Assessment completed by end of PY6, regulations updated as needed.

Green Infrastructure

BMP 5-3

Completed PY6 ☐

Document Name and/or Website: Town of Newmarket – Code of Ordinances, Chapter 32, Appendices https://library.municode.com/nh/newmarket/codes/code_of_ordinances

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

Responsible Department/Parties: Planning and Community Development; Engineering; Public Works

Measurable Goal(s): Completed assessment and implement recommendations, where feasible.

Implementation Timeframe: Assessment completed by end of PY6, regulations updated as needed.

List of Municipal Retrofit Opportunities

BMP 5-4

Completed PY6 ☐

Updated PY7 ☐

Document Name and/or Website: N/A

Description: Develop an inventory and priority ranking of municipally-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to the municipal storm drain system. As BMP retrofit projects are completed, the Town will tack them; continue to identify potential sites for BMP retrofits; and report on progress annually.

Responsible Department/Parties: Engineering; Public Works; Environmental Services

Measurable Goal(s): Complete inventory and use it as a screening level ranking for implementation of retrofit projects in future permit years as opportunities present themselves, as part of capital improvements to storm drain and sanitary sewer infrastructure, road reconstruction, or municipal buildings/facilities upgrades.

Implementation Timeframe: Completed by end of PY6, update as needed.

Track BMP Retrofit Implementation

BMP 5-5

Completed PY6 ☐

Updated PY7 ☐

Document Name and/or Website: N/A

Description: Track the retrofit projects/BMPs installed on municipally-owned and/or privately owned properties to mitigate impervious cover (IC). Information to be tracked includes, but is not limited to, property owner, location (i.e. address, GPS coordinates), installation date, BMP type, IC type (i.e. parking lot, roadway, rooftop), IC area disconnected, receiving water body or discharge location, contractor, inspection and maintenance plan, and installation cost. As BMP retrofit projects are completed, the Town will tack them and report on progress annually.

Responsible Department/Parties: Engineering; Public Works; Environmental Services

Measurable Goal(s): Track retrofit projects/BMPs installed and associated pollutant load removed to demonstrate reductions in pollutant loads discharged from the municipal storm drain system.

Implementation Timeframe: Completed by end of PY6, update as needed.

2.2.6 MCM6: Pollution Prevention / Good Housekeeping

Section 2.3.7 of the NH MS4 General Permit requires the permittee to “implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned operations.”

This minimum control measure includes a training component and has the goal of preventing or reducing stormwater pollution from municipal activities and facilities such as parks and open spaces, buildings and facilities, vehicles and equipment, and providing for the long-term operation and maintenance of municipal infrastructure. The Town conducts this training annually in the spring as seasonal employees are joining (or rejoining) DPW crews.

The Town of Newmarket continues to employ several good housekeeping measures, adopted or adapted in recent years, to reduce nutrient loading to Great Bay and its tributaries. The Town currently sweeps all streets and municipally owned parking lots at least twice per year in the spring and fall. Streets located in the more densely populated downtown area are swept every week during summer and fall. Catch basins are typically cleaned once every year, or as needed for catch basins that are known to accumulate sediment at a slower rate. The Town follows proper disposal practices for removal of residual materials from catch basin cleaning and street sweeping activities. Salt spreaders are calibrated each year, salt usage is monitored, and the Town follows proper snow disposal practices. The Town continues to implement existing Stormwater Pollution Prevention Plans (SWPPPs) for the DPW/Fire & Rescue Facility, Wastewater Treatment Facility, and the Snow Dump site.

Table 2.6 MCM6 – BMP/Activity Tracking						
BMP Number	BMP/Activity	Date BMP Completed or Updated				
6-1	Operation & Maintenance (O&M) Procedures				X	X
6-2	Inventory of Municipally-Owned Property				X	X
6-3	SWPPPs				X	X
6-4	Infrastructure O&M Procedures				X	X
6-5	Catch Basin Cleaning Program	X	X	X	X	X
6-6	Street Sweeping Program	X	X	X	X	X
6-7	Winter Road Maintenance Program	X	X	X	X	X
6-8	SW Treatment Structure I&M				X	X

Operation & Maintenance (O&M) Procedures

BMP 6-1

Completed PY4 ☒

Updated PY5 ☒

Document Name and/or Website: Appendix F – Town-Wide Operations and Maintenance Program

Description: Develop written O&M procedures addressing parks and open spaces, buildings and

facilities, and vehicles and equipment in accordance with the requirements outlined in the NH MS4 General Permit. Review and update O&M procedures annually.

Responsible Department/Parties: Engineering; Public Works

Measurable Goal(s): Implement Town-Wide O&M Program for municipal facilities and equipment.

Implementation Timeframe: Completed by end of PY4, update as needed.

Inventory of Municipally-Owned Property

BMP 6-2

Completed PY4 ☒

Update PY5 ☒

Document Name and/or Website: Appendix F – Town-Wide Operations and Maintenance Program

Description: Develop inventory of municipally-owned parks and open spaces, buildings and facilities, and vehicles and equipment. Review and update inventory annually.

Responsible Department/Parties: Engineering; Public Works

Measurable Goal(s): Maintain up-to-date inventory.

Implementation Timeframe: On-going activity beginning in PY4.

Stormwater Pollution Prevention Plans (SWPPPs)

BMP 6-3

Completed PY4 ☒

Updated PY5 ☒

Document Name and/or Website: Stormwater Pollution Prevention Plan (SWPPP)

Description: Develop and implement a SWPPP for the DPW/Fire & Rescue Facility, Wastewater Treatment Facility, and the Snow Dump site in accordance with the requirements outlined in the NH MS4 General Permit. Review and update SWPPPs as needed.

Responsible Department/Parties: Engineering; Public Works; Environmental Services

Measurable Goal(s): Implement SWPPPs at applicable facilities. Conduct quarterly site inspections and annual trainings.

Implementation Timeframe: On-going activity beginning in PY4.

Infrastructure O&M Procedures

BMP 6-4

Completed PY4 ☒

Updated PY5 ☒

Document Name and/or Website: Appendix F – Town-Wide Operations and Maintenance Program

Description: Establish and implement a program for repair and rehabilitation of municipal storm drain system infrastructure in accordance with the requirements outlined in the NH MS4 General Permit. Review and update O&M procedures annually.

Responsible Department/Parties: Engineering; Public Works

Measurable Goal(s): Implement Town-Wide O&M Program for municipal storm drain system infrastructure.

Implementation Timeframe: Completed by end of PY4, update as needed.

Catch Basin Cleaning Program

BMP 6-5

Completed PY1 ☒

Completed PY2 ☒

Completed PY3 ☒Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** Appendix F – Town-Wide Operations and Maintenance Program**Description:** Establish and implement a program, including schedule, for catch basin cleaning in accordance with the requirements outlined in the NH MS4 General Permit, so that no catch basin is more than 50% full at any given time. Review and update O&M procedures annually. Track the number of catch basins inspected and cleaned and the mass or volume of material removed annually.**Responsible Department/Parties:** Engineering; Public Works**Measurable Goal(s):** Implement catch basin cleaning program, ensuring that every catch basin is inspected and cleaned (if required) on the established schedule.**Implementation Timeframe:** On-going activity beginning in PY1.**Street Sweeping Program**

BMP 6-6

Completed PY1 ☒Completed PY2 ☒Completed PY3 ☒Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** Appendix F – Town-Wide Operations and Maintenance Program**Description:** Establish and implement a program, including schedule, for sweeping streets and municipally-owned parking lots in accordance with the requirements outlined in the NH MS4 General Permit. Review and update O&M procedures annually. Track the number of miles swept and the mass or volume of material removed annually.**Responsible Department/Parties:** Engineering; Public Works**Measurable Goal(s):** Implement street sweeping program, ensuring that all streets and municipally-owned parking lots are swept at least twice per year, once in the spring and once in the fall.**Implementation Timeframe:** On-going activity beginning in PY1.**Winter Road Maintenance Program**

BMP 6-7

Completed PY1 ☒Completed PY2 ☒Completed PY3 ☒Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** Appendix F – Town-Wide Operations and Maintenance Program**Description:** Establish and implement a program for winter road maintenance in accordance with the requirements outlined in the NH MS4 General Permit. Review and update O&M procedures annually. Track the amount of deicing material used annually.**Responsible Department/Parties:** Engineering; Public Works**Measurable Goal(s):** Implement winter road maintenance program to minimize environmental impacts.**Implementation Timeframe:** On-going activity beginning in PY1.

Stormwater Treatment Structures I&M**BMP 6-8**Completed PY1 ☒Completed PY2 ☒Completed PY3 ☒Completed PY4 ☒Completed PY5 ☒**Document Name and/or Website:** Appendix F – Town-Wide Operations and Maintenance Program**Description:** Establish and implement I&M frequencies and procedures for municipally-owned stormwater treatment structures in accordance with the requirements outlined in the NH MS4 General Permit. Review and update I&M procedures annually. Track the number of inspections conducted and maintenance activities completed annually.**Responsible Department/Parties:** Engineering; Public Works**Measurable Goal(s):** Inspect, at least once per year, and maintain 100% of municipally-owned stormwater treatment structures to ensure proper function.**Implementation Timeframe:** On-going activity beginning in PY1.

3.0 TMDLS AND WATER QUALITY LIMITED WATERS

3.1 Discharges to Water Quality Limited Waters

Under the Federal Water Pollution Control Act, commonly called the Clean Water Act, each state is required to submit a list of impaired waters to the EPA every two years. The New Hampshire Department of Environmental Services (NHDES) is responsible for monitoring the state's waters, identifying those waters that are impaired, and developing a plan to bring them back into compliance with New Hampshire Surface Water Quality Standards. The list of impaired waters, better known as the "303(d) list," because it is a requirement of Section 303(d) of the Clean Water Act, identifies impaired surface waters and the reasons for impairment. The New Hampshire 2020/2022 303(d) list was approved by EPA on March 14th, 2022.

Once a water body is identified as impaired, NHDES is required by the CWA to develop a strategy for restoring the health of the impaired water body. The process of developing this strategy, which is generally referred to as a Total Maximum Daily Load (TMDL) includes identifying the type of pollutant, and the potential sources of the pollutant, in addition to determining the maximum amount of pollutant that can be discharged to a specific surface water body in order to meet surface water quality standards. Part of the TMDL also includes the development of a plan to help in meeting the TMDL limits once they have been established. These impaired waters are listed under Category 4A in the New Hampshire Integrated Report of Waters. As of the permit effective date, the only approved TMDL applicable to water bodies within the Town of Newmarket is the NH Statewide Bacteria TMDL, which applies to the Lamprey River and Great Bay estuary segments listed in Table 3.1.

In addition to identifying water bodies for which a TMDL has already been developed, the Integrated Report of Waters also identifies the 303(d) List of Impaired Waters under Category 5. The 303(d) List identifies water bodies that are impaired or threatened for one or more designated uses and therefore require the development of a TMDL. As of the permit effective date, there are two impairments commonly found in stormwater (nitrogen; and solids, oil and grease or metals) that impact water bodies within the Town of Newmarket.

Table 3.1 Impaired / Water Quality Limited Water Bodies in Newmarket

Applicable Water Body	TMDL Name Impairment
Lamprey River North (NHEST600030709-01-01)	NH Statewide Bacteria TMDL Nitrogen; Solids, Oil and Grease or Metals
Lamprey River South (NHEST600030709-01-02)	NH Statewide Bacteria TMDL Nitrogen
Great Bay Prohib Sz1 (NHEST600030904-02)	NH Statewide Bacteria TMDL Nitrogen
Great Bay Prohib Sz2 (NHEST600030904-03)	Nitrogen

3.2 Bacteria TMDL

There is an approved statewide TMDL for bacteria, which applies to three of the water body segments listed in Table 3.1 and therefore, the Town is subject to the requirements of Appendix F, Part II of the NH MS4 General Permit, which outlines requirements related to discharges to impaired water bodies where bacteria or pathogens is the cause of the impairment.

3.2.1 Public Education and Outreach

The Town of Newmarket has a fairly robust public education program for multiple purposes and has easily been able to add in specific, targeted information regarding actions that can be taken to reduce sources of bacteria from outfalls tributary to the Lamprey River and Great Bay.

The Town will supplement its residential public education program by distributing information to pet owners within catchments tributary to these water bodies about the proper management of pet waste, including noting any existing ordinances. This message must be disseminated to all residents annually and to pet owners at the time of pet license issuance and renewal. This informational campaign can be combined with the nitrogen education requirements outlined in Section 3.3.1.

The Town will also distribute information to septic system owners in catchments tributary to these water bodies about proper system maintenance.

3.2.2 Illicit Discharges

In implementing their IDDE Program, the Town will designate all catchments tributary to bacteria-impaired water bodies as problem or high priority under the catchment prioritization and ranking. These outfalls will be prioritized going forward for dry and wet weather screening and sampling as well as IDDE investigations.

3.3 Nitrogen Impairments

The four water body segments listed in Table 3.1 are impaired for nitrogen and require the development of a TMDL. The Town has a number of outfalls, which discharge directly to these water bodies and their tributaries and therefore, the Town is subject to the requirements of Appendix H, Part I of the NH MS4 General Permit, which outlines requirements related to discharges to water quality limited water bodies and their tributaries where nitrogen is the cause of the impairment.

3.3.1 Public Education and Outreach

As noted above, the Town of Newmarket has a fairly robust public education program for multiple purposes and has easily been able to add in specific, targeted information regarding actions that can be taken to reduce sources of nitrogen from outfalls tributary to the Lamprey River and Great Bay.

The Town will supplement its public education program by distributing information to residential property owners, businesses, and commercial institutions about the proper use and disposal of grass clippings and leaf litter, and to encourage the use of slow release fertilizers. These messages must be disseminated annually in the spring and fall.

The Town will also distribute information to pet owners about the proper management of pet waste. This informational campaign can be combined with the bacteria education requirements outlined in Section 3.2.1.

3.3.2 Regulatory Updates

The Town of Newmarket updated the Code of Ordinances, Chapter 32, Appendix C, which covers *Stormwater Management*, to require that new development and redevelopment stormwater management BMPs constructed in town be optimized for nitrogen removal.

In addition, as part of the assessment to identify municipally-owned property that can be retrofitted with BMPs, the incorporation of BMPs that infiltrate stormwater shall be prioritized where feasible to aid in nitrogen removal.

3.3.3 *Good Housekeeping and Pollution Prevention*

The Town of Newmarket developed and is currently implementing a program to reduce and manage fertilizer use (including the use of slow release fertilizers) and to manage grass clippings and leaf litter on all municipally-owned property (including prohibiting blowing organic waste materials onto adjacent impervious surfaces). These activities/procedures are outlined in the Town-Wide Operations and Maintenance Program included in Appendix F of this SWMP.

The Town has increased the sweeping frequency of street and municipal parking lots to a minimum of two times per year, in the spring after snowmelt and sanding practices have subsided, and in the fall in catchments tributary to the Lamprey River and Great Bay. Streets located in the more densely populated downtown area are swept every week during summer and fall. These activities/procedures are outlined in the Town-Wide Operations and Maintenance Program included in Appendix F of this SWMP.

3.3.4 *Nitrogen Source Identification Report*

The Town of Newmarket will develop a comprehensive Nitrogen Source Identification Report. This report must include the following elements and be appended to this SWMP upon completion.

- Calculation of the total MS₄ regulated area draining to the Lamprey River and Great Bay and their tributaries. The analysis will reflect any updated MS₄ mapping and catchment delineations.
- All screening and monitoring results for outfalls discharging to the Lamprey River and Great Bay and their tributaries.
- Calculation of Impervious Area and Directly Connected Impervious Area for each catchment.
- Identification, delineation and prioritization of potential catchments with high nitrogen loading.
- Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment, including the removal of impervious area to reduce nitrogen loading.

After development of the report, the Town will evaluate all municipally-owned properties within the drainage area that could be candidates for a BMP retrofit projects. This evaluation will include:

- The next infrastructure or redevelopment activity planned for the property or planned retrofit date;
- The estimated cost of redevelopment or retrofit BMPs; and
- The engineering and regulatory feasibility of redevelopment of retrofit BMPs.

This analysis must be complete within 6 years of the permit effective date, and a plan and schedule for implementation must be included in the Year 6 Annual Report. The Town must plan and install at least one structural BMP as a demonstration project within the drainage area within 7 years of the permit effective date. This BMP must target a catchment with high nitrogen load potential. Any other identified BMP retrofit project must be installed according to the schedule outlined in the Year 6 Annual Report. For structural BMPs installed, the Town must document the following in each MS₄ Annual Report:

- BMP type
- Total area treated by the BMP
- Design storage volume of the BMP
- Estimated nitrogen removed in mass per year by the BMP

3.4 Solids, Oil and Grease or Metals Impairments

The Lamprey River North segment is impaired for solids, oil and grease and metals and requires the development of a TMDL. The Town has a number of outfalls, which discharge directly to this water body and its tributaries and therefore, the Town is subject to the requirements of Appendix H, Part V of the NH MS4 General Permit, which outlines requirements related to discharges to water quality limited water bodies where solids, oil and grease (hydrocarbons) or metals are the cause of the impairment.

3.4.1 *Regulatory Updates*

The Town of Newmarket updated the Code of Ordinances, Chapter 32, Appendix C, which covers *Stormwater Management*, to require that new development and redevelopment stormwater management BMPs located on commercial or industrial land within the watershed incorporate designs that allow for shutdown and containment to isolate the drainage system in the event of an emergency spill or other unexpected event.

3.4.2 *Good Housekeeping and Pollution Prevention*

The Town has increased the sweeping frequency of street and municipal parking lots to a minimum of two times per year, in the spring after snowmelt and sanding practices have subsided, and in the fall in catchments tributary to the Lamprey River and Great Bay. Streets located in the more densely populated downtown area are swept every week during summer and fall. These activities/procedures are outlined in the Town-Wide Operations and Maintenance Program included in Appendix F of this SWMP.

Additionally, catch basins that drain to those outfalls tributary to the Lamprey River must be inspected more frequently to ensure that the sump for each basin is no more than 50% full at any given time. Catch basins where excessive sediment or debris has accumulated are cleaned more often.

4.0 EVALUATION, MODIFICATION AND REPORTING

4.1 SWMP Evaluation

This SWMP should be considered a dynamic document that is updated and modified as necessary to account for changes in storm drain system infrastructure, laws and regulations, and Town leadership and policy. The success of programs implemented by the SWMP, such as IDDE and O&M, should also be evaluated to ensure that they are accomplishing the goals for which they were intended and in a method and timetable that continues to be appropriate. Additionally, the SWMP should be reviewed and updated as necessary to keep text and appendices current. Annual SWMP Evaluations should incorporate updates to the following.

- Appended IDDE investigation, identification and removal documentation, including monitoring results and priorities.
- Appended Town-Wide Operations and Maintenance documentation.
- New requirements from each NH MS₄ General Permit renewal and associated Notices of Intent (NOIs) and other supporting documents should be appended.
- References and requirements from new or revised ordinances and regulations related to stormwater management or storm drain system infrastructure.

The Town of Newmarket implements this SWMP to ensure the protection of natural resources and the large investment in municipal storm drain system infrastructure. Periodic review and revision of this written document will help achieve these goals on a perpetual basis.

4.2 Modifications to the SWMP or Notice of Intent

As discussed above, minor modifications to this SWMP should be made on a regular and frequent basis to keep it current. However, major changes to the SWMP or needed modifications to the NOI for inclusion under the NH MS₄ General Permit require an official process. In accordance with the NH MS₄ General Permit, modifications to the SWMP or NOI may be made under the following provisions.

- At any time, the Town may add (but not subtract or replace) components, controls or requirements to the SWMP.
- The Town may request to replace an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP at any time as long as the basis for the change is documented in the SWMP by, at a minimum:
 - An analysis of why the BMP is ineffective or infeasible (or cost prohibitive).
 - Expectations on the effectiveness of the replacement BMP.
 - An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
- The Town shall indicate BMP modifications along with a brief explanation of the modification in each Annual Report.

At this time, the Town of Newmarket does not anticipate any major modifications to the SWMP or NOI requiring official notification.

4.3 Record Keeping and Reporting

All documentation and records required by the NH MS₄ General Permit will be maintained for a period of at least five years. Records will include things such as monitoring results; copies of reports; records of inspections/screenings; records of follow-up and elimination of illicit discharges; records of facility and

infrastructure inspections and maintenance; and data used in the development of the NOI, SWMP, SWPPPs and Annual Reports.

The NH MS4 General Permit requires submission of Annual Reports assessing the SWMP effectiveness. At a minimum, the Annual Report should include the following.

- The status of compliance with permit terms and conditions, including an assessment of the appropriateness of the selected BMPs and progress toward achieving the selected measurable goals for each minimum control measure.
- Results of any information collected and analyzed, including monitoring data, if any. Outfall screening and monitoring data collected shall be submitted for both the reporting cycle and cumulative for the permit term.
- A summary of the stormwater activities planned for the next reporting cycle.
- A change in any identified BMPs or measurable goals for any minimum control measure.
- A summary of activities undertaken by an entity contracted for achieving any measurable goal or implementing any control measure.

The Town of Newmarket will submit an Annual Report that covers the reporting period of July 1st to June 30th for each year of the permit term. The first Annual Report covered the period of May 1, 2018 to July 1, 2019. The Annual Report will contain information as outlined in Part 4.4 of the NH MS4 General Permit. Annual Reports are due within 90 days of the permit year end date of June 30th. Annual Reports will be submitted to EPA electronically via email to stormwater.reports@epa.gov or at the following address.

United States Environmental Protection Agency
Stormwater and Construction Permits Section (OEP06-1)
Five Post Office Square, Suite 100
Boston, MA 02109

NHDES may request Annual Reports be submitted to them as well. Upon receipt of this request, Annual Reports will be submitted electronically via email to Deborah Loiselle (Deborah.S.Loiselle@des.nh.gov) or at the following address.

NH Department of Environmental Services, Water Division, Wastewater Engineering Bureau
Permit and Compliance Section
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Annual Reports submitted by the Town of Newmarket can be viewed at the following websites.

EPA: <https://www.epa.gov/npdes-permits/regulated-ms4-new-hampshire-communities> or

PY1 Annual Report:

https://www.newmarketnh.gov/sites/g/files/vyhlif3536/f/uploads/newmarketnh_py1_annualrpt.pdf

PY2 Annual Report:

https://www.newmarketnh.gov/sites/g/files/vyhlif3536/f/uploads/newmarketnh_py2_annualrpt.pdf

PY3 Annual Report:

https://www.newmarketnh.gov/sites/g/files/vyhlif3536/f/uploads/newmarketnh_py3_annualrpt.pdf

PY4 Annual Report:

https://www.newmarketnh.gov/sites/g/files/vyhlif3536/f/uploads/newmarketnh_py4_annualrpt.pdf

PY5 Annual Report:

APPENDIX A

Abbreviations and Definition

ABBREVIATIONS AND ACRONYMS

303(d) List – List of Impaired Waters (Section 303(d) of the CWA)

AOC – Administrative Order on Consent

BMP – Best Management Practice

CGP – Construction General Permit

CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)

DCIA – Directly Connected Impervious Area

EPA – U. S. Environmental Protection Agency

ESA – Endangered Species Act

FWPCA – Federal Water Pollution Control Act

GBNNPSS – Great Bay Nitrogen Non-Point Source Study

GIS – Geographic Information System

IA – Impervious Area

IDDE – Illicit Discharge Detection and Elimination

I/I – Infiltration / Inflow

MCM – Minimum Control Measure

MEP – Maximum Extent Practicable

mg/l – Milligrams per Liter

MS4 – Municipal Separate Storm Sewer System

MSGP – Multi-Sector General Permit

NCP – Nitrogen Control Plan

NERRS – National Estuarine Research Reserve System

NHDES – New Hampshire Department of Environmental Services

NHPA – National Historic Preservation Act

NMFS – U. S. National Marine Fisheries Service

NOI – Notice of Intent

NPDES – National Pollutant Discharge Elimination System

NRHP – National Register of Historic Places

NPS – Non-Point Source

O&M – Operation and Maintenance

PREP – Piscataqua Region Estuaries Partnership

PTAP – Pollutant Tracking and Accounting Program

SHPO – State Historic Preservation Officer

SPCC – Spill Prevention, Control, and Countermeasure

SSO – Sanitary Sewer Overflow

SVF – System Vulnerability Factor

SWMP – Stormwater Management Program

SWPPP – Stormwater Pollution Prevention Plan

TMDL – Total Maximum Daily Load

TSS – Total Suspended Solids

UA – Urbanized Area

USFWS – U. S. Fish and Wildlife Service

WLA – Wasteload Allocation

WQS – Water Quality Standard

WWTF – Wastewater Treatment Facility

DEFINITIONS

Best Management Practices (BMPs) – schedules of activities, practices (and prohibitions of practices), structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Control Measure – refers to any BMP or other method (including effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the United States.

Director – a Regional Administrator of the EPA or an authorized representative.

Discharge – when used without qualification, means the "discharge of a pollutant."

Discharge of a pollutant – any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from surface runoff which is collected or channeled by man; or discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Discharge-related activities – activities which cause, contribute to, or result in stormwater and allowable non-stormwater point source discharges, and measures such as the siting, construction and operation of BMPs to control, reduce, or prevent pollution in the discharges.

Disturbance – action to alter the existing vegetation and/or underlying soil of a site, such as clearing, grading, site preparation (e.g., excavating, cutting, and filling), soil compaction, and movement and stockpiling of top soils.

Existing Discharger – an operator applying for coverage under this permit for discharges covered previously under an NPDES general or individual permit.

Facility or Activity – any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

Federal Facility – any buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property, owned by, or constructed or manufactured for the purpose of leasing to, the federal government.

Illicit Discharge - any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities.

Impaired Water – a water is impaired if it does not meet one or more of its designated use(s). For purposes of this permit, "impaired" refers to categories 4 and 5 of the five-part categorization approach used for classifying the water quality standards attainment status for water segments under the TMDL program. Impaired waters compilations are also sometimes referred to as "303(d) lists." Category 5 waters are impaired because at least one designated use is not being supported or is threatened and a TMDL is needed. Category 4 waters indicate that at least one designated use is not being supported but a TMDL is not needed (4a indicates that a TMDL has been approved or established by EPA; 4b indicates other required control measures are expected in result in the attainment of water quality standards in a

reasonable period of time; and 4c indicates that the nonattainment of the water quality standard is the result of pollution (e.g. habitat) and is not caused by a pollutant). See USEPA's 2006 Integrated Report Guidance, July 29, 2005 for more detail on the five-part categorization of waters [under EPA National TMDL Guidance <http://www.epa.gov/owow/tmdl/policy.html>]).

Impervious Surface – any surface that prevents or significantly impedes the infiltration of water into the underlying soil. This can include but is not limited to: roads, driveways, parking areas and other areas created using non-porous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil.

Industrial Activity – the ten categories of industrial activities included in the definition of “stormwater discharges associated with industrial activity,” as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi).

Industrial Stormwater – stormwater runoff associated with the definition of “stormwater discharges associated with industrial activity.”

Interconnection – the point (excluding sheet flow over impervious surfaces) where the permittee's municipal storm drain system discharges to another MS₄ or other storm drain system, through which the discharge is eventually conveyed to a water of the United States. Interconnections shall be treated similarly to outfalls throughout the permit.

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

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

Municipal Separate Storm Sewer or Municipal Storm Drain – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Municipal Separate Storm Sewer System (MS₄) or Municipal Storm Drain System – means all separate storm sewers that are defined as “large” or “medium” or “small” municipal storm sewer systems pursuant to paragraphs 40 CFR 122.26 (b)(4) and (b)(7), or designated under paragraph 40 126.26(a) (1)(v). For the purposes of this permit “MS₄” may also refer to the permittee with jurisdiction over the sewer system.

New Development – any construction activities or land alteration resulting in total earth disturbances greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) on an area that has not previously been developed to include impervious cover. (See part 2.3.6. of the permit)

New Discharger – for the purposes of this permit, a new discharger is an entity that discharges stormwater from a new facility with an entirely new separate storm sewer system that is not physically located on the same or adjacent land as an existing facility and associated system operated by the same MS4.

New Source – any building, structure, facility, or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced:

- after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or
- after proposal of standards of performance in accordance with section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

No exposure – all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

One Lane Width – the width of the travel lane for a roadway. Lane width does not include shoulders, curbs, and on-street parking areas.

Outfall Catchment – the land area draining to a single outfall or interconnection. The extent of an outfall's catchment is determined not only by localized topography and impervious cover but also by the location of drainage structures and the connectivity of MS4 pipes.

Outfall – a point source as defined by 40 CFR 122.2 (and below) at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

Owner or operator – the owner or operator of any “facility or activity” subject to regulation under the NPDES program.

Person – an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point source – any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant – dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged into water.

Pollutant of concern – a pollutant which causes or contributes to a violation of a water quality standard, including a pollutant which is identified as causing an impairment in a State's 303(d) list.

Redevelopment – for the purposes of part 2.3.6., any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances 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 new development (see above).

Runoff coefficient – the fraction of total rainfall that will appear at the conveyance as runoff.

Site – for the purposes of part 2.3.6., the area extent of construction activities, including but not limited to the creation of new impervious cover and improvement of existing impervious cover (e.g. repaving not covered by 2.3.6.a.ii.4.d.)

Small Municipal Separate Storm Sewer System – all separate storm sewer systems that are (i) owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district, or drainage district, or similar entity or an Indian tribe or an authorized Indian tribal organization or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States, and (ii) not defined as “large” or “medium” municipal separate storm sewer system pursuant to paragraphs 40 CFR 122.26 (b)(4) and (b)(7), or designated under paragraph 40 CFR 126.26(a) (1)(v). This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. This term does not include separate storm sewers in very discrete areas, such as individual buildings.

Small MS4 – means a small municipal separate storm sewer system.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Discharges Associated with Construction Activity – a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavating), construction materials, or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. (See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15).

Stormwater Discharges Associated with Industrial Activity – the discharge from any conveyance that is used for collecting and conveying stormwater and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste water (as defined at part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office

buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas. Industrial facilities include those that are federally, State, or municipally owned or operated that meet the description of the facilities listed in Appendix D of this permit. The term also includes those facilities designated under the provisions of 40 CFR 122.26(a)(1)(v).

Total Maximum Daily Loads (TMDLs) – a TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL includes wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources and/or natural background, and must include a margin of safety (MOS) and account for seasonal variations. (See section 303(d) of the Clean Water Act and 40 CFR 130.2 and 130.7).

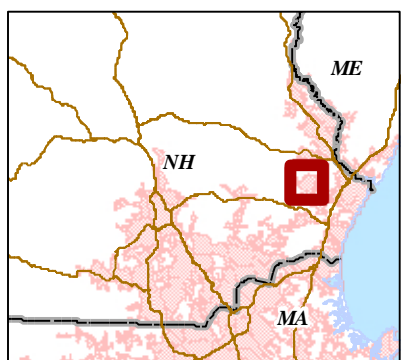
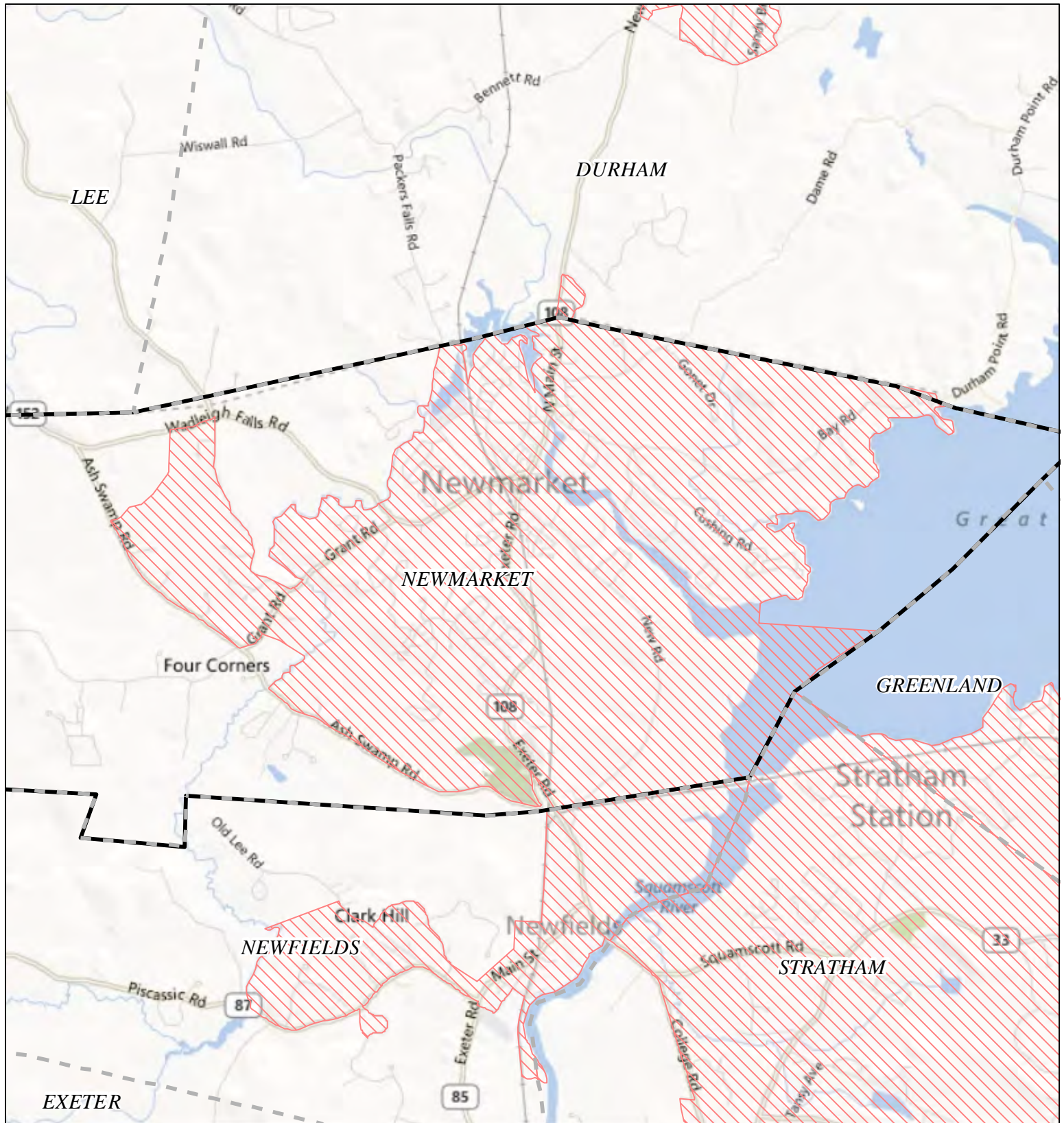
Urbanized Area – US Census designated area comprised of a densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. For the purposes of this permit, Urbanized Areas as defined by any Census since 2000 remain subject to stormwater regulation even if there is a change in the reach of the Urbanized Area because of a change in more recent Census data.

Water Quality Limited Water – for the purposes of this permit, a water quality limited water is any water body that does not meet applicable water quality standards, including but not limited to waters listed in categories 5 or 4b on the most recent (as of the permit effective date) EPA-approved New Hampshire Integrated Report of Waters listed pursuant to Clean Water Act section 303(d) and 305(b).

Water Quality Standards – a water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and EPA adopt WQS to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (See CWA sections 101(a)2 and 303(c)).

APPENDIX B

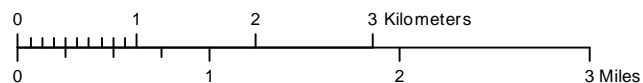
Regulated Area Map



NPDES Phase II Stormwater Program Automatically Designated MS4 Areas

Newmarket NH

 Regulated Area (2000 + 2010 Urbanized Area)



Town Population: 14 527
Regulated Population: 7465
(Populations estimated from 2010 Census)



Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2010 Microsoft Corporation
and its data suppliers

APPENDIX C

Notice of Intent (NOI) / Authorization to Discharge

Part I: General Conditions

General Information

Name of Municipality or Organization: State:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Fax Number:

Other Information

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

Eligibility Determination

Endangered Species Act (ESA) Determination Complete?

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

National Historic Preservation Act (NHPA) Determination Complete?

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

Part II: Summary of Receiving Waters

New Hampshire list of impaired waters: <http://des.nh.gov/organization/divisions/water/wmb/swqa/>

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 of the permit. List any other pollutants in the last column, if applicable.

[illegible]

		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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 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 Implementation
Brochures/Pamphlets	Erosion & Sediment Control / LID Principles	Developers (construction)	Planning Department	Proper installation of E&S controls and increased implementation of LID Principles	2022
Brochures/Pamphlets	Proper Lawn Care	Residents & Businesses, Institutions and Commercial Facilities	Planning Department	Increased awareness of proper fertilizer use.	2019
Brochures/Pamphlets	Pet Waste Management	Residents & Businesses, Institutions and Commercial Facilities	Planning Department	Increased awareness of pet waste impacts to water quality.	2019
Local Public Service Announcements	Proper Disposal of Leaf Litter	Residents & Businesses, Institutions and Commercial Facilities	Planning Department	Increased awareness of yard waste impacts to water quality.	2019
Brochures/Pamphlets	Construction Site Stormwater Management	Developers (construction)	Planning Department	Improved stormwater controls on construction sites.	2020
Mailing	Septic System Maintenance	Residents w/ septic systems in the Lamprey River and Great Bay Prohib SZ1 catchments.	Planning Department	Increased owner awareness on proper maintenance and testing of residential septic systems.	2019
Web Page	Proper Storage of Industrial Materials	Industrial Facilities	Planning Department	Improved storage procedures by Industrial Facility	2020

[illegible]

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

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

[illegible]

[illegible]

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)
SSO inventory	Develop SSO inventory template and procedure in accordance with Section 2.3.4.4.	DPW Operations / Environmental Services Department	Develop SSO inventory within 1 year of effective date of permit
Storm sewer system map	Phase I Section 2.3.4.5.a Phase II Section 2.3.4.5.b	DPW Operations / Environmental Services Department	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit
Written IDDE program development	Create written IDDE program document	DPW Operations / Environmental Services Department	Complete within 1 year of the effective date of permit
Implement IDDE program	Implement catchment investigations according to IDDE program and permit conditions	DPW Operations / Environmental Services Department	Complete 10 years after effective date of permit
Employee training	Train employees in IDDE program implementation	DPW Operations / Environmental Services Department	Provide annual training
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions in section 2.3.4.7.b	DPW Operations / Environmental Services Department	Complete 3 years after effective date of permit, update annually based on results of dry weather screening
Conduct wet weather screening	Conduct in accordance with outfall screening procedures in section 2.3.4.8.c	DPW Operations / Environmental Services Department	Elimination of illicit connections within MS4 boundary
Ongoing Screening	Conduct ongoing screening in accordance with section 2.3.4.10	DPW Operations / Environmental Services Department	Complete ongoing outfall screening on completion of IDDE program

[illegible]

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

[illegible]

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)
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 Department / Planning Board / Town Consulting Engineer	Require submission of as-built plans for completed projects within 2 years of project completion
Target properties to reduce impervious areas	Complete an inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area.	Facilities Department	Complete 4 years after permit effective date and report annually on retrofitted properties
Determine feasibility and allow green infrastructure implementation	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Department / Facilities Department	Complete 4 years after permit effective date and implement recommendations of report
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 Department / Town Consulting Engineer	Complete 4 years after permit effective date and implement recommendations of report

[illegible]

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 Implementation
Operation and Maintenance Procedures	Create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment, per section 2.3.7.1 requirements.	Facilities Department / DPW Operations	Complete 2 years after permit effective date	2019
Prepare Inventory	Inventory all permittee-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment	Facilities Department / DPW Operations	Complete 2 years after permit effective date	2019
MS4 Infrastructure Repair Program	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Facilities Department / Town Consulting Engineer	Complete 2 years after permit effective date	2019
Stormwater Pollution Prevention Plan (SWPPP) for maintenance garages, transfer stations, and other waste-handling facilities	Create SWPPPs for all municipal properties or individual facilities per section 2.3.7.2 requirements.	Facilities Department / DPW Operations	Complete 2 years after permit effective date	2019
Catch basin cleaning	Establish and implement schedule for catch basin cleaning such that each catch basin is no more than 50% full. Ensure proper storage/disposal of basin cleanings.	Facilities Department / DPW Operations	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material removed annually.	2019
Street sweeping program	Sweep all (curbed) streets and permittee-owned parking lots in accordance with section 2.3.7.1.iii requirements	Facilities Department / DPW Operations	Complete once per year in spring and more frequently in permittee determined target areas	2019

[illegible]

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**. If submitting a NHDES approved alternative reduction plan, attach and submit it with the NOI.

[illegible]

Part III: Stormwater Management Program Summary (continued)

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.**

[illegible]

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.2 that you have identified as not applicable to your MS4 and provide all supporting documentation below or attach additional documents if necessary.

Provide any additional information about your MS4 program below.

Part I: General Conditions - Endangered Species Act (ESA) Determination. The Town of Newmarket has determined that the Town's MS4 stormwater discharges and discharge related activities will have no effect on the (2) two threatened species listed. Please refer to Attachment A - Letter from the United States Department of Interior, Fish and Wildlife Service for the Official Species List pursuant to Section 7 of the Endangered Species Act. The Town will consult with the United States Fish and Wildlife Service as necessary during the permit term.

Part I: General Conditions - National Historic Preservation Act (NHPA) Determination. The Town of Newmarket has submitted a Request for Project Review (RPR) form to the New Hampshire Division of Historical Resources (NHDHR) regarding the Town's stormwater discharge, allowable non-stormwater discharge, and discharge-related activities on properties listed or eligible for listing on the National Register of Historic Places. Please refer to Attachment B for the completed RPR form determining that the Town is eligible under Criteria C of this permit.

Part II: Summary of Receiving Waters - A map has been provided as Attachment C of the Town of Newmarket's MS4 urbanized area and the 2012 New Hampshire Department of Environmental Services 303(d) Impaired Waters.

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

Page 19 of 19

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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than 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:

Steve Fournier

Title:

Town Administrator

Signature:


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

Date:

10/1/18

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

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

RECEIVED
SEP 04 2018

DHR Use Only	
R&C #	10006
Log In Date	___/___/___
Response Date	___/___/___
Sent Date	___/___/___

Request for Project Review by the New Hampshire Division of Historical Resources

- ☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title National Historic Preservation Act Determination for EPA MS4 Notice of Intent

Project Location Newmarket, NH MS4 Boundary

City/Town Newmarket Tax Map R1-R7, U1-U5
Lot # Multiple Properties

NH State Plane - Feet Geographic Coordinates: Easting 1178749 Northing 211001
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact (if applicable) Environmental Protection Agency - Region 1
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference # MS4 General Permit

State Agency and Contact (if applicable) Department of Environmental Services, D. Loiselle
Permit Type and Permit or Job Reference #

APPLICANT INFORMATION

Applicant Name Diane Hardy

Mailing Address 186 Main Street Phone Number 603-659-8501

City Newmarket State NH Zip 03857 Email dhardy@newmarketnh.gov

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company (same as Applicant)

Mailing Address Phone Number

City State Zip Email

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. Please refer to the Request for Project Review Instructions for direction on completing this form. Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at christina.st.louis@nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION 10006

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) **indicating the defined project boundary.** (See RPR Instructions and R&C FAQs for guidance.)
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) (Informative photo captions are requested.)
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the project area. Provide file review results in **Table 1.** (Blank table forms are available on the DHR website.)
File review conducted on 08/31/2018 - Telephone Conference with David Trubey, Review Coordinator.

Architecture Architecture - Documentation (Attached)

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s): 19th century to Present

- ☒ Photographs of ~~resource~~ resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology Archaeology - Documentation Attached

Does the proposed undertaking involve ground-disturbing activity? ☐ Yes ☐ No
If yes, submit all of the following information:

- ☐ Description of current and previous land use and disturbances.
- ☐ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☒ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☐ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: SPECIFIC PROJECTS TO BE EVALUATED WHEN IDENTIFIED. PROJECTS HAVE
POTENTIAL TO HAVE EFFECT ON HISTORIC PROPERTIES. DHR RECOGNIZES
TOWN'S COMMITMENT TO COORDINATE WITH DHR TO AVOID, MINIMIZE OR
MITIGATE ADVERSE EFFECTS AND ENTER INTO WRITTEN AGREEMENT WITH DHR
TO ASSURE COMPLIANCE WITH NHPA.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Nedra Melton DSHPO Date: 9/5/18



United States Department of the Interior



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

In Reply Refer To:

August 09, 2018

Consultation Code: 05E1NE00-2018-SLI-2679

Event Code: 05E1NE00-2018-E-06278

Project Name: Newmarket, NH MS4 Notice of Intent Submittal

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-2679

Event Code: 05E1NE00-2018-E-06278

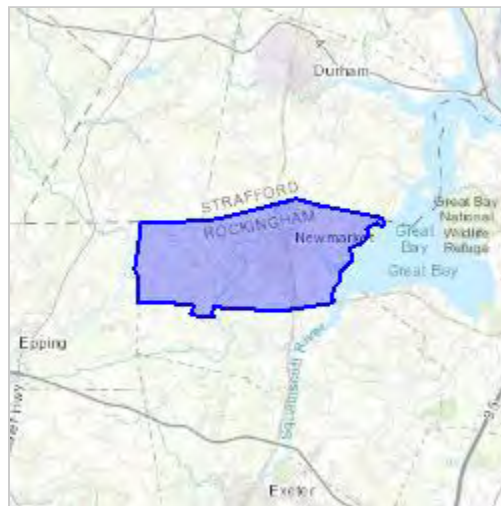
Project Name: Newmarket, NH MS4 Notice of Intent Submittal

Project Type: ** OTHER **

Project Description: ESA Determination in conjunction with the 2017 NH Small MS4 General Permit, Notice of Intent submission for Newmarket, NH. Submission deadline is October 1, 2018.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/43.0688056177656N70.96002273435995W>



Counties: Rockingham, NH | Strafford, NH

Endangered Species Act Species

There is a total of 2 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 Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Mammals

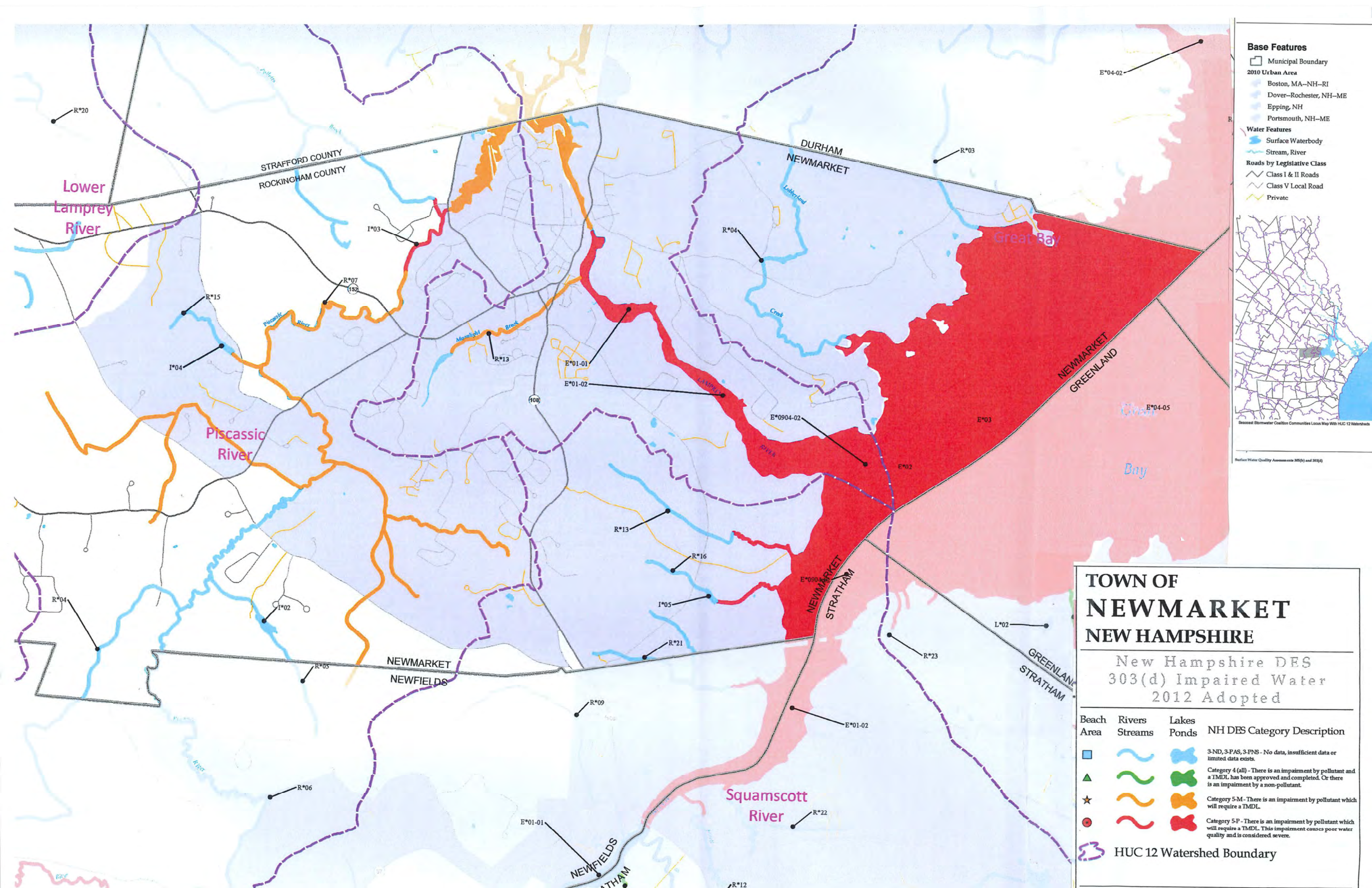
NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Small Whorled Pogonia <i>Isotria medeoloides</i> 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.



Base Features

- Municipal Boundary
- 2010 Urban Area
 - Boston, MA-NH-RI
 - Dover-Rochester, NH-ME
 - Epping, NH
 - Portsmouth, NH-ME
- Water Features
 - Surface Waterbody
 - Stream, River
- Roads by Legislative Class
 - Class I & II Roads
 - Class V Local Road
 - Private



Source: Water Quality Assessments 303(d) and 303(d)

**TOWN OF
NEWMARKET
NEW HAMPSHIRE**

New Hampshire DES
303(d) Impaired Water
2012 Adopted

Beach Area	Rivers Streams	Lakes Ponds	NH DES Category Description
			3-ND, 3-PAS, 3-PNS - No data, insufficient data or limited data exists.
			Category 4 (all) - There is an impairment by pollutant and a TMDL has been approved and completed. Or there is an impairment by a non-pollutant.
			Category 5-M - There is an impairment by pollutant which will require a TMDL.
			Category 5-P - There is an impairment by pollutant which will require a TMDL. This impairment causes poor water quality and is considered severe.
HUC 12 Watershed Boundary			



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

VIA EMAIL

May 14, 2019

Stephen R. Fournier
Town Administrator

And;

Diane Hardy
Town Planner
186 Main Street
Newmarket Town Hall
Newmarket, NH 03857
dhardy@newmarketnh.gov

Re: National Pollutant Discharge Elimination System (NPDES) Permit ID: NHR041040, Town of Newmarket, NH

Dear Diane Hardy:

Your Notice of Intent (NOI) for coverage under the 2017 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in New Hampshire (MS4 General Permit) has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA to discharge stormwater from your MS4 in accordance with applicable terms and conditions of the MS4 General Permit, including all applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2023**.

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/new-hampshire-small-ms4-general-permit>. Should you have

any questions regarding this permit please contact Suzanne Warner at warner.suzanne@epa.gov or (617) 918-1383.

Sincerely,

A handwritten signature in blue ink that reads "Thelma Murphy". The signature is fluid and cursive, with a long horizontal flourish extending from the end of the name.

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



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 1

**5 Post Office Square – Suite 100
BOSTON, MA 02109-3912**

VIA EMAIL

Dated by electronic signature

Re: 2017 New Hampshire Small Municipal Separate Storm Sewer System General Permit - Administratively Continued Permit Coverage

Dear Permit Holder:

You are receiving this letter because stormwater discharges from your municipal separate storm sewer system (MS4) are currently authorized under the 2017 New Hampshire Small MS4 Permit (NH MS4 permit), which will expire on July 1, 2023. In accordance with Part 1.6 of the NH MS4 Permit, the NH MS4 Permit will be administratively continued on July 1, 2023. The NH MS4 Permit will remain in effect for discharges that were authorized prior to July 1, 2023 until such discharges are authorized under a reissued general permit, an individual permit, or other alternative general permit. No action is required at this time to remain covered under the NH MS4 Permit.

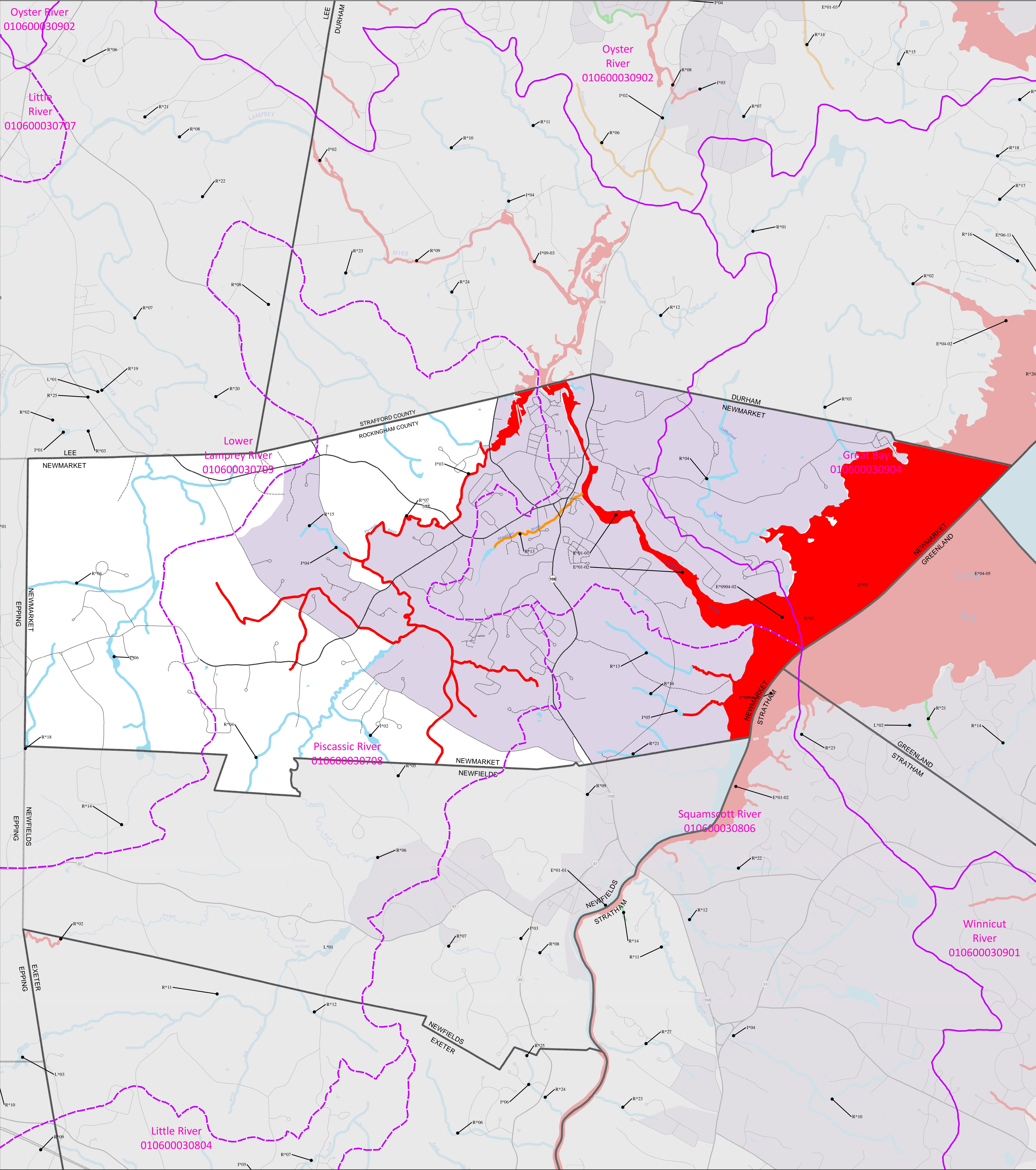
If you have any questions regarding this matter, please contact Michelle Vuto (vuto.michelle@epa.gov) of the Stormwater Permits Section.

Sincerely,

Lynne Jennings, Chief
Water Permits Branch
Water Division
Environmental Protection Agency, Region 1

APPENDIX D

Impaired Water Bodies Map



TOWN OF NEWMARKET NEW HAMPSHIRE

New Hampshire DES
303(d) Impaired Water
2016 Partially Adopted

Beach Area	Rivers Streams	Lakes Ponds	NH DES Category Description
			3-ND, 3-PAS, 3-PNS - No data, insufficient data or limited data exists.
			Category 4 (d) - There is an impairment by pollutant and a TMDL has been approved and completed. Or there is an impairment by a non-pollutant.
			Category 5-M - There is an impairment by pollutant which will require a TMDL.
			Category 5-P - There is an impairment by pollutant which will require a TMDL. This impairment causes poor water quality and is considered severe.
HUC 12 Watershed Boundary			

Abbrev. Label

L*03

HUC 12

010700060201

AUID = NH LAK700060201-03

Base Features

- Municipal Boundary
- MS4 Regulated Areas

Water Features

- Surface Waterbody
- Stream, River

Roads by Legislative Class

- Class I & II Roads
- Class V Local Road
- Private

Seacoast Stormwater Coalition Communities Locus Map With HUC 12 Watersheds

A huge thank you to NH DES for their assistance in this mapping effort. Their patience, time, skill and guidance have been critical in this effort.

Surface Water Quality Assessments 305(b) and 303(d)

The Surface Water Quality Assessment Program produces two surface water quality documents every two years, the "305(b) Report" and the "303(d) List." As the two documents use the same data, the 305(b) Report and 303(d) List were combined into one Integrated Report starting in 2002. The Integrated Report describes the quality of New Hampshire's surface waters and an analysis of the extent to which all such waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water.

The Federal Water Pollution Control Act (PL92-500, commonly called the Clean Water Act (CWA)), as last reauthorized by the Water Quality Act of 1987, requires each state to submit two surface water quality documents to the US Environmental Protection Agency (EPA) every two years. Section 305(b) of the CWA requires submittal of a report (commonly called the "305(b) Report"), that describes the quality of its surface waters and an analysis of the extent to which all such waters provide for the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water.

The second document is typically called the "303(d) List," which is so named because it is a requirement of Section 303(d) of the CWA. The 303(d) List includes surface waters that are:

- > Impaired or threatened by a pollutant or pollutant(s).
- > Not expected to meet water quality standards within a reasonable time even after application of best available technology standards for point sources or best management practices for nonpoint sources.
- > Require development and implementation of a comprehensive water quality study (a Total Maximum Daily Load (TMDL) study) which is designed to meet water quality standards.

Data Sources

Base features from NH GRANIT database. Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Earth Systems Research Center (ESRC), under contract to the Office of Strategic Initiatives (OSI), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. Neither OSI nor ESRC make any claim as to the validity or reliability or to any implied uses of these data.

Data Disclaimer

Data should be used for planning purposes only. Data were derived from various sources and were updated at different timeframes, with varying levels of accuracy. Please notify SRPC or RPC of any errors or omissions.

APPENDIX E

Illicit Discharge Detection and Elimination (IDDE) Program



TOWN OF NEWMARKET, NEW HAMPSHIRE

EPA NPDES Permit Number: NHRo41040

UPDATED:

JUNE 2023
JUNE 2022

Illicit Discharge Detection and Elimination (IDDE) Program



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ANNUAL REVISIONS

This document was finalized in June 2022, in accordance with NH MS4 General Permit requirements. This document was updated in June 2023 to reflect program accomplishments and document activities completed during Permit Year 5. The SWMP Team, and subsequently the IDDE Program roles and responsibilities have changed with staff turnover in recent years. This version of the IDDE Program has been updated and reformatted to be consistent with recent updates to the SWMP.

Revision History:

No.	Description	Date	Printed Name	Title	Initials
0	Drafted	6/2022	Sean Greig	Dir. Of Env. Services	
1	Year 5 Updates	6/2023	Lyndsay Butler, PE	Town Engineer	<i>LB</i>

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1.0 INTRODUCTION

1.1 MS₄ Program

The Federal Water Pollution Control Act (WPCA), initially enacted in 1948, established ambient water quality standards to specify acceptable levels of pollution in lieu of preventing the causes of water pollution. The 1972 amendments to the WPCA, referred to as the Clean Water Act (CWA), implemented measures which were focused on establishing effluent limitations on point sources, or 'any discernable, confined, and discrete conveyance... from which pollutants are or may be discharged.'

The 1972 CWA introduced the National Pollutant Discharge Elimination System (NPDES). The NPDES program was established as the fundamental regulatory mechanism of the CWA, requiring direct dischargers of pollutants into waters of the United States to obtain a NPDES permit. Between 1972 and 1987, the NPDES permit program focused on improving surface water quality by reducing pollutants of industrial process wastewater and municipal sewage. During this period, several nationwide studies on water quality, most notably the United States Environmental Protection Agency (EPA) National Urban Runoff Plan (NURP), identified stormwater discharges as a significant source of water pollution.

The findings of the NURP and similar studies, resulted in the reauthorization of the CWA in 1987 with the passage of the Water Quality Act (WQA). The WQA established a legal framework and required EPA to develop a comprehensive phased program for regulating municipal and industrial stormwater discharges under the NPDES permit program.

The NPDES Phase 1 Rule, which was issued in November 1990, addressed stormwater discharges from medium to large municipal separate storm sewer systems (MS₄s), which were communities serving a population of at least 100,000 people, as well as stormwater discharges from 11 categories of industrial activity. The NPDES Phase 2 Rule, which was promulgated in December 1999 and was the next step after the Phase 1 Rule, addressed small MS₄s serving a population of less than 100,000 people in urbanized areas and expanded EPA's effort to preserve, protect, and improve the Nation's water resources. The Phase 2 Rule requires nationwide coverage of all operators of small MS₄s that are located within the boundaries of the Bureau of the Census-defined "urbanized area" (UA) based on the latest decennial census. The Phase 2 Rule requires that all MS₄s located within "urbanized areas" automatically comply with the Phase 2 stormwater regulations through implementation of programs and practices to control polluted stormwater runoff. Since Newmarket is located within an urbanized area, the EPA has designated the Town of Newmarket as a Phase 2 Community, which must comply with the NPDES regulations. In the State of New Hampshire, the EPA retains primacy as the NPDES permitting authority.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 Small MS₄ Permit) consistent with the Phase 2 Rule. The 2003 Small MS₄ General Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS₄ Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2017 New Hampshire Small MS₄ General Permit for Stormwater Discharges (NH MS₄ General Permit), which became effective on July 1, 2018. The NH MS₄ General Permit was modified during 2020, and the modifications became effective on January 6, 2021. A copy of the NH MS₄ General Permit can be found here: <https://www.epa.gov/npdes-permits/new-hampshire-small-ms4-general-permit>. On October 1, 2018, the Town submitted a Notice of Intent to EPA to obtain coverage under the NH MS₄ General Permit. The Town received authorization from EPA to discharge under the NH MS₄ General Permit on May 14, 2019. In March 2023, EPA Region 1 issued notices to permittees currently authorized under the 2017 NH MS₄ General Permit, which will expire on July 1, 2023, stating that permit coverage will be administratively continued.

The NH MS4 General Permit will remain in effect for discharges that were authorized prior to July 1, 2023 until such discharges are authorized under a reissued general permit, an individual permit, or other alternative permit.

The NH MS4 General Permit required the Town of Newmarket to develop, implement, and enforce a Stormwater Management Program (SWMP). The objectives of the SWMP are to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA.

The SWMP describes and details the programs, policies, practices and measures that will be implemented to meet the terms and conditions of the NH MS4 General Permit. The objectives of the NH MS4 General Permit are accomplished through the implementation of Best Management Practices (BMPs) for each of the following six minimum control measures.

- Public education and outreach
- Public involvement / participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control
- Post-construction stormwater management in new development or redevelopment
- Pollution prevention/good housekeeping

In addition to a SWMP, the Town is required to develop and implement an Illicit Discharge Detection and Elimination (IDDE) Program to systematically find and eliminate sources of non-stormwater discharges to the municipal storm drain system and implement procedures to prevent such discharges. The IDDE Program must also be recorded in a written (hardcopy or electronic) document. This written IDDE Program has been prepared to satisfy that requirement.

1.1.1 Illicit Discharges

An “illicit discharge” is any discharge to a storm drain system that is not composed entirely of stormwater, except for discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal storm drain system) and discharges resulting from fire-fighting activities.

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

Some illicit discharges are intentional, such as a waste hauler or even recreational vehicle owner who may illegally release the contents of hazardous or sanitary waste from an onboard holding tank into a catch basin or on a paved surface that drains into the municipal storm drain system and eventually into surface waters. The dumping of solid waste, such as pet waste or yard waste, into the storm drain system can also be a significant source of pollutants including nutrients and bacteria. This material can be minimized through educational outreach in conjunction with having enough waste receptacles available and disposing of collected materials on a regular basis.

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

1.1.2 Allowable Non-Stormwater Discharges

The following categories of non-stormwater discharges are allowed under the NH MS₄ General Permit unless the permittee, EPA of New Hampshire Department of Environmental Services (NHDES) identifies any category or individual non-stormwater discharge as a significant contributor of pollutants to the MS₄ regulated area:

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

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

1.1.3 Receiving Waters and Impairments

The quality of water bodies in Seacoast New Hampshire, fresh and marine alike, have been at the forefront of discussions across the Great Bay region for many years. The Town of Newmarket has taken an active role in these discussions and will continue to do so into the future. The Town has made a concerted effort to minimize stormwater impacts and reduce pollutants discharged to its water bodies and resource areas through implementation of regulatory policies, participation in collaborative workgroups, and completion of various studies and construction projects.

Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat. All water bodies within the town boundary, including those receiving stormwater discharges from the MS₄, and their associated impairments are listed in **Table 1.1** on the following pages.

Table 1.1 RECEIVING WATERS AND IMPAIRMENTS

Water body segment	Number of outfalls discharging to water body segment	Chloride	Chlorophyll-a	Dissolved Oxygen/DO Saturation	Nitrogen	Oil & Grease/PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Lamprey River North (NHEST600030709-01-01)	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Aluminum, Anthracene, Arsenic, Benzo[a]anthracene, Cadmium, Chrysene (C1-C4), Copper, DDD, DDE, DDT, Diben[a,h]anthracene, Dioxin (including 2,3,7,8-TCDD), Fluoranthene, Fluorene, Lead, Mercury, Naphthalene, Nickel, pH, Polychlorinated Biphenyls, Phenanthrene, Pyrene, trans-Nonachlor, BOD, Biochemical oxygen demand
Lamprey River South (NHEST600030709-01-02)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, Polychlorinated Biphenyls
Great Bay Prohib Sz1 (NHEST600030904-02)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, pH, Polychlorinated Biphenyls
Great Bay Prohib Sz2 (NHEST600030904-03)	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dioxin (including 2,3,7,8-TCDD), Estuarine Bioassessments, Light Attenuation Coefficient, Mercury, Polychlorinated biphenyls
Wildlife Pond Dam (NHIMP600030708-02)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Piscassic River (NHIMP600030708-03)	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – Conservation Pond Dam (NHIMP600030708-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Lamprey River - Macallen Dam (NHIMP600060709-03)	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – Recreation Pond Dam (NHIMP600030709-06)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – Fire Pond Dam (NHIMP600030806-05)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Piscassic River (NHRIV600030708-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Wildlife Pond (NHRIV600030708-05)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury

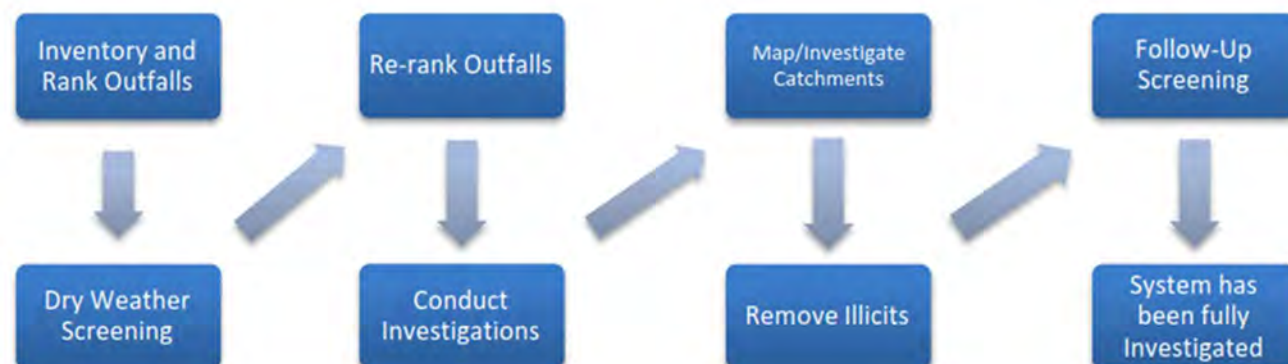
Piscassic River (NHRIV600030708-06)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Piscassic River (NHRIV600030708-07)	8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Folletts Brook – Unnamed Brook (NHRIV600030708-08)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030708-15)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – Thru Tuttle Swamp (NHRIV600030709-04)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Moonlight Brook (NHRIV600030709-13)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury, pH
Unnamed Brook – To Piscassic River (NHRIV600030709-14)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030709-18)	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Great Bay (NHRIV600030806-13)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030806-16)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook (NHRIV600030806-21)	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Unnamed Brook – To Great Bay (NHRIV600030904-03)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Lubberland Creek (NHRIV600030904-04)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mercury
Total Outfalls	37	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.2 IDDE Program Goals, Timeline, and Framework

The goals of the IDDE Program are to find and eliminate illicit discharges to the municipal storm drain system and to prevent illicit discharges from happening in the future. The IDDE Program consists of the major components/activities to be completed as outlined in the NH MS₄ General Permit and shown in **Table 1.2**.

IDDE Program Requirement	Permit Year Completion Deadline / Completion Date					
	PY3	PY4	PY5	PY6	PY10	PY13
Legal Authority / Regulatory Mechanism	06/21					
SSO Inventory		06/22				
Written IDDE Program Document		06/22				
Written Catchment Investigation Procedures		06/22				
Outfall/Interconnection Inventory and Initial Ranking		06/22				
Annual Employee Training		06/22	06/23	Due	Due	Due
Phase I Mapping			06/23			
Phase II Mapping						Due
Dry Weather Outfall Screening				Due		
Re-ranking of Outfall/Interconnections				Due		
Catchment Investigations – Problem Outfalls			Begin		Due	
Catchment Investigations – All Outfalls						Due

The basic IDDE Program implementation framework is shown below.



1.3 Work Completed to Date

The Town of Newmarket has completed the following IDDE Program activities.

- Developed a storm drain system map, showing locations of outfalls and receiving waters;
- Performed video camera work of sanitary sewer collection system and storm drain system in selected areas;
- Updated existing Subdivision and Site Plan Review regulations to incorporate requirements for stormwater management;
- Identified, managed and eliminated a handful of SSOs and illicit discharges.
- Reviewed and actively updating existing Town of Newmarket – Code of Ordinances to ensure legal authority to prohibit illicit discharges with a clearly outlined enforcement procedure;
- Actively working to collect additional asset information for components of the municipal storm drain system including invert elevations, size, material, and condition.

2.0 LEGAL AUTHORITY AND STATEMENT OF RESPONSIBILITIES

2.1 Legal Authority

The Town reviewed existing municipal codes and regulations to determine whether they prohibit non-stormwater discharges to the municipal storm drain system and include appropriate enforcement procedures and actions for non-compliance. Town of Newmarket – Code of Ordinances, Chapter 14: Environment and Natural Resources, governs the use of public sewers and prohibits the discharge of wastewater and other polluted waters to any natural outlet (Article III, Division 2, Section 14-44). The Town inspects all new and updated sewer connections to ensure proper connection to the Town’s sanitary sewer as required in Chapter 14, Article III. In addition, this chapter outlines procedures and penalties for violations. The Town is actively working on amendments to the Code of Ordinances that would relocate the language pertaining to illicit discharges to a different chapter, Chapter 32 – Zoning, and clarify enforcement procedures. When these amendments are approved/adopted, the SWMP and IDDE Program documents will be updated accordingly.

2.2 Statement of Responsibilities

The Town of Newmarket Department of Public Works (DPW) is responsible for maintaining the municipal storm drain system and highway infrastructure, however implementation of the IDDE Program requires collaboration and support from several different Town Departments. Staff from DPW, Engineering, Environmental Services, Planning & Community Development and Building Safety/Code Enforcement are responsible for implementation of various IDDE Program components/activities. DPW and Engineering staff take the lead in overall IDDE Program implementation, documentation and record keeping.

As noted above, the legal authority to prohibit illicit discharges is currently contained within Chapter 14 and therefore the Director of Environmental Services has the authority to enforce this prohibition. The Town is working on amendments to the Code of Ordinances that would shift that authority to the Code Enforcement Officer.

3.0 STORMWATER SYSTEM MAPPING

The NH MS₄ General Permit requires a detailed storm drain system map be prepared in two phases. The DPW and Engineering staff is responsible for updating the storm drain system map and GIS database. The Town will report annually on the progress of system mapping and data collection efforts.

3.1 Phase I Mapping

Phase I mapping was completed, as required, within 5 years of the effective date of the permit (by July 1, 2023) and includes the following information.

- Outfalls and receiving waters
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS₄s and other storm drain systems
- Municipally owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved New Hampshire Integrated List of Waters Report
- Initial catchment delineations. Topographic contours and storm drain system information may be used to produce initial catchment delineations.

3.2 Phase II Mapping

Phase II mapping must be completed within 13 years of the effective date of the permit (by July 1, 2023) and include the following information.

- Outfall spatial location (latitude & longitude with a minimum accuracy of +/- 30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.
- Municipal sanitary sewer system (if available)
- Municipal combined sewer system (if applicable)

3.3 Additional Recommended Mapping Elements

Although not a requirement of the NH MS₄ General Permit, the Town will include the following recommended elements in the storm drain system map and GIS database when this information is available.

- Storm sewer material, size (pipe diameter), age
- Sanitary sewer system material, size (pipe diameter), age
- Privately owned stormwater treatment structures
- Where a municipal sanitary sewer system exists, properties known or suspected to be served by a septic system, especially in high density urban areas
- Areas where the permittee's MS₄ has received or could receive flow from septic system discharges
- Seasonal high-water table elevations impacting sanitary alignments
- Topography
- Orthophotography
- Alignments, dates and representation of work completed of past illicit discharge investigations
- Locations of suspected, confirmed and corrected illicit discharges with dates and flow estimates

4.0 SANITARY SEWER OVERFLOWS (SSOs)

The NH MS4 General Permit requires municipalities to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the municipal storm drain system. SSOs are discharges of untreated 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; or vandalism.

Table 4.1 provides an inventory of SSOs that have discharged from the Town's municipal sanitary sewer system within the past 5 years and will be updated when and if new SSOs are detected. The table includes a description of the completed and planned mitigation or corrective actions based on the known or suspected cause of each SSO. The SSOs that occurred were due primarily to pump system failures or blockages.

Upon detection of a future SSO, the Town will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from the system until the SSO is eliminated. Upon becoming aware of an SSO, the Town will provide oral notice to EPA within 24 hours and written notice to EPA and NHDES within 5 days.

IDDE PROGRAM

Table 4.1 SSO Inventory Town of Newmarket, NH – Last Revised: June 2023						
SSO Location ¹	Discharge Statement ²	Time Start ³	Time End ³	Estimated Volume ⁴	Description ⁵	Mitigation Completed ⁶ Or Mitigation Planned ⁷
7 Bennett Way	Overflow from SMH to stormwater detention pond	02/15/23 9:30am	02/15/23 10:15am	2,000 gal	ES Staff was notified that the SMH was overflowing. Staff identified that bricks in the SMH caused a blockage in the outlet sewer main.	Staff used the Town's jet truck to clear the blockage and restore flow in the sewer main. Epping Septic was contracted to remove 19,000 gal. of water from the stormwater detention pond and bring it to the Creighton St Pump Station where it was discharged back into the sanitary sewer system.
Bay Rd Force Main in Lamprey River	Break in Force Main located under the Lamprey River between Bay Rd Pump Station and Creighton Street Pump Station	05/21/23 10:30am	07/15/23	TBD Need Info from ES Staff	ES Staff was notified of "bubbling" in the Lamprey River. Staff identified a break in the Bay Rd Force Main, resulting in "bubbling" of untreated wastewater when the station pumps were running.	For a temporary repair, ES Staff worked with Engineers from Wright-Pierce and Contractors from Pepperell Cove to excavate the river bed, locate the break, and repair the force main. The Town is evaluating alternatives for a permanent repair to be completed in the coming years.

1 Location (approximate street crossing/address and receiving water, if any).

2 A clear statement of whether the discharge entered a surface water directly or entered the municipal storm drain system.

3 Date(s) and time(s) of each known SSO occurrence (i.e. beginning and end of any known discharge)

4 Estimated volume(s) of the occurrence.

5 Description of the occurrence indicating known or suspected cause(s).

6 Mitigation and corrective measures completed with dates implemented.

7 Mitigation and corrective measures planned with implementation schedules.

5.0 ASSESSMENT AND PRIORITY RANKING OF OUTFALLS

As described below, the Town has completed an assessment and priority ranking of its outfalls in terms of their potential to have illicit discharges and related public health significance consistent with the NH MS₄ General Permit. The priority ranking will be used to guide catchment investigations and IDDE Program activities to meet NH MS₄ General Permit milestones.

At this time, the Town of Newmarket has identified 27 outfalls discharging stormwater from the municipal storm drain system to surface waters or wetland area within the regulated Urbanized Area.

5.1 Preliminary Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall¹ or interconnection². The catchments for each of the identified outfalls was delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments were delineated based on topographic contours and mapped drainage infrastructure, where available. As described in **Section 3**, initial catchment delineations were completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations.

5.2 Outfall and Interconnection Inventory and Rankings

The Town of Newmarket completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The inventory and ranking identifies each outfall and interconnection discharging from the municipal storm drain system, records its location and condition, and provides a framework for tracking inspections, screenings and other IDDE program activities. The initial inventory and ranking was completed in June 2022. The inventory and ranking will be updated annually based on data collected in connection with stormwater asset management program work, opportunistic system inspections and maintenance, dry weather screening and other relevant system work.

Outfalls and interconnections are classified into one of the following categories:

1. **Problem Outfalls:** Outfalls/Interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening indicates likely sewer input. Likely sewer input indicators are any of the following:
 - a. Olfactory or visual evidence of sewage;
 - b. Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or
 - c. Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

¹ **Outfall** means a point source as defined by 40 CFR § 122.2 as the point where the municipal storm drain system discharges to waters of the United States. An outfall does not include open conveyances connecting two municipal storm drains or pipes, tunnels or other conveyances that connect segments of the same stream or other waters of the United States and that are used to convey waters of the United States. Culverts longer than a simple road crossing shall be included in the inventory unless the permittee can confirm that they are free from any connections and simply convey waters of the United States.

² **Interconnection** means the point (excluding sheet flow over impervious surfaces) where the permittee's storm drain system discharges to another MS₄ or other storm drain system, through which the discharge is conveyed to waters of the United States or to another storm drain system and eventually to a water of the United States.

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

2. **High Priority Outfalls:** Outfalls/Interconnections that have not been classified as Problem Outfalls and that are:
 - a. Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds; or
 - b. Determined by the permittee as high priority based on the characteristics listed below or other available information.
3. **Low Priority Outfalls:** Outfalls/Interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.
4. **Excluded Outfalls:** Outfalls/Interconnections with no potential for illicit discharges may be excluded from the IDDE Program. This category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

Outfalls have been classified into the above categories (except for Excluded Outfalls, which may be excluded from the IDDE Program) based on the following characteristics of the defined initial catchment areas, where information is available. Additional relevant characteristics, including location-specific characteristics, may be considered but must be described in this IDDE Program document.

- Previous screening results – Previous screening/sampling results indicate likely sewer input (see criteria above for Problem Outfalls).
- Past discharge complaints and reports.
- Poor receiving water quality – The following guidelines are recommended to identify water as having a high potential for illicit discharges:
 - Exceeding water quality standards for bacteria
 - Ammonia levels greater than or equal to 0.5 mg/L
 - Surfactant levels greater than or equal to 0.25 mg/L
- Density of generating sites – Generating sites are those places, including institutional, municipal, commercial or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealers, car washes, gas stations, garden centers, and industrial manufacturing areas.
- Age of development and infrastructure – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high potential for illicit discharges. Development 20 years or younger will probably have a low potential for illicit discharges.
- Sewer conversion – Contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections may have a high potential for illicit discharges.
- Historic combined sewer systems – Contributing areas that were once serviced by a combined sewer system but have been separated may have a high potential for illicit discharges.
- Surrounding density of aging septic systems – Septic systems 30 years old or older in residential land use areas are prone to have failures and may have a high potential for illicit discharges.
- Culverted streams – Any river or stream that is culverted for distances greater than a simple roadway crossing may have a high potential for illicit discharges.

- Water quality limited water bodies – Water bodies that receive a discharge from the municipal storm drain system or waters with approved TMDLs applicable to the permittee, where illicit discharges have the potential to contain the pollutant identified as the cause of the water quality impairment.

The following is an initial outfall prioritization flowchart. **Table 5.1** shows a summary of outfall inventory and priority ranking, see **Appendix B** for the full outfall inventory and priority ranking matrix.

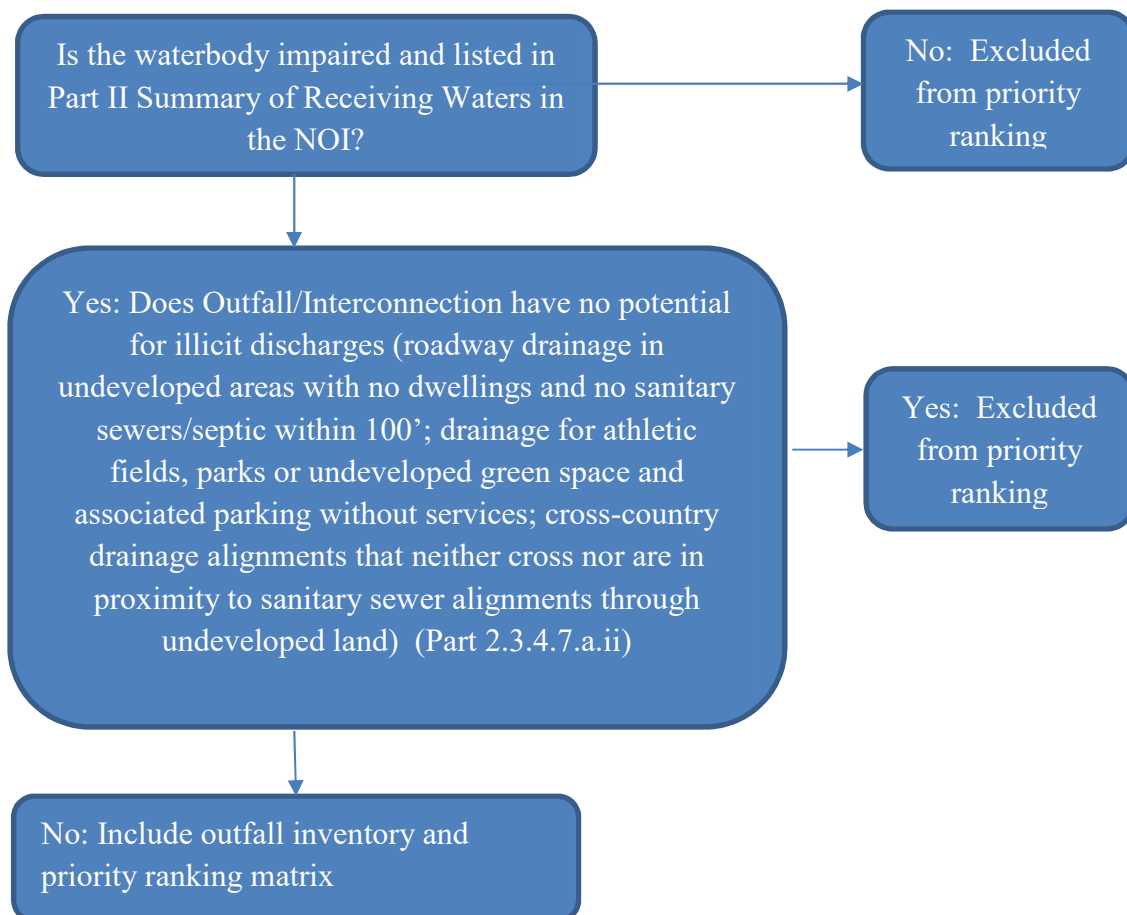


Table 5.1 Outfall Inventory and Priority Ranking Summary
Town of Newmarket, NH – Last Revised: June 2023

Outfall Priority	# of Outfalls
Problem	0
High Priority	11
Low Priority	16
Excluded	0
Total Outfalls	27

6.0 DRY WEATHER OUTFALL SCREENING AND SAMPLING

Dry weather flow is a common indicator of potential illicit connections. The NH MS₄ General Permit requires all outfalls/interconnections (excluding Problem and Excluded outfalls) to be inspected for the presence of dry weather flow. DPW and Engineering staff are responsible for conducting dry weather outfall inspections and screening, starting with High Priority Outfalls, followed by Low Priority Outfalls, based on the initial priority rankings described in **Section 5**.

6.1 Weather Conditions

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring. For purposes of determining dry weather conditions, DPW and Engineering staff will use precipitation data available online at Weather Underground (www.wunderground.com) for three weather stations within or closest to Newmarket. If any of the three stations document more than 0.1 inches of rainfall in the previous 24-hour period, DPW staff will not count that as a dry weather period.

6.2 Dry Weather Screening/Sampling Procedure

6.2.1 General Procedure

The dry weather outfall screening/sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking.
2. Acquire the necessary staff, mapping, and field equipment (see **Table 6.1** for a list of field equipment that may be needed).
3. Conduct the outfall inspection during dry weather:
 - a. Mark and photograph the outfall.
 - b. Record the inspection information and outfall characteristics (using DPW tablet to complete digital form for Outfall Inspection).
 - c. Look for and record visual/olfactory evidence of pollutants including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in **Section 6.2.3**.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.
6. Input results from the screening/sampling into spreadsheet/database. Include pertinent information in the outfalls/interconnection inventory and priority ranking.
7. Submit all screening/sampling data completed during the Permit Year with the Annual Report for that Permit Year.

6.2.2 Field Equipment

Table 6.1 lists the field equipment commonly used for conducting dry weather outfall screening/sampling.

Table 6.1 Field Equipment – Dry Weather Outfall Screening/Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface.
Field Sheets	Field sheets for both dry weather inspection and dry weather sampling should be available with extras.
Chain of Custody Forms	To ensure proper handling of all samples.
Pens/Pencils/Markers	For proper labeling/writing.
Tablet	For digital documentation and taking photos.
GPS Receiver	For collecting spatial location data.
Nitrile Gloves	To protect the sampler as well as the sample from contamination.
Flashlight/Headlamp w/batteries	For looking in outfalls or structures, helpful for early mornings as well.
Personal Protective Equipment	Reflective vest, safety glasses and boots at a minimum.
Rubber Boots/Waders	For accessing shallow streams/areas.
Hand Sanitizer	Disinfectant/decontaminant.
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day.
Sampling Pole/Dipper	For accessing hard to reach outfalls and structures
Sample Containers	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e. bacteria requires sterile containers).
Label Tape	For labeling sample containers.
Cooler with Ice	For transporting samples to the laboratory.
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH.
Water Quality Meter	Hand held meter, if available, for testing for various water quality parameters such as ammonia, surfactants and chlorine.
Pry Bar or Pick	For lifting structure grates/covers when necessary.
Sandbags	For damming low flows in order to take samples.
Small Mallet or Hammer	For helping to free stuck structure grates/covers.
Utility Knife	Multiple uses.
Measuring Tape	Measuring distances and depth of flow.
Safety Cones	Safety.
Zip Ties/Duct Tape	For making field repairs.

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required parameters³ as noted in the NH MS₄ General Permit and listed in **Table 6.2**. The sample collection procedure consists of the following general steps:

1. Fill out all sample information on sample containers and field sheets (see **Appendix C**).
2. Put on protective gloves (nitrile/latex/other) before collecting a sample.
3. Collect sample with a dipper or directly in sample containers. If possible, collect water from the flow directly in the sample container. Be careful not to disturb sediments when collecting the sample.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling).
5. Use test strips, test kits, and field meters (rinse same as dipper) for most parameters (see **Table 6.2**).
6. Place laboratory samples on ice for analysis of bacteria and other pollutants of concern.
7. Fill out chain of custody form (see **Appendix C**) for laboratory samples.
8. Deliver samples to either the Town laboratory or selected commercial laboratory.
9. Dispose of used test strips and test kit ampules properly.
10. Decontaminate all testing personnel and equipment.

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

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges, Table 6.2 lists various field test kits and field instruments that can be used for outfall sampling associated with the NH MS₄ General Permit parameters, other than indicator bacteria and any pollutants of concern.

Table 6.2 Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410; LaMotte 5864-01 Ammonia-Nitrogen Test Strips
Chlorine	CHEMetrics™ V-2000 Hach™ Pocket Colorimeter™ II	SenSafe Total Chlorine Test Strips
Conductivity	YSI Pro30; Extech ExStik® II	N/A
Salinity	YSI Pro30; Extech ExStik® II	N/A
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400
Temperature	YSI Pro30; Extech ExStik® II	N/A

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

³ Other potentially useful parameters, although not required by the NH MS₄ General Permit, include **fluoride** (indicator of potable water sources in areas where water supplies are fluoridated), **potassium** (high levels may indicate that presence of sanitary wastewater), and **optical brighteners** (indicative of laundry detergents).

impairments. Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136⁴. Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 6.3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

Table 6.3 Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	EPA: 350.2; SM: 4500-NH ₃ C	0.05 mg/L	28 days	Cool ≤6°C, H ₂ SO ₄ to pH <2, No preservative if analyzed immediately
Chlorine	SM: 4500-Cl G	0.02 mg/L	Analyze w/in 15 minutes	None Required
Conductivity	EPA: 120.1; SM: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	SM: 2520	-	28 days	Cool ≤6°C
Surfactants	SM: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Temperature	SM: 2550B	-	Immediate	None Required
Indicator Bacteria: E.coli Enterococcus	<i>E.coli</i> EPA: 1603; SM: 9221B, 9221F 9223B; Other: Colilert®, Colilert-18® <i>Enterococcus</i> SM: 9230C; Other: Enterolert®	<i>E.coli</i> EPA: 1 cfu/100mL; SM: 2 MPN/100mL; Other: 1 MPN/100mL <i>Enterococcus</i> SM: 1 MPN/100mL; Other: 1 MPN/100mL	8 hours	Cool ≤10°C, 0.0008% Na ₂ S ₂ O ₃
Total Nitrogen (Ammonia + Nitrate/Nitrite, TKN)	EPA: Cadmium reduction (automated)-353.2 Rev 2.0; SM: 4500-NO ₃ E-F	EPA: 0.05 mg/L SM: 0.05 mg/L	28 days	Cool ≤6°C, H ₂ SO ₄ to pH <2
Total Phosphorus	EPA: 365.3, Automated Ascorbic Acid Digestion- 365.1 Rev. 2.0, ICP/AES4- 200.7 Rev. 4.4; SM: 4500-P E-F	EPA: 0.01 mg/L SM: 0.01 mg/L	28 days	Cool ≤6°C, H ₂ SO ₄ to pH <2

SM = Standard Method

6.3 Interpreting Outfall Screening/Sampling Results

Analytical data from dry weather screening/sampling can be used to help identify the major type or source of discharge. **Table 6.4** lists values identified by the EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each

⁴ 40 CFR § 136: [ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7bob8cd6c4303d86271b7&mc=true&node=pt40.25.136&rgn-div5](https://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7bob8cd6c4303d86271b7&mc=true&node=pt40.25.136&rgn-div5)

parameter expected to be found in stormwater. **Screening/sampling values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.**

Table 6.4 Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Chlorine	>0.02 mg/L (detectable levels per the NH MS ₄ General Permit)
Surfactants	>0.25 mg/L
Indicator Bacteria ⁵ : <i>E.coli</i> <i>Enterococcus</i> ⁶	<i>E.coli</i> : the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 mL and no single sample taken during the bathing season shall exceed 235 colonies per 100 mL. <i>Enterococcus</i> : the geometric mean of the 3 most recent samples taken during a 60-day period shall not exceed 35 colonies per 100 mL and no single sample taken during the bathing season shall exceed 104 colonies per 100 mL.

6.4 Follow-up Ranking of Outfalls and Interconnections

The Town of Newmarket will periodically update and re-prioritize the outfall/interconnection rankings based on information gathered during dry weather screening/sampling efforts. The first update and re-prioritization will be completed no later than July 1, 2024. As the outfalls are screened/sampled, if screening/sampling results for an outfall indicate that the system is likely to contain illicit discharges from sanitary sources, such outfalls will be ranked at the top of the High Priority Outfalls category for catchment investigation. Other outfalls/interconnections may be re-ranked based on any new information obtained during dry weather screening/sampling.

⁵ EPA Illicit Discharge Detection and Elimination: A Guidance Manual: epa.gov/npd/pubs/idde_chapter-12.pdf

⁶ NHDES Water Division: des.nh.gov/organization/divisions/water/wmb/beaches/faq_advisories.htm

7.0 CATCHMENT INVESTIGATIONS

Once outfalls/interconnections with evidence of illicit discharges have been identified, various methods can be used to trace the source of the discharge within the catchment area associated with each outfall/interconnection. Systematic procedures to investigate catchments and trace the source of illicit discharges are described in a separate document contained in **Appendix D**. Catchment investigations may include a review of historic plans and records; manhole observations; dry and wet weather sampling results; video inspection; smoke testing; and dye testing. As required by the NH MS₄ General Permit, all data collected as part of the catchment investigations will be recorded and submitted to EPA as an attachment to each Annual Report.

In addition to catchment investigation work, illicit discharges may be discovered during opportunistic inspections or reported to Town staff. **Table 7.1** provides an inventory of illicit discharges that have been identified within the Town's municipal storm drain system since this IDDE Program document was finalized in June 2022. **Table 7.1** will be updated when new illicit discharges are identified and eliminated, including location source, description of the discharge, date and method of discovery, date of elimination, and a description of completed or planned mitigation or enforcement/corrective actions.

Table 7.1 Illicit Discharge Inventory
Town of Newmarket, NH – Last Revised: June 2023

Location ¹	Discharge Statement ²	Discovery Date ³	Discovery Method ⁴	Elimination Date ³	Enforcement Actions ⁵	Mitigation Completed ⁶ Or Mitigation Planned ⁷
20-22 Ash Swamp Rd	Private septic system (shared by two properties) connected directly to the municipal storm drain system at a CB.	Initially Suspected 08/25/22 Confirmed 10/06/22	Potential Septic Failure reported to Code Enforcement Officer	Capped/ Disconnected 11/11/22	The Code Enforcement Officer was notified of a potential septic failure of a private septic system. Upon inspection, it was determined that the shared private system was directly connected to the municipal storm drain system via a catch basin in the roadway near the properties. Notices of Violations issued.	Town Staff worked with NHDES on enforcement and mitigation. The private system was capped (disconnected from the municipal storm drain system) and the property owners were allow to continue occupying the properties as long as the septic tanks are pumped, as needed. The owners are still working on a resolution.
33 Bay Rd	Private fuel oil tank failure. AST leak resulted in approx. 200-250 gal. of home heating oil infiltrating the ground and entering the municipal storm drain system via an underdrain.	02/06/23	Property owner noticed and reported the spill to NHDES	AST Removed/ Disconnected 02/07/23	NHDES Spill Response & Complaint Investigation Section handled enforcement and remediation work. Town staff worked with NHDES to support cleanup efforts through the municipal storm drain system.	Containment boom and sorbent materials deployed in the canal leading from 10 Bay Rd into the Lamprey River and in the Lamprey River. Town infrastructure jetted and vacuumed to recover impacted water. Failed AST removed and replaced with a new tank. Remedial soil excavation and monitoring wells installed at 33 Bay Rd.

1 Location (approximate street crossing/address).

2 A clear statement of whether the discharge entered a surface water directly or entered the municipal storm drain system.

3 Date(s) of each known occurrence (i.e. beginning and end of any known discharge)

4 Reporting party and Town Staff or other agency that received the report.

5 Description of the enforcement actions taken.

6 Mitigation and corrective measures completed.

7 Mitigation and corrective measures planned with implementation schedules.

8.o TRAINING

Annual training will be made available to all employees involved in implementation of the IDDE Program. This training will, at a minimum, include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE Program. Training records will be maintained in **Appendix E** and noted in each Annual Report submitted to EPA.

9.0 PROGRESS REPORTING

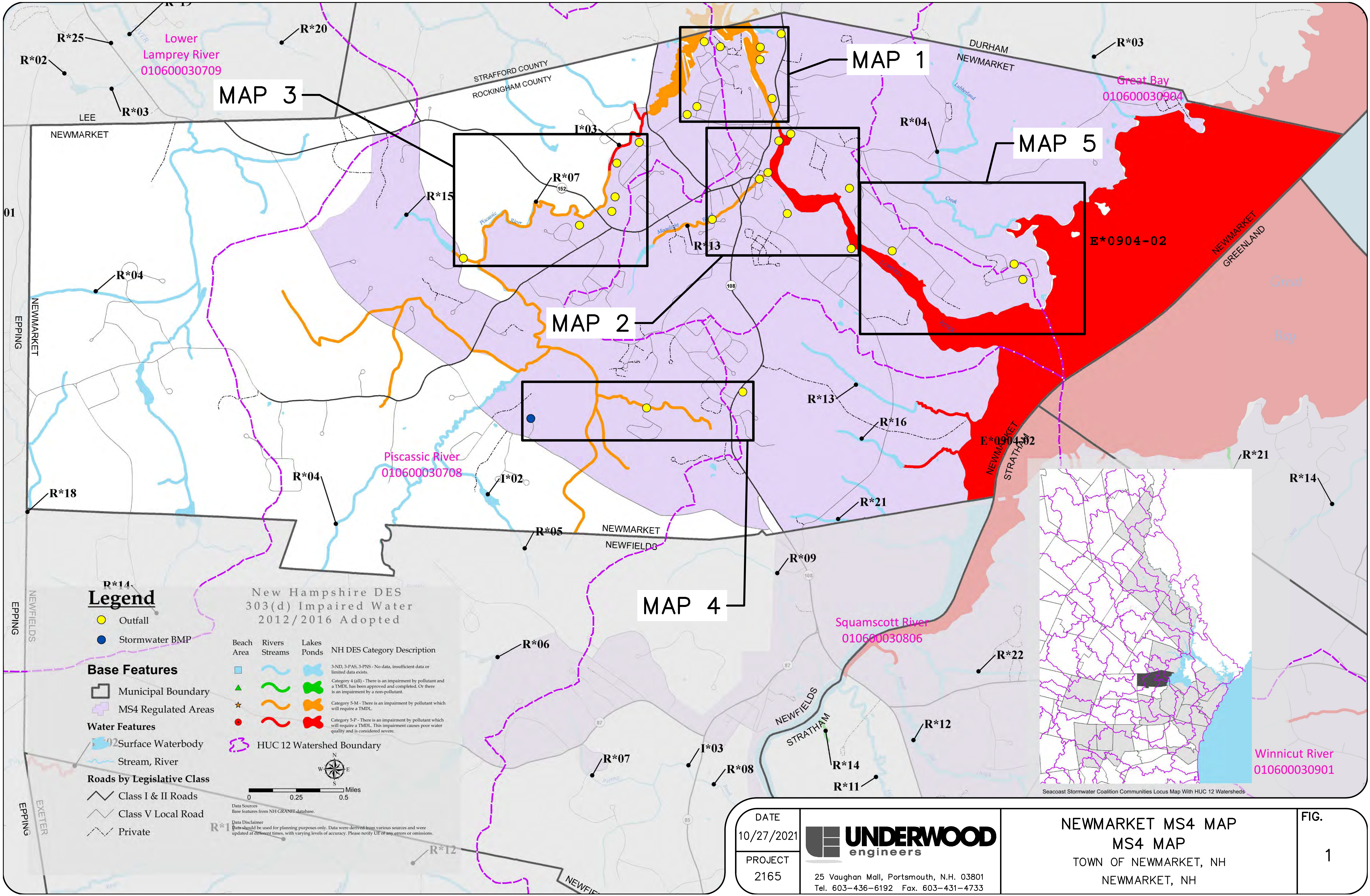
All documentation and records required by the NH MS₄ General Permit will be maintained for a period of at least five years. Records will include things such as monitoring results; records of inspections/screenings; and records of follow-up and elimination of illicit discharges. The progress and success of the IDDE Program will be evaluated and updated annually. The program evaluation will be documented in each Annual Report submitted to EPA and will include consideration of the following:

- Number of SSOs and illicit discharges identified and removed;
- Number of dry weather outfall/interconnection inspections completed;
- Number and percent of total outfalls and catchments investigated;
- Number of wet weather outfall/interconnection inspections completed;
- Number of enforcement notices issued;
- All dry weather and wet weather screening/sampling results;
- Estimate of the volume of sewage removed, as applicable; and
- Number of employees trained annually.

The success of the IDDE Program will be measured by the IDDE activities completed within the required timeline as outlined in the NH MS₄ General Permit.

APPENDIX A

Municipal Storm Drain System Map



DATE
10/27/2021

PROJECT
2165

UNDERWOOD
engineers

25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

0 75 150 300 450 600 Feet
1 inch = 250 feet

Map 1

N



Piscassic River
010600030708

Lower Lamprey
River
010600030709

1H

1C

1D

1E

1F

1B

1A

1G

Twin Rivers Condo

Twin Rivers Condo

Piscassic St

River St

River St

Bass St

Salmon St

No Name

No Name

No Name

No Name

No Name

Cedar St

Grape St

Forest St

Elder St

Beech St

Nichols Ave

N Main St

Dame Rd

Gilman Ave

Boardman Ave

Lamprey St

Sanborn Ave

DATE
11/3/2021

PROJECT
2165

UNDERWOOD
engineers

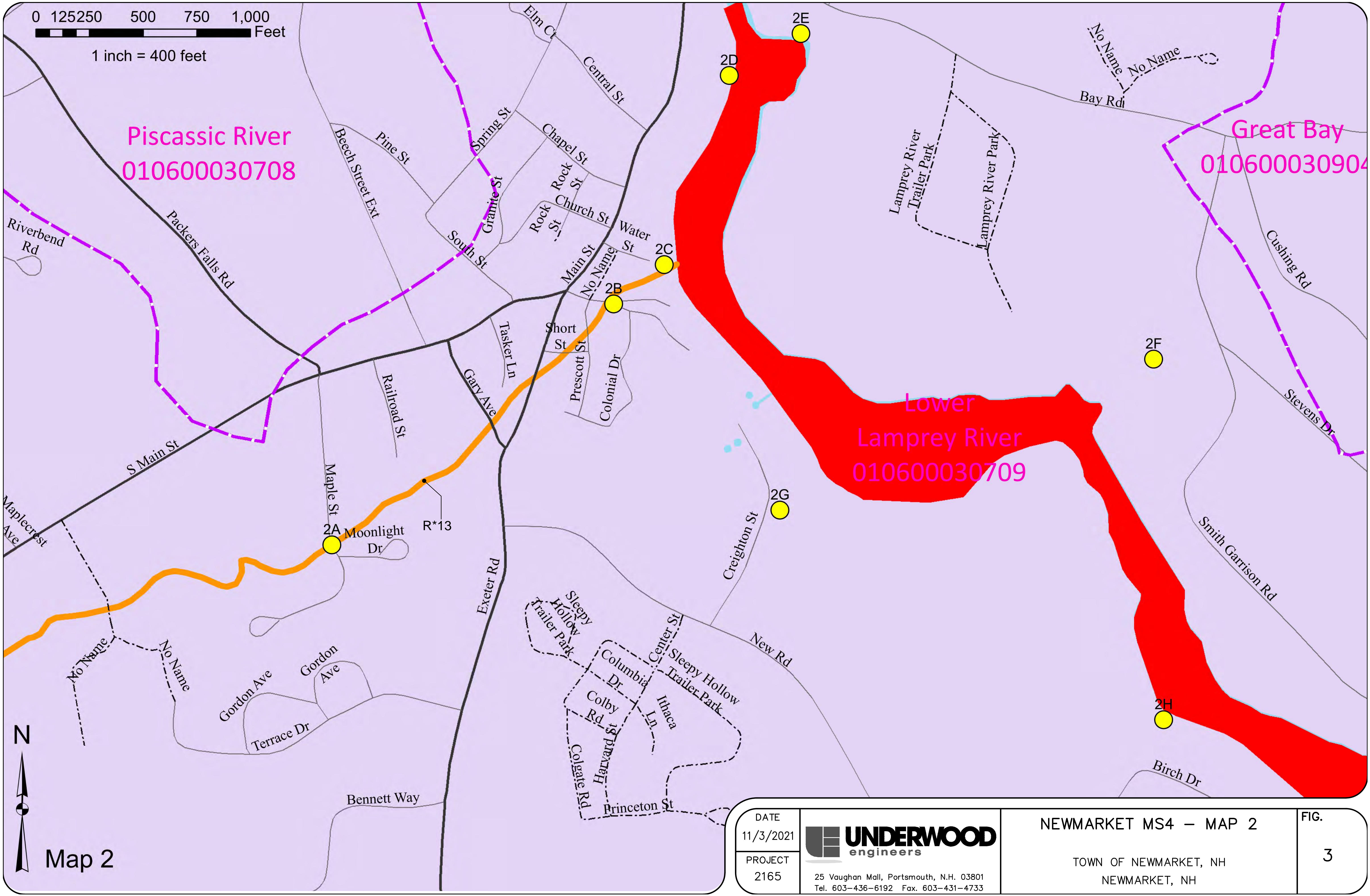
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NEWMARKET MS4 — MAP 1

TOWN OF NEWMARKET, NH
NEWMARKET, NH

FIG.

2



DATE
11/3/2021

PROJECT
2165

UNDERWOOD
engineers

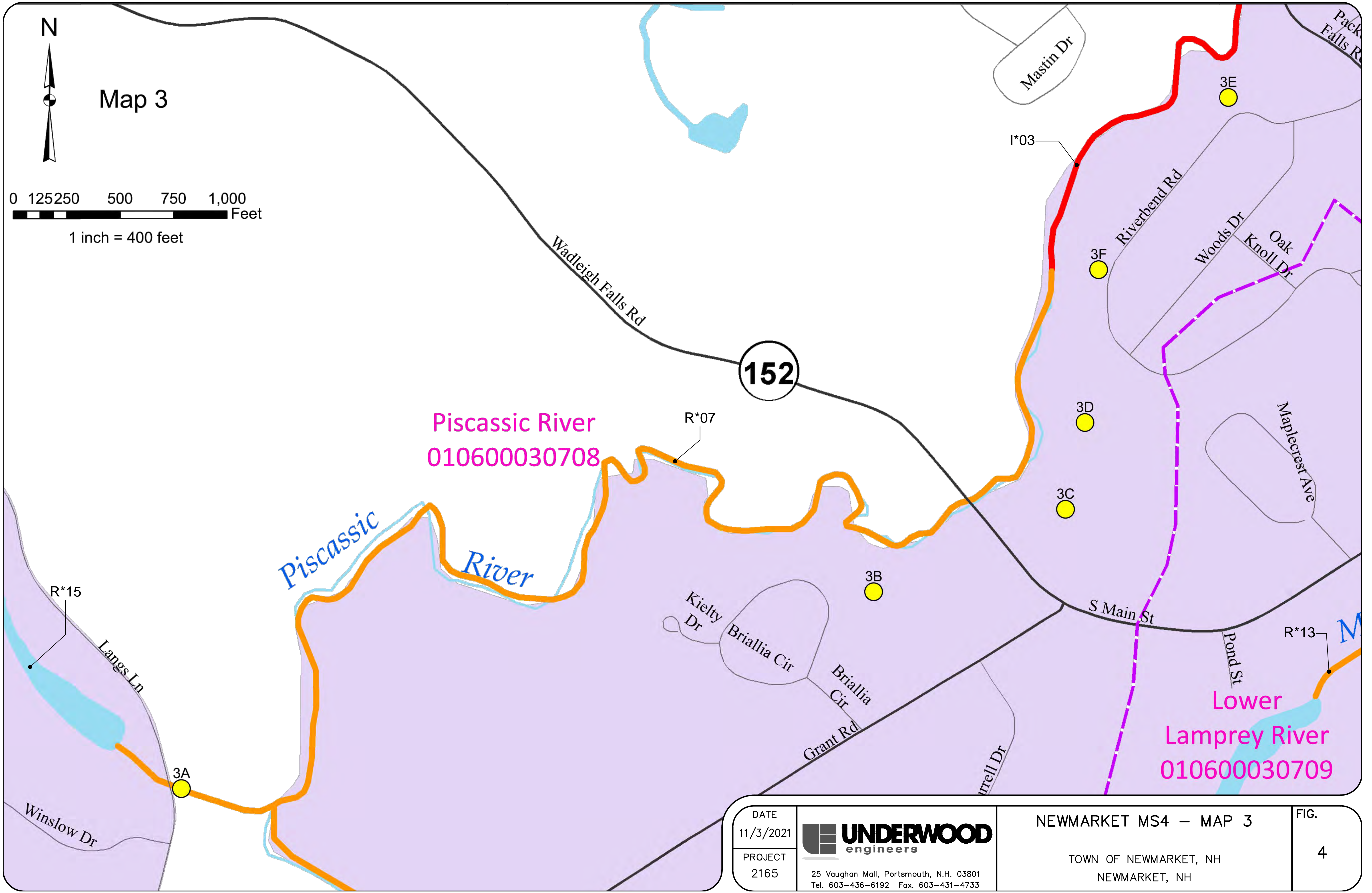
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NEWMARKET MS4 – MAP 2

TOWN OF NEWMARKET, NH
NEWMARKET, NH

FIG.
3

Map 2

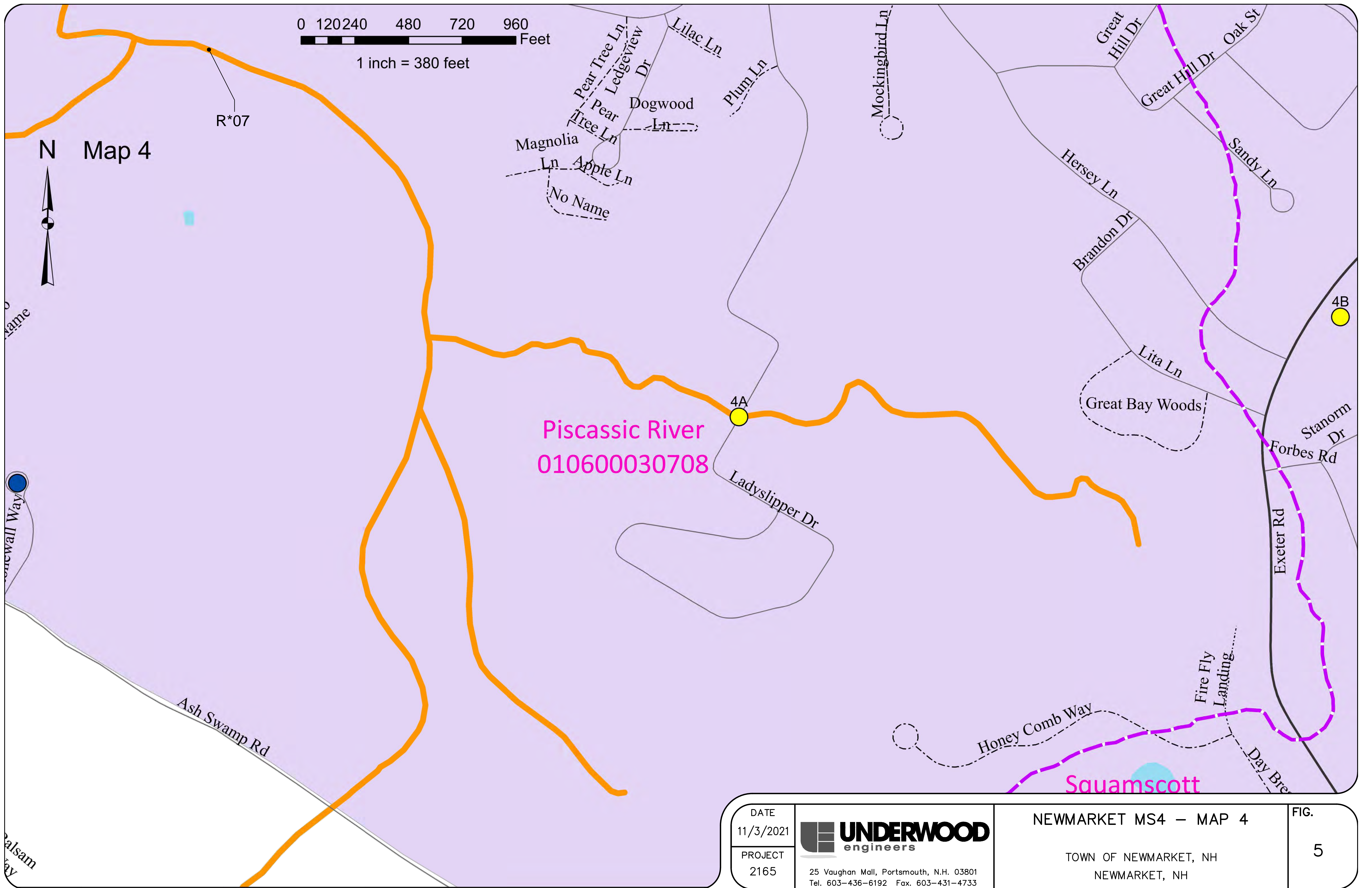


DATE
11/3/2021
PROJECT
2165

UNDERWOOD
engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NEWMARKET MS4 – MAP 3
TOWN OF NEWMARKET, NH
NEWMARKET, NH

FIG.
4



DATE
11/3/2021

PROJECT
2165

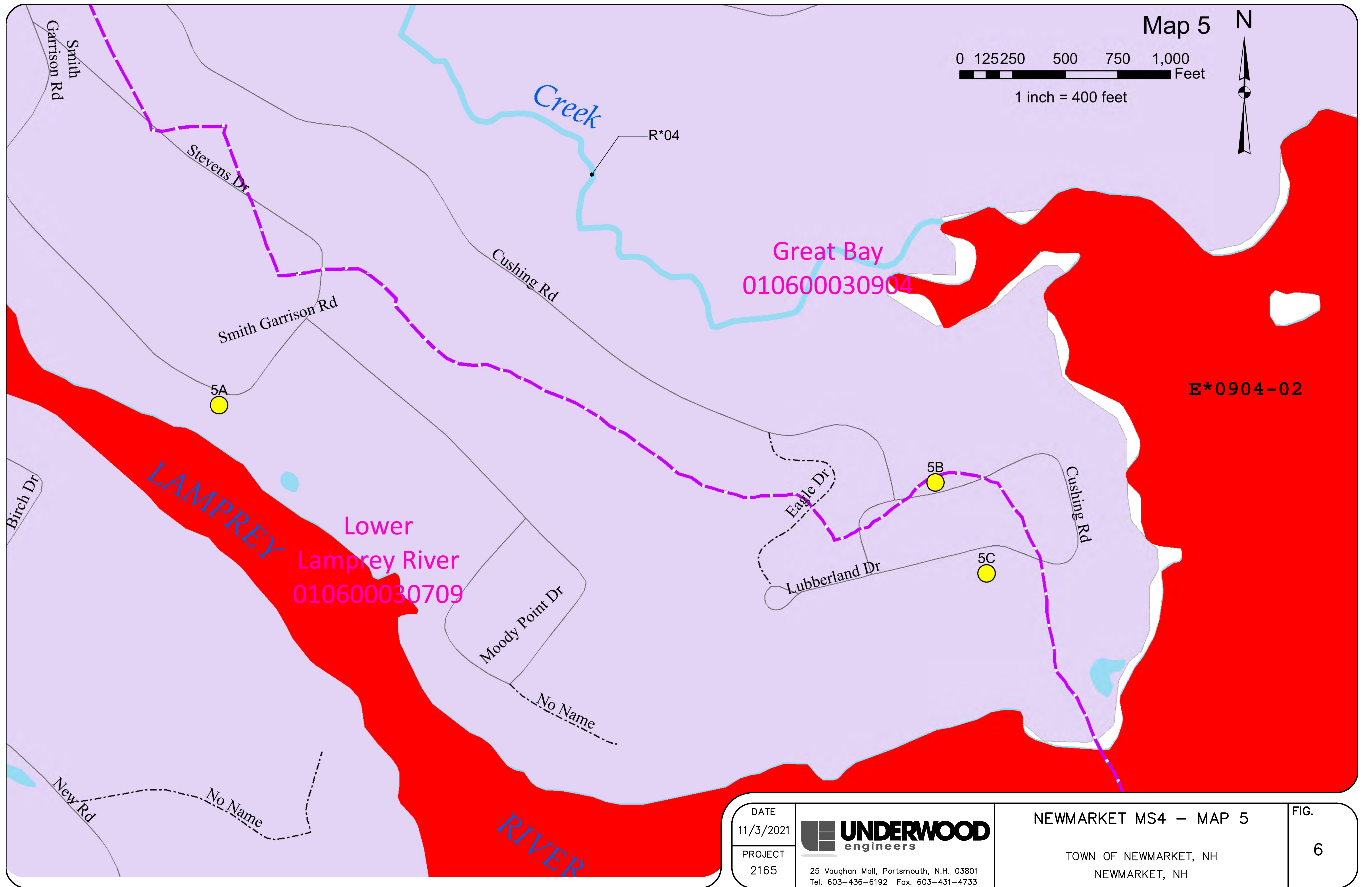
UNDERWOOD
engineers

25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NEWMARKET MS4 - MAP 4

TOWN OF NEWMARKET, NH
NEWMARKET, NH

FIG.
5



APPENDIX B

Outfall/Interconnection Inventory and Priority Ranking Matrix

Town of Newmarket, NH - Outfall Inventory and Priority Ranking Matrix

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? ¹	Discharging to Area of Concern to Public Health? ²	Frequency of Past Discharge Complaints	Receiving Water Quality ₃	Density of Generating Sites ⁴	Age of Development/ Infrastructure ⁵	Once Serviced by Septic Systems ⁶	Aging Septic (> 30 years old) ⁷	Culverted Streams? ₈	Score	Priority Ranking ¹
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps		0-9 = LOW 10+ = HIGH ¹ All outfalls considered "priority" due to receiving water quality
Scoring Criteria		Yes = 3 (Problem Outfall) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes, large area = 3 Yes, small area = 2 No = 0	Yes = 3 No = 0	Yes = 3 No = 0		
100	Piscassic River	0	3	0	3	0	1	0	0	0	7	LOW
101	Piscassic River	0	0	0	3	0	3	0	0	0	6	LOW
102	Piscassic River	0	0	0	3	1	3	3	3	0	13	HIGH
103	Piscassic River	0	0	0	3	0	3	3	3	0	12	HIGH
104	Piscassic River	0	0	0	3	0	3	0	0	0	6	LOW
105	Piscassic River	0	0	0	3	2	3	0	0	0	8	LOW
106	Moonlight Brook	3	3	0	3	3	3	0	0	0	15	PROBLEM
107	Moonlight Brook	3	3	0	3	0	3	0	0	0	12	PROBLEM
108	Lamprey River South	0	3	0	3	0	3	3	3	0	15	HIGH
109	Lamprey River South	0	3	0	3	0	3	3	3	0	15	HIGH
110	Lamprey River North	0	3	0	3	2	2	0	0	0	10	HIGH
111	Lamprey River North	0	3	0	3	3	3	2	3	0	17	HIGH
112	Lamprey River - Macallen Dam	0	0	0	3	1	2	0	0	0	6	LOW
113	Moonlight Brook	3	0	0	3	2	2	0	0	0	10	PROBLEM
114	Lamprey River - Macallen Dam	0	0	0	3	2	3	0	0	0	8	LOW
115	Lamprey River - Macallen Dam	0	0	0	3	0	2	0	0	0	5	LOW
116	Piscassic River	0	0	0	3	0	2	0	0	0	5	LOW
117	Lamprey River - Macallen Dam	0	0	0	3	0	3	0	0	0	6	LOW
118	Lamprey River - Macallen Dam	0	0	0	3	0	3	0	0	0	6	LOW
119	Lamprey River - Macallen Dam	0	3	0	3	1	3	0	0	0	10	HIGH
120	Lamprey River - Macallen Dam	0	0	0	3	0	3	0	0	0	6	LOW
121	Lamprey River - Macallen Dam	0	0	0	3	0	3	0	0	0	6	LOW
122	Lamprey River North	0	3	0	3	1	3	0	0	0	10	HIGH
123	Piscassic River	0	0	0	3	0	2	0	0	0	5	LOW
124	Lamprey River South	0	3	0	3	0	0	3	3	0	12	HIGH
125	Great Bay Prohib Sz1	0	3	0	3	0	2	2	3	0	13	HIGH
126	Great Bay Prohib Sz1	0	3	0	3	0	2	0	0	0	8	LOW

Water Body Impairments

Water Body Name	Assessment Unit ID	Impairment(s)	Associated Approved TMDL/ Other Impairment
Lamprey River North	NHEST600030709-01-01	chlorophyll-a; dissolved oxygen saturation; total nitrogen; oil & grease/PAH; solids/TSS/turbidity; enterococcus 2-methylnaphthalene; acenaphthene; acenaphthylene; aluminum; anthracene; arsenic; benzo(a)pyrene (PAHs); benzo(a)anthracene, cadmium; chrysene (C1-C4); copper; DDD; DDE; DDT; dibenz[a,h]anthracene; fluoranthene; fluorene; lead; mercury; naphthalene; nickel; phenanthrene; pyrene; pH; trans-nonachlor; polychlorinated biphenyls; dioxin (including 2,3,7,8-TCDD); biochemical oxygen demand	N/A
Lamprey River South	NHEST600030709-01-02	Chlorophyll-a; total nitrogen; enterococcus estuarine bioassessments; light attenuation coefficient; polychlorinated biphenyls; dioxin (including 2,3,7,8-TCDD); mercury	N/A
Great Bay Prohib Sz1	NHEST600030904-02	Total nitrogen; enterococcus Estuarine bioassessments; light attenuation coefficient; pH; polychlorinated biphenyls; dioxin (including 2,3,7,8-TCDD); mercury	N/A
Great Bay Prohib Sz2	NHEST600030904-03	Total nitrogen; Estuarine bioassessments; light attenuation coefficients; polychlorinated biphenyls; dioxin (including 2,3,7,8-TCDD); mercury, pH	N/A
Lamprey River – Macallen Dam	NHIMP600030709-03	Mercury; pH	N/A
Piscassic River	NHRIV600030707-07	Dissolved oxygen saturation; dissolved oxygen; pH; mercury	N/A
Moonlight Brook, Newmarket	NHRIV600030709-13	Mercury; pH	N/A

Outfall ID	Receiving Water	Waterbody ID
100	Piscassic River	NHRIV600030708-07
101	Piscassic River	NHRIV600030708-07
102	Piscassic River	NHRIV600030708-07
103	Piscassic River	NHRIV600030708-07
104	Piscassic River	NHRIV600030708-07
105	Piscassic River	NHRIV600030708-07
106	Moonlight Brook	NHRIV600030709-13
107	Moonlight Brook	NHRIV600030709-13
108	Lamprey River South	NHEST600030709-01-02
109	Lamprey River South	NHEST600030709-01-02
110	Lamprey River North	NHEST600030709-01-01
111	Lamprey River North	NHEST600030709-01-01
112	Lamprey River - Macallen Dam	NHIMP600030709-03
113	Moonlight Brook	NHRIV600030709-13
114	Lamprey River - Macallen Dam	NHIMP600030709-03
115	Lamprey River - Macallen Dam	NHIMP600030709-03
116	Piscassic River	NHRIV600030708-03
117	Lamprey River - Macallen Dam	NHIMP600030709-03
118	Lamprey River - Macallen Dam	NHIMP600030709-03
119	Lamprey River - Macallen Dam	NHIMP600030709-03
120	Lamprey River - Macallen Dam	NHIMP600030709-03
121	Lamprey River - Macallen Dam	NHIMP600030709-03
122	Lamprey River North	NHEST600030709-01-01
123	Piscassic River	NHIMP600030708-03
124	Lamprey River South	NHEST600030709-01-02
125	Great Bay Prohib Sz1	NHEST600030904-02
126	Great Bay Prohib Sz1	NHEST600030904-02

Scoring Criteria

Scoring Criteria:	Process
Past discharge complaints and reports	Completed by Town
Poor receiving water quality*	No data available
Density of generating sites (including institutional, municipal, commercial, and industrial sites, with a potential to generate pollutants that could contribute to illicit discharges; e.g., car washes, gas stations, garden centers, and industrial manufacturing areas)	Generating sites from NH OneStop; summed number of sites
Age of development and infrastructure (>40 years, high illicit potential; <20 years, low illicit potential)	Based on sewer age or 1992 Orthophoto (visual observations of developments, houses, etc.)
Sewer conversion (catchments areas that were once serviced by septic systems may have a high illicit discharge potential)	Assumed all sewered areas once serviced by septic
Historic combined sewer systems (contributing areas once serviced by a CSO may have a high illicit discharge potential)	No historic CSOs
Surrounding density of aging septic systems (septic >30 years; prone to have failures and may have a high illicit discharge potential)	Based on sewer system (lack thereof) and 1992 Orthophoto (visual observations)
Culverted streams (more than a simple roadway crossing may have high illicit discharge potential)	Assumed no culverted streams
Water quality limited waterbodies that receive a discharge from the MS4 or waters with an approved TMDL, where illicit discharges have the potential to contain the pollutant identified as the cause of the WQ impairment	All waterbodies subject to bacteria TMDL; additional waterbody impairments (see Attachment 2)
Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies, or shellfish beds	Based on shellfish area and wellhead protection areas; no beaches or recreational areas in MS4 area

APPENDIX C

Field Forms, Sample Container Labels, and Chain-of-Custody Forms
(to be inserted when developed)

APPENDIX D

Catchment Investigation Procedures

Catchment Investigation Plan

Prepared For:

**Town of Newmarket
New Hampshire**



Date: June 2022

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3.0	Wet Weather Sampling Program	2
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TABLES

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Table 3-1. Common Sources of Bacteria and Nutrients in Urban Watersheds

FIGURES

Figure 4-1. Selecting A Tracing Technique

Figure 4-2. Comparison between follow-up and early implementation of advanced forensic tools in a tiered IDDE management strategy.

Figure 5-1. Corrective Action Flow Chart

ATTACHMENTS

Attachment A: Manhole Field Inspection Form

Attachment B: Advanced Forensic Tools

1.0 Introduction

1.1 Purpose and Need

This Catchment Investigation Plan (Plan) was developed to describe the field protocols to be used to investigate storm drain outfalls and associated catchment areas to identify potential illicit discharges within catchment areas of each outfall or interconnection and to describe measures that will be used to confirm and eliminate any identified illicit discharges and connections.

Prior to initiating the field component of the catchment investigations, the project team will systematically evaluate, using existing mapping and outfall screening data, to prioritize outfalls based on their potential to have an illicit discharge or connection. The results of this outfall prioritization will be presented separately and included as an attachment to this Plan.

1.2 Catchment Investigation Timeline and Process

Consistent with the MS4 Permit, the catchment investigation involves the following four (4) major components or tasks:

1. Review of Existing Data: Identify Maps, Historic Plans, Sewer Separation Plans, Sanitary Sewer Overflow Records, and Other Sources of Data to Identify System Vulnerability Factors
2. Manhole Inspection / Storm Drain Connection Investigation
3. Wet Weather Sampling
4. Isolate and Eliminate any Illicit Discharges and Confirm Successful Elimination

Timeline

The Permit requires catchment investigations to be completed according to the timeline presented in Table 1-1 depending on the outfall prioritization;

Table 1-1. Catchment Investigation Implementation Timeline

Catchment Investigation Task	Completion Date from Effective Date of Permit				
	4 Years	5 Years	6 Years	7 Years	10 Years
Written Catchment Investigation Procedure	X				
Begin Catchment Investigations of Problem Outfalls		X			
Complete Catchment Investigations of Problem Outfalls				X	
Complete Catchment Investigations w/ Likely Sewer Input				X	
Complete Investigations for all Outfalls/ Catchments					X

2.0 Review of Existing Data

The Town should use existing data including but not limited to plans related to the construction of the storm drain and of sanitary sewers, prior work performed on the storm drains and sanitary sewers, board of health or other municipal data on septic system failures or require upgrades and complaint records related to sanitary sewer overflows (SSOs), sanitary sewer surcharges, and septic system breakouts.

This existing data will help the Town to identify System Vulnerability Factors (SVFs) within each subcatchment.

2.1 System Vulnerability Factors

The MS4 Permit requires the Town review relevant mapping and historic plans to identify and record the presence of any of the following specific **System Vulnerability Factors (SVFs)** for its outfalls:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages;
- Common or twin-invert manholes serving storm and sanitary sewer alignments;
- Common trench construction serving both storm and sanitary sewer alignments;
- Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system;
- Sanitary sewer alignments known or suspected to have underdrains to redirect groundwater;
- Inadequate sanitary sewer level of service (LOS) resulting in regular customer back-ups, or frequent customer complaints;
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.

EPA recommends the following also be considered as System Vulnerability Factors:

- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs;
- Any sanitary sewer and storm drain infrastructure greater than 40 years old;
- Known areas where septic system failures are prevalent due to inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance);

The Town will document the presence or absence of System Vulnerability Factors for each outfall, retain this documentation as part of its IDDE program, and report this information in future Annual Reports. Catchments with a minimum of one (1) System Vulnerability Factor will be targeted for wet weather sampling in accordance with Section 3.0 below.

3.0 Wet Weather Sampling Program

Wet weather sampling will be conducted for any outfall that has at least one (1) System Vulnerability Factor within its catchment area. Wet weather sampling will be targeted for periods with high groundwater conditions typically in the March to June period to assess whether wet weather-induced flows indicate any influence of sanitary sewer flows to the MS4 area.

The following procedures will be used in guiding the wet-weather sampling process:

- Wet weather sampling will occur during or after a storm event of enough depth (0.20 inches or more) or intensity to produce stormwater runoff.
- Sampling will be done in a manner to avoid the “first flush” typically considered to be in the half-hour after the storm begins. This will help to detect the influence of more continuous or chronic illicit inputs vs. that caused by pollutants washed off impervious surfaces.
- Wet weather samples will be analyzed for the same parameters conducted during the dry weather sampling including the following:
 - Ammonia

- Chlorine
- Surfactants
- E. coli (freshwater) or enterococcus (saline or brackish waters)
- Temperature, and
- Pollutants of Concern (total nitrogen).

Based on the wet-weather sampling and field investigation results, outfalls that may indicate sanitary sewer inputs or an illicit connection will require additional investigation techniques to find and isolate the source.

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

The sampling results and follow-up investigation activities will be summarized in the Annual Report.

4.0 Illicit Discharge Source Tracing

Once an illicit discharge has been reported or detected through a dry weather inspection or citizen call-in, the next step is to locate the source. Selection of tracing techniques will depend on the type of illicit discharge detected, the information collected during initial discovery and observation (whether through an inspection by a municipal employee or through a citizen call-in) and the resources/technology available to the municipality. A single technique may be used, or several techniques may need to be combined to identify the source of the discharge.

4.1 Categories of Illicit Discharges

Figure 4-1 presents a flow chart for selecting tracing techniques that can be applied to the two categories of potential illicit discharges:

1. Transitory or intermittent discharges (where upon returning to the site, no flow is present at the location where the illicit discharge was initially reported); and
2. Continuous discharges (where upon returning to the site a continuous flow is present and the flow may be more easily traced to its source).

While these conditions may not cover the universe of discharges that may be discovered, they should provide general guidance on the selection of tracing techniques. Each of these circumstances is described below.

Transitory or Intermittent Discharges

These conditions may occur as a result of an inspection or a citizen complaint. While initial information may have been collected regarding the potential illicit discharge, a return trip may show that the discharge was either intermittent or transitory (e.g., no flow is present upon return to the site). The investigative techniques that should be used will depend on whether a potential source location was identified during the initial observation:

- Potential source identified - If a potential source for the illicit discharge was initially identified, steps should be taken to investigate the potential source site, such as inspecting the site and storm drain system in the vicinity of the site. If floor drains, sumps, or other suspect discharge locations are observed during this inspection, dye testing, smoke testing, electronic location of subsurface pipes, or televising may be used. These techniques should definitively show whether the suspect site was the source of the illicit discharge.

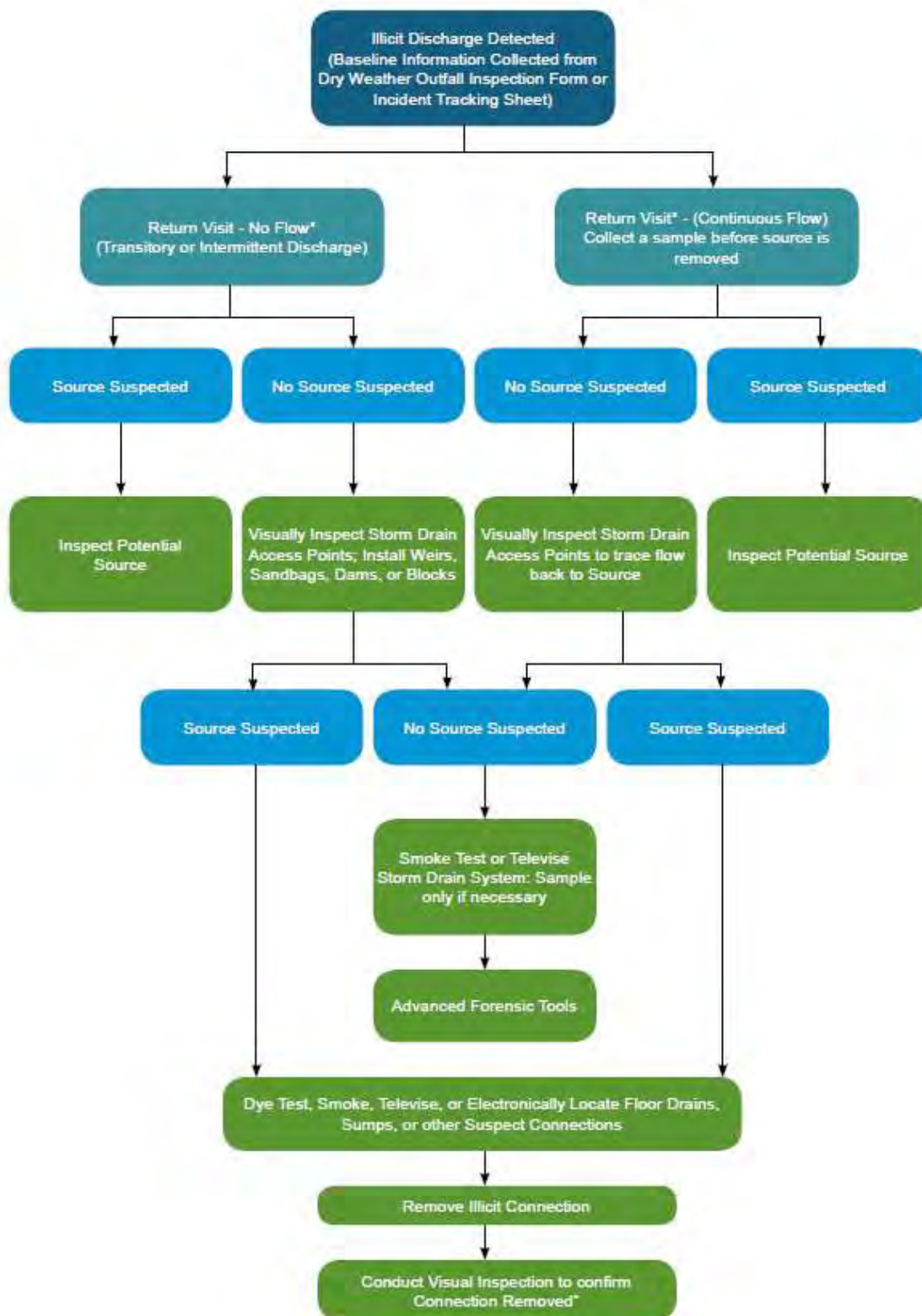


Figure 4-1. Selecting A Tracing Technique

*Consider use of Advanced Forensic Tools

- Potential source not identified - If no source site is suspected, and only the general area of the illicit discharge is known, it may be possible to trace the evidence of the illicit discharge by visual inspection of the storm drain access points. If this catch basin/manhole inspection technique is not fruitful, some interim steps could be taken to try to trap water from an intermittent discharge. For example, sand bagging, damming or block testing of selected storm drain access points, combined with installation of an optical brightener trap to assess if detergents are present in a discharge, can help reveal the source of the discharge. If these techniques have no positive result (no water pools behind the weir or sandbag), the discharge was likely transitory (one time only), and it may not be possible to determine its origin. In this case, the location of the originally reported illicit discharge should be added to a regular inspection program to provide for the possibility of future incidents. If the original report of the illicit discharge was severe or gross pollution, then smoke testing or televising of the storm drain system may be warranted.

Continuous Discharges

Tracing continuous discharges is typically more fruitful than tracing transitory or intermittent discharges. The primary difference between tracing a transitory or intermittent discharge and tracing a continuous discharge is that sandbagging, and weirs are not required for a continuous discharge. Visual observation of the system access points should reveal where the flow is coming from. Just as for tracing a transitory or intermittent discharge, if visual inspections are not fruitful in identifying the source and the original report was severe or gross pollution, then televising, smoke testing, or sample collection would be warranted. NHDES recommends collecting a grab sample for bacterial analysis from any pipe with a significant flow, even if the discharge appears to be clear.

4.2 Tracing Techniques

To select an effective tracing technique, one must have a good understanding of the technique and its limitations. The following tracing techniques that may be used to locate the source of an illicit discharge:

- Visual Inspection at Manholes
- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- Advanced Forensic Tools

Visual Manhole Inspection

This technique is typically used when there is no suspected source site. It is the most cost effective and efficient method of tracing. In general, structures should be systematically inspected starting at the initial detection location, gradually working upstream through the system. If the field crew is tracking a continuous discharge, the inspections may be relatively easy, and the flow can be tracked back to its source. If the field crew is attempting to track a transitory or intermittent discharge, the field crew should make the observations depending on the information provided from the initial identification (e.g., color, clarity, etc....).

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

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.
- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the IDDE program. Adequate implementation of the IDDE program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

The field crews will systematically inspect key junction manholes during dry weather conditions to detect evidence of illicit discharges. The overall goal involves progressive inspection and sampling, if necessary, at manholes in the storm drain network to detect and isolate the source of the illicit discharges. These investigations will seek to document the storm drain connections and general conditions at key junction manholes in the drainage system.

Prior to initiating field investigations, maps of the proposed sequence of outfall locations will be developed. The field crew will meet to discuss potential vehicle traffic control needs, accessibility issues and/or other safety concerns. The field crew will identify potential sampling and access equipment needs. Infrastructure connection information and observations will be documented using GPS mobile data collection tools to allow incorporation into the Town storm drain geodatabase.

The manhole inspection methodology will be conducted as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections (key observations and fields to be documented are shown on the draft manhole field inspection form provided in **Attachment A**).
2. If flow is observed, the field crew should look for visual indicators consistent with what was observed at the outfall which may signify an illicit discharge. Field crews should follow the flow to its source. If a source cannot be found, the field crew should collect a sample to be analyzed at a minimum for ammonia, chlorine, and surfactants using appropriate field kits in accordance with procedures outlined in the Town's IDDE Plan. Additional indicator sampling may assist in determining potential sources (e.g., bacteria and total nitrogen as impaired water pollutants of concerns).
3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.
4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or sanitary sewer overflows (SSOs) can be isolated to a pipe segment between two manholes.

If no evidence of an illicit discharge is found, field inspections of manholes and outfalls will be considered complete and the wet-weather sampling (Section 2.0) component will be initiated for investigation information, where appropriate. Wet weather sampling protocols are in Section 6.0.

Sandbagging

Sandbagging or damming is typically only conducted when the discharge flow has ceased since initial detection. This technique can be useful when attempting to isolate small, intermittent flows with very little perceptible or periodic flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within the bottom of manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically lowered on a rope through the manhole to form a dam along the bottom of the storm drain, taking care not to fully block the pipe (in case it rains before the sandbag is retrieved). If the catch basin has a sump, pumping of the sump may be required to remove all standing water prior to installation of sandbags.

Sandbags are typically left in place for 48 hours and should only be used when dry weather is forecast.

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

If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge.

Smoke Testing

Smoke testing is a useful technique for tracing intermittent discharges or continuous discharges that have no apparent source site. Smoke testing involves injecting non-toxic smoke into drain lines and detecting the emergence of smoke at locations that are connected to the system. Smoke testing works best for short reaches of pipe, or in situations where pipe diameters are too small for video testing.

Smoke testing requires public notice to residents and/or business owners in the area well as local police and fire departments notified to avoid unnecessarily alarming people of possible fire. Depending on the potential connection (e.g. floor drains) smoke can be emitted into a building. ***It should be noted that smoke can cause minor irritation of respiratory passages. Residents with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.***

Two types of smoke sources can be used. The first is a smoke bomb or candle that burns at a controlled rate and releases very white smoke visible at relatively low concentrations. Smoke bombs are suspended beneath a blower in a manhole. Candles are available in 30 second to three-minute sizes.

The second smoke source is liquid smoke, which is a petroleum-based product that is injected into the hot exhaust of a blower where it is heated and vaporized. The length of smoke production can vary depending on the length of the pipe being tested. In general, liquid smoke is not as consistently visible and does not travel as far as smoke from bombs.

Smoke blowers provide a high volume of air that forces smoke through the storm drainpipe. Two types of blowers are commonly used: "squirrel cage" blowers and direct-drive propeller blowers. Squirrel cage blowers are large and may weigh more than 100 pounds but allow the operator to generate more controlled smoke output. Direct-drive propeller blowers are considerably lighter and more compact, which allows for easier transport and positioning.

Three basic steps are involved in smoke testing.

1. The storm drain is sealed off by plugging storm drain inlets.
2. The smoke is released and forced by the blower through the storm drain system.
3. The crew looks for any escape of smoke above-ground to find potential leaks. Septic vents on rooftops are clear indicators of cross connections to the storm drain system.

One of three methods can be used to seal off the storm drain. (1) Sandbags can be lowered into place with a rope from the street surface. (2) Alternatively, beach balls that have a diameter slightly larger than the drain can be inserted into the pipe. The beach ball is then placed in a mesh bag with a rope attached to it so it can be secured and retrieved. If the beach ball gets stuck in the pipe, it can simply be punctured, deflated and removed. (3) Finally, expandable plugs are available, and may be inserted from the ground surface.

Blowers should be set up next to the open manhole after the smoke is started. Only one manhole is tested at a time. If a smoke candle is used, crews simply light the candle, place it in a bucket, and lower it in the manhole the crew then watches to see where smoke escapes from the pipe. The two most common situations that indicate an illicit discharge are when smoke is seen rising from internal plumbing

fixtures (typically reported by residents) or from sewer vents. Sewer vents extend upward from the sewer lateral to release gas buildup and are not supposed to be connected to the storm drain system.

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

Dye Testing

Dye testing is typically conducted when a potential source has been identified, and the crew is trying to determine whether the location the source is coming from has floor drains or other locations that connect and discharge to the storm drain system. Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, floor drains and sinks and then determining if the dye is observed in nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Like smoke testing, it is important to inform residents and business owners. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

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

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

CCTV/Video Inspection

Televised video inspections are a useful technique when an illicit connection or infiltration from a nearby sanitary sewer is suspected, but little evidence of the illicit discharge remains behind. Two types of video cameras are available for use: (1) a small camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe. Typically, the operator of the camera has access to a keyboard or audio voice-over to record significant findings on the videotape that is produced for future review and evaluation. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other techniques.

Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener monitoring can be done in two ways. The least expensive method involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved later and placed under UV light to determine the presence/absence of brighteners during the monitoring period. An alternative but more expensive method involves the use of handheld fluorometers to detect optical brighteners in water sample collected from outfalls or in ambient surface waters.

Use of a fluorometer, while more quantitative, can be more challenging to use in the field depending on the ambient light conditions and accessibility, and is not as effective at detecting intermittent discharges as other source isolation techniques.

Advanced Forensic Tools

Advanced Forensic Tools (AFTs) are targeted analytes and investigation methods designed for the identification, location, and elimination of specific nutrient and bacterial sources. AFTs allow for effective waste source identification in comparison to conventional IDDE tracing methods by targeting the sources with the highest human health risk and/or bioavailability. By identifying and locating the specific sources causing the greatest human health and/or aquatic habitat impacts for abatement, significant cost savings can be achieved compared to treatment of all sources of bacteria and nutrients. Sources of bacteria and nutrients to an MS4 can generally be categorized into three groups: human waste sources, non-human sources related to human activities, and non-human sources independent of human activity (**Table 4-1**). Human waste sources have the highest human pathogen levels compared to other bacteria sources and therefore also carry the highest illness risk. Human waste sources also contain highly bioavailable nutrients (e.g., nitrate and dissolved phosphorous) which may lead to eutrophication and algal blooms in downstream surface waters. Despite the threat human waste sources pose to both human and aquatic health, most current IDDE programs, which may target the removal of both bacteria and nutrients, are not capable of discerning between human and non-human sources.

Table 4-1. Common Sources of Bacteria and Nutrients in Urban Watersheds

Human Waste Sources	Non-Human Sources Related to Human Activities	Non-Human Sources Independent of Human Activity
Sanitary Sewer Overflows (SSOs) Leaky Sewer Pipes (Exfiltration) Illicit Connections to MS4 Leaky or Failing Septic Systems Porta-Potties Bathers and Open Defecation Boats and RVs Dumpsters and Trash Cans Garbage Trucks Illegal Dumping Illegal Discharges Gray Water Discharges Recycled Water	Pets (Dogs, Cats, etc.) Livestock (Horses, Cows, etc.) Rodents (Mice, Rats, etc.) Birds (Gulls, Pigeons, etc.) Dumpsters and Trash Cans Garbage Trucks Animal Manure/Compost Wash water Green Waste Litter Grease Bins/Traps Irrigation Runoff Fertilizers Atmospheric Deposition	Wildlife (Raccoons, Birds, Deer, Coyote, etc.) Decaying Plants Algae and Biofilms Natural Soils/Sediment

AFTs may be used in conjunction with or as a follow up to conventional IDDE tools and are most effective when incorporated into a tiered IDDE management strategy or study design where specific source hypotheses have been identified (Figure 4-1). AFTs may be implemented in catchments where traditional IDDE source tracing has been completed but elevated levels of bacteria and/or nutrients remain (Track A, Figure 4-1). By targeting the use of more expensive AFTs to only those catchments where other tools have not been effective, the added cost to an IDDE program is minimized. In some cases, cost savings may also be achieved by integrating use of AFTs early in an IDDE program (Track B, Figure 4-2). For example, screening MS4 outfall discharges for human waste sources allows traditional IDDE efforts to be focused on sewage impacted catchments, thus getting the greatest human and aquatic health risk reduction for the effort.

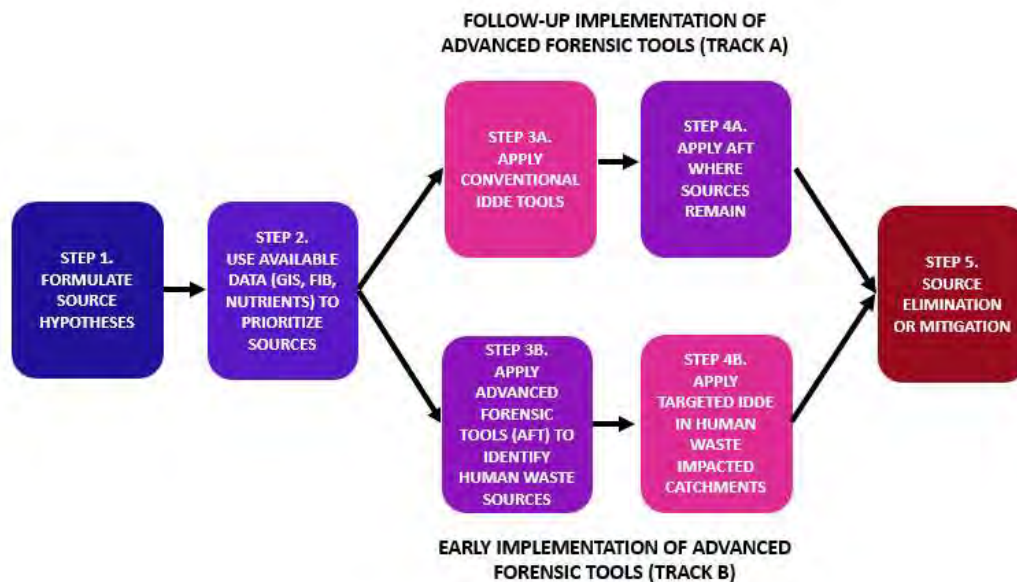


Figure 4-2. Comparison between follow-up and early implementation of advanced forensic tools in a tiered IDDE management strategy.

The following four AFTs are summarized in **Attachment B** and the following sub-sections outline the recommended approach to applying these AFTs alongside conventional IDDE methodologies:

- **DNA Markers** - Used to identify the presence of bacteria associated with human waste. Markers are also available for non-human waste sources (e.g., cattle, dogs, birds). Useful for identifying both bacteria and nutrient sources within the MS4. Human markers are often detected in recycled water.
- **Nitrate Isotopes** – Used to distinguish nitrate sources based on isotopic ratios of nitrogen and oxygen. Able to differentiate chemical fertilizers and atmospheric deposition from human waste and animal manure-based sources. Best used in combination with other tools to identify nutrient sources.
- **Advanced Chemical Indicators** – Detection of pharmaceuticals and personal care products (PPCPs) is an indication of likely sewage or septic impacts. Useful for identifying both bacteria and nutrient sources to the MS4 and may also be able to identify recycled water sources.
- **Advanced Dye Testing** – Dye testing using rhodamine dye and a field fluorometer allows for leaks and intermittent connections to be identified that would not be found through conventional dye testing procedures. Useful for identifying a hydraulic connection between the sanitary sewer and the MS4 that may be responsible for bacteria and nutrients.

The selection and use of AFTs is determined by a combination of 1) the presence of fecal indicator bacteria or elevated nutrient levels measured through preliminary outfall screening, and 2) the hypothesized sources that may be contributing to these locations (e.g., human, non-human but human related, or non-human and independent of human activity). In general, because human waste sources such as sewer leaks and illicit sewer connections are a primary concern of most IDDE programs and these sources may contribute both an elevated public health risk and highly bioavailable nutrients to downstream receiving waters, the determination of human source presence or absence is prioritized. This is frequently accomplished using the HF183 marker. However, this marker may not always be

appropriate, such as in case where nutrients are the primary contaminant of concern and bacteria from human waste may have decayed or been removed through groundwater transport.

Two example scenarios are described below where the implementation of AFTs may be more cost-effective than traditional tracing methods.

Scenario 1 – Elevated FIB or Elevated FIB and Nutrients (Sewered area)

The following study design is recommended when an outfall's dry weather screening results include elevated FIB or elevated FIB and nutrients, and the outfall drainage area includes a sewered area.

Hypothesized sources: Sewer exfiltration or illicit connections

Advanced tools recommended: Early implementation of the human DNA marker HF183

Potential study design:

1. *Desktop GIS evaluation* (MS4, sanitary sewers, septic parcels) to identify the contributing MS4 network, the catchment area, and potential areas with human waste sources (e.g., where sewer lines cross or parallel the MS4 network).
2. *Dry weather HF183 outfall sampling* to quantify and evaluate the persistence of human waste (at least three rounds are recommended).
3. *Above ground flow tracking* concurrent with sampling to identify the flowing portion of the MS4 network and survey above ground bacteria and nutrient sources.
4. *HF183 results evaluation:*
 - a. *If HF183 detected* at high concentrations (e.g., >1,000 copies/100ml¹):
 - i. *Conduct additional HF183 sampling* at major MS4 nodes within the same outfall's network to determine the section of pipe containing the human waste source input (for large networks with many flowing areas).
 - ii. After completion of the step above, *conduct Closed-circuit television (CCTV) investigation* on the section of pipe identified to visually identify infiltration or illicit connections.
 - iii. If the above steps are unsuccessful, *implement dye testing* (conventional or advanced) of nearby sewers to identify source of infiltration or illicit connection.
 - b. *If HF183 not detected* or detected at low concentrations (e.g., <1,000 copies/100ml):
 - i. Reevaluate source hypotheses, investigate hypothesized non-human sources such as dogs and birds, if further source investigation is desired.
 - ii. Analyze samples previously collected for HF183 for dog and bird DNA markers, if these sources are suspected.
5. Conduct *abatement actions* to mitigate or eliminate identified bacteria and nutrient sources.
6. Perform *confirmation sampling* to confirm that identified waste sources were successfully abated after completion of abatement actions.

¹ 1,000 copies/100ml represents an approximate risk-based threshold for recreational water contact based on diluted sewage from published literature. An appropriate action level should be determined prior to study.

Scenario 2 – Elevated Nutrients and Low FIB (Area serviced by septic systems)

The following study design is recommended when an outfall's dry weather screening results include elevated nutrients, but low FIB and the outfall drainage area includes mostly areas served by septic systems.

Hypothesized sources: Septic system leaks

Advanced tools recommended: Advanced chemical indicators (PPCPs) and nitrate isotopes

Potential study design:

1. *Desktop GIS evaluation* (MS4, septic parcels) to identify the contributing MS4 network, the catchment area, and potential areas with human waste sources (e.g., where septic effluent or leaks could enter the MS4).
2. *PPCP and nitrate isotope outfall sampling* to identify nutrient sources (at least three rounds are recommended).
3. *Above ground flow tracking* concurrent with sampling to identify the flowing portion of the MS4 network and survey above ground bacteria and nutrient sources.
4. *PPCP and nitrate isotope results evaluation:*
 - a. *If PPCPs detected* and isotopic ratios consistent with human/animal waste, then septic systems are likely source that should be targeted for management actions.
 - b. *If PPCPs not detected* and isotopic ratios consistent with other sources, then reevaluate source hypotheses and investigate other sources, if desired.
5. Conduct *abatement actions* to mitigate or eliminate identified nutrient sources.
6. *Confirmation sampling* to confirm that identified waste sources were successfully abated after completion of the measures in Step 5.

Identifying illicit waste sources, both human and non-human, conveyed in storm drains and urban receiving waters is imperative for both human and environmental health. A successful IDDE approach requires the coordination of careful study design, cost effective tool utilization, and actionable interpretation of the collected results. The informed implementation of AFTs into an IDDE program can increase success rates and cut long-term cost by providing highly specific identification of waste sources leading to more efficient source abatement. In combination with conventional analytes, GIS, and observational data, sources can now be more efficiently eliminated through targeted and cost-effective management programs. Additional information can be found in **Attachment B**.

5.0 Removing the Source of An Illicit Discharge

There is a range of ways in which municipalities may wish to handle the removal an illicit connection between homes or businesses and the storm sewer system. In accordance with the MS4 Permit, upon detection of an illicit discharge, the Town shall locate, identify and eliminate the illicit discharge as expeditiously as possible (within 60 days).

Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge. Four questions should be answered for each individual illicit discharge to determine how to proceed; the answers will usually vary depending on the source of the discharge.

- Who is responsible?
- What methods will be used to repair?

- How long will the repair take?
- How will removal be confirmed?

Financial responsibility for source removal will typically fall on property owners, MS4 operators, or a combination of the two. Methods for removing illicit discharges usually involve a combination of education and enforcement. A process for addressing illicit discharges that focuses on identifying the responsible party and enforcement procedures is presented in **Figure 5-1**.

The Town should use judgment in exercising the right mix of compliance assistance and enforcement. The authority and responsibility for correction and enforcement is defined in the IDDE ordinance. An escalating enforcement approach may be warranted and is usually a reasonable process to follow. Voluntary compliance should be used for first-time, minor offenders. Often, property owners are not even aware of a problem, and are willing to fix it when educated. More serious violations or continued non-compliance may warrant a more aggressive, enforcement-oriented approach. Typically, a municipality responds to the discovery of an illegal connection in a graduated manner, beginning with efforts to obtain voluntary compliance and escalating to increasingly severe enforcement actions if compliance is not obtained, as presented in **Figure 5-1**.

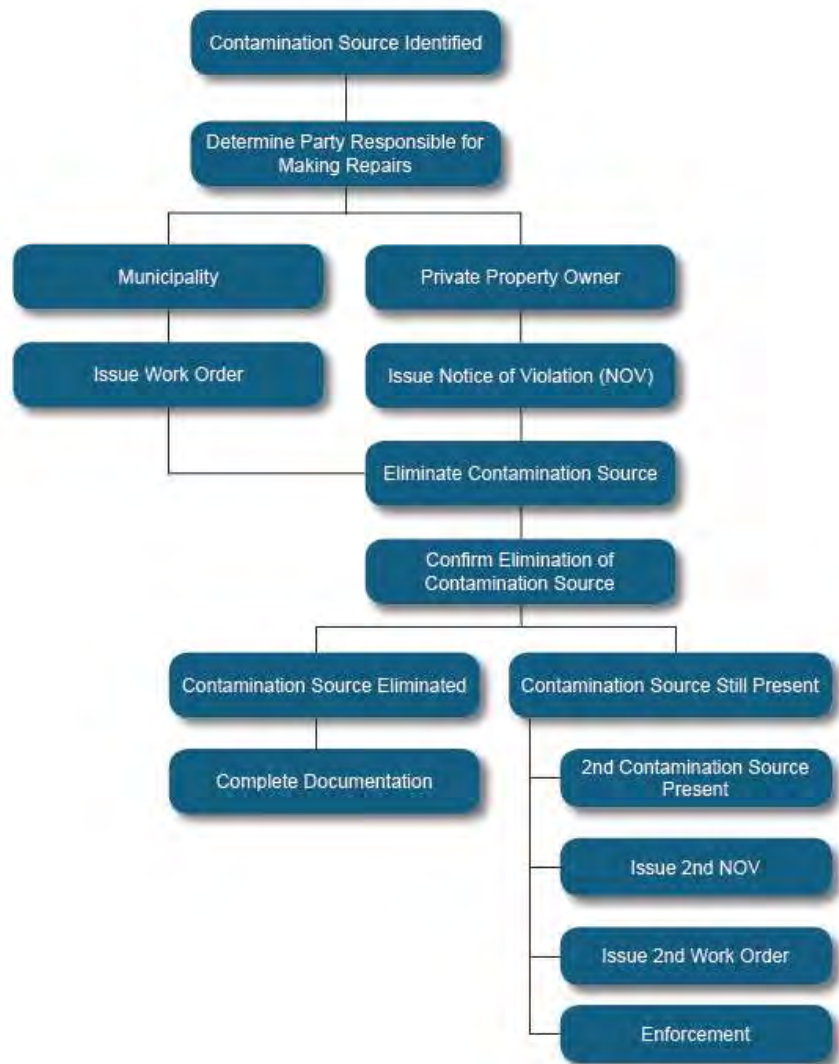


Figure 5-1. Corrective Action Flow Chart

The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- Estimate of the volume of flow removed.

5.1 Confirmatory Outfall Screening

After completing the removal of illicit discharges from a catchment, the outfall subcatchment is re-screened to verify corrections. Within one (1) year of removal of the identified illicit discharge within a catchment area, confirmatory outfall or interconnection screening will be conducted. Depending on the extent and timing of corrections, confirmatory screening can be done at the initial junction manhole or the closest downstream manhole to the location of removal. Confirmation is accomplished by using the same visual inspection, field monitoring, and damming techniques as described above.

The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation.

6.0 On-going Screening

Upon completion of all outfall catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized and scheduled for on-going screening once every five (5) years.

On-going screening will consist of dry weather screening and sampling consistent with the procedures described in the IDDE Plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted. All sampling results will be reported in the Annual Report.

Attachment A: Manhole Field Inspection Form



DRAIN MANHOLE INSPECTION LOG

Manhole ID:

Inspection Date: _____

Tributary Area: _____

Street: _____

Inspector: _____

Inspection: Not Found ____ Surface ____ Internal ____ Follow Up Inspection _____

Time Since Last Rain: < 48 hours ____ 48 – 72 hours ____ > 72 hours ____ Est Amt _____ inches

Observations:

Standing Water in Manhole: Yes ____ No ____ Water Clarity: Clear ____ Cloudy ____ Other _____

Flow in Manhole: Yes ____ No ____ Velocity: Slow ____ Medium ____ Fast ____ Depth of Flow: ____ in.

Color of Flow: No Flow: ____ Clear ____ Tea ____ Brown ____ Iron ____ Suspended Solids ____ Other _____

Blockages: Yes ____ No ____ Sediment in Manhole: Yes ____ No ____ If Yes: Percent of Pipe Filled: ____

% Floatables: None ____ Sewage ____ Oily Sheen ____ Foam ____ Other _____

Odor: None ____ Sewage ____ Oil ____ Soap ____ Other _____

Field Testing:

Temp ____ Conductivity ____ Surfactants: Yes/No Ammonia: Yes/No Chlorine ____ Salinity ____

Lab analysis:

E. coli ____ Pollutants of Concern* _____

*For TMDLs or Water Quality Limited (WQL), refer to Appendix G of the MS4 Permit.

MH DETAILS

Location:	Material:	MH Cover size:	MH Diameter:	Invert/Flow Channel:
Roadway	Brick	24"	48"	Present Y/N
Gutter	Block	26"	60"	Material:
Grass	Concrete	30"	Other (describe below)	Concrete
Easement	Lined	36"		Brick/mortar
Other (describe below)	Other (describe below)	Other (describe below)		Other (describe below)

CONDITION

Cover:	Ring & Frame	Chimney:	Wall:	Rungs:
Good	Good	Good	Good	Good
Loose	Loose	Cracked/Broken	Cracked/Broken	Unsafe
Below Grade	Displaced	Corroded	Corroded	Missing any
Damaged	Missing Grout	Misaligned	Misaligned	Corroded
Sealed	Raise	Infiltration	Infiltration	N/A - no rungs
Holes (# of holes)	Lower	Roots at Joints	Roots at Joints	

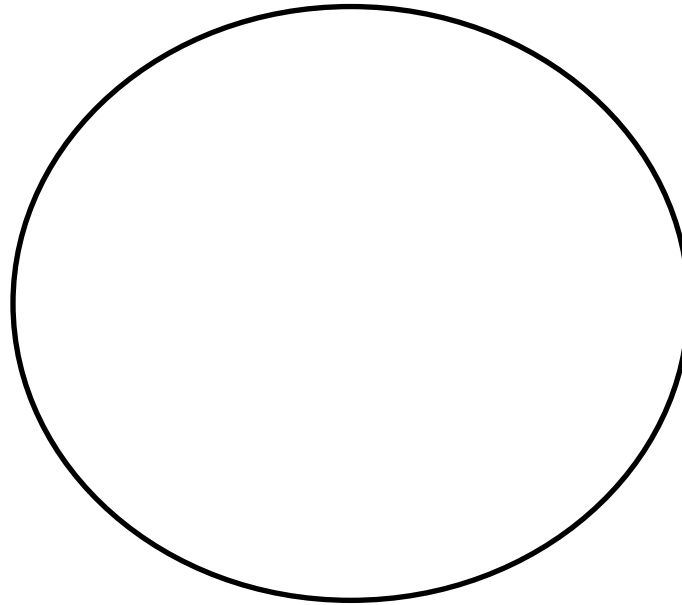
Include any pertinent notes regarding component conditions below:



MANHOLE DIAGRAM

Manhole ID: _____

(Outgoing pipe should be at the 6:00 position. Label all pipes with size/type and flow direction)



INSERT PHOTO(S) BELOW:

Attachment B: Advanced Forensic Tools

APPENDIX B

ADDITIONAL INFORMATION ON ADVANCED FORENSIC TOOLS

1. DNA Markers

DNA-based marker analyses allow for the rapid identification and quantification of fecal bacteria from specific hosts including humans, cattle, dogs, birds and other animals. Analysis is performed using published DNA markers in a validated laboratory by quantitative polymerase chain reaction (qPCR) or droplet digital polymerase chain reaction (ddPCR) methodologies. The use of ddPCR allows for the greatest sensitivity (ability to detect highly diluted fecal waste) and reduces inhibition associated with qPCR in some sample matrices (which can lead to false negative results).

The USEPA released methods 1696 and 1697 in 2019 for the quantification of human fecal pollution in water. Guidance on the use of these DNA markers, as well as markers for other animals, was previously released in 2013 for California¹ and has been successfully used across the United States. The most sensitive and specific DNA-marker for the quantification of human fecal bacteria HF183. When analyzed by ddPCR, HF183 can be detected in sewage diluted up to one million times. Detection of HF183 indicates that human waste impacts are present. However, treated waste (e.g., recycled water) may also result in marker detections and therefore recycled water use within drainage areas to sample locations should be considered. The health risks from water contact recreation in water containing diluted sewage have been estimated based on the concentration of human markers including HF183. A HF183 concentration of approximately 4,000 copies/100ml has been predicted to increase the public health risk above USEPA tolerable risk levels. Use of an HF183 screening threshold or action level in the range of 500 to 1,000 copies/100ml is recommended as a conservative concentration to prioritize follow-up actions to locate and eliminate human waste sources. Sewage impacts above this level would be expected to contribute to elevated bacteria and nutrients, in addition to representing a potential public health risk.

Where HF183 is low (below the action level) or not detected, but bacteria and nutrient sources remain elevated, other host-specific DNA-markers (e.g., for cattle, dogs, and/or birds) may help further inform the identification and quantification of non-human sources that are contaminating the MS4 and impacting downstream surface waters.

2. Nitrate Isotopes

The combined analysis of oxygen and nitrogen isotope ratios of nitrate ($\delta^{18}\text{O}$ and $\delta^{15}\text{N}$, respectively) can be used to distinguish the primary source of nitrate based on typical values that have been established in literature (Figure 1). Although this analyte does not distinguish between human waste and animal waste nitrate sources, it can differentiate nitrate from natural soils, ammonium fertilizer, synthetic fertilizers, and precipitation from animal and human wastes. Typical ranges for nitrate vary by source and location and may overlap with other sources. Therefore, source samples (e.g., samples of fertilizer) are recommended to identify the source in MS4 discharges or other water samples. Denitrification of nitrate occurring between the source and the sampling location (e.g., as nitrate travels through groundwater) also impacts the ratios. Therefore, nitrate isotope analysis is recommended as an additional line of

¹ The California Microbial Source Identification Manual, available at:
https://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/docs/sipp_manual.pdf.

evidence to confirm nitrate sources (e.g., combined with PPCPs), rather than the sole line of evidence indicating the source. The use of nitrate isotopes as tracers of nitrogen sources has been used for over 20 years and guidance has been developed by the USGS².

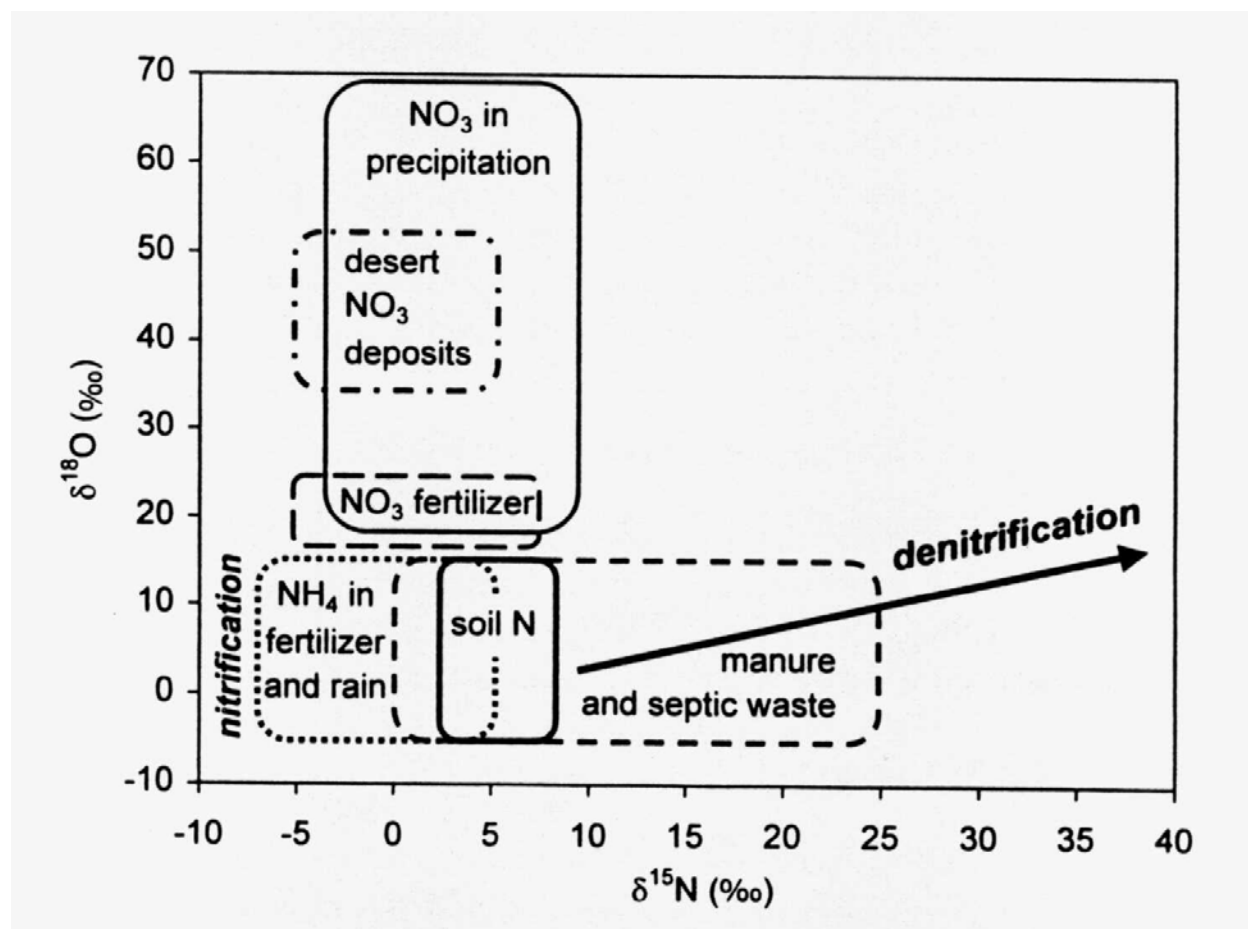


Figure 1. Typical ranges of nitrate isotopes from various sources (USGS, 1998)

3. Advanced Chemical Indicators

The detection of pharmaceutical and personal care products (PCPPs) such as Acesulfame, Acetaminophen, Methylparaben, Naproxen, Paraxanthine, Sucralose, Sulfamethoxazole, and Trimethoprim in MS4 samples provide evidence of the presence of human waste. Each of these chemicals is generally present in raw sewage at concentrations one thousand to one million times the detection limit when analyzed by HPLC/MS/MS (USEPA Method 1694), and these chemicals are not naturally occurring. Some PPCPs such as Acetaminophen and Methylparaben are effectively removed during typical wastewater treatment processes, whereas others such as acesulfame and sucralose remain and can easily be detected in treated effluent. Thus, which PPCPs are detected can provide evidence as to whether a sample is impacted by untreated (e.g., raw sewage) or treated human waste source (e.g., recycled water).

² Tracing Nitrogen Sources and Cycling in Catchments, available at:
<https://www.camnl.wr.usgs.gov/isoig/isopubs/itchch16.html>

4. Advanced Dye Testing

Visual dye testing is a useful tool used in many traditional IDDE programs to identify a hydraulic connection between sanitary sewer lines and the MS4. A hydraulic connection may be due to illicit connections to the MS4 or exfiltration from aging or damaged sewer lines that then travels to the MS4 through the subsurface. Visual dyes, such as fluorescein and rhodamine, can be added to the sewer then observed in the downgradient storm drain if there is a major leak or connection. Visual dyes are generally detectable to 1 part per million in clear water. However, visual detection is not always possible (e.g., in dark or deep pipes) and may not be able to identify small leaks, heavily diluted inputs or leaks that have long transport times from the sewer to the MS4. Detection of dye using a probe capable of measuring fluorescence allows these same dyes to be detected to 1 part per billion and over a much longer continuous period of time compared to a more limited snapshot captured by visual detection. Thus, dye diluted over one million times can be detected (the concentration of dye in commercially available tracers varies from 1-20%).

For advanced dye testing, Rhodamine WT dye is recommended with detection using a YSI 600 OMS Sonde w/ rhodamine sensor (or similar probe capable of continuous measurement of rhodamine). A desktop evaluation of GIS data (MS4 and sanitary sewers) is first performed to determine where sewers cross or run near the MS4 and prioritize these areas for dye testing. Field reconnaissance is then conducted to confirm accuracy of GIS data and identify suitable locations for dye addition and probe placement. The probe is placed either at the outfall or within the MS4 downgradient of the testing area. Dye is added directly to the sewer system upgradient of areas identified for testing. It is recommended that continuous fluorescence measurements be taken prior to dye addition (i.e., background measurements) and for multiple days following the addition of dye. Depending on the transport pathway from the sewer to the MS4, leaks may take time to travel to the MS4. Fluctuations in water use throughout the day may also impact transport, both in the sewer and in the MS4 through irrigation overspray. Finally, the probe is retrieved, and data analysis is performed to determine if above background levels of dye were detected in the MS4. Follow-up testing may be required to locate the source if multiple dye additions were performed in a single test or if intermittent flow and/or human waste sources are being investigated.

5. Study Design Considerations

The effectiveness of an IDDE investigation relies heavily on study design factors applicable to both conventional and advanced tools, including the timing and number of sampling events as well as sampling locations with respect to suspected sources. The overall study design should be based on the hypothesized sources. In most cases, collection of samples during dry weather for source investigation should be done prior to wet weather sampling and analysis. The investigation and mitigation of dry weather bacterial and nutrient sources prior to wet weather investigation allows for identification and abatement of sources that would otherwise be diluted and/or mixed with additional sources during wet weather when increased overland flow from throughout the catchment mobilizes contaminants from the land surface.

The repetition of sampling events is also an important study design component that is needed to characterize transient sources of flow and contaminants, as well as for the prioritization of priority or high-risk areas. Multiple rounds of sampling are required to assess source variability and identify intermittent sources. Three to five rounds of initial sampling are generally recommended for most investigations, although more replication may be required if statistically significant differences in concentration are required to test source hypotheses (particularly for bacterial targets). After initial rounds of

screening/sampling are complete, areas can be prioritized for further investigation, identified sources abated, and confirmation sampling performed. Confirmation sampling after abatement actions have been completed is important to show that sources have been successfully eliminated and/or that bacteria and nutrients have been significantly reduced.

Lastly, when collecting water quality analytes, the sampling location within the MS4 network can be leveraged to further narrow the potential location of illicit sources of nutrients and bacteria. When sampling at the outfall, or the final terminus of a contributing MS4 network, the measurement characterizes the entire drainage area. However, when combined with active above ground source tracking methods by field technicians, upstream in-network sampling can be useful to pinpoint areas with human waste or other source inputs. Samples can be collected at major MS4 nodes to reduce the contributing area required for further investigation or at MS4 manholes downstream and upstream of a suspected source area (particularly in wet weather).

6. Cost of Advanced Forensic Tools

Cost is frequently one of the driving factors when selecting tools to be included in an IDDE program. As previously discussed, although AFTs are generally more expensive than conventional tools on a per sample or per day of implementation cost, overall cost saving can be achieved through more efficient identification of sources contributing the greatest loads or having the greatest public and aquatic health risks. The relative costs of commonly used tools are shown in Table 1 compared to AFTs. Overall costs will depend on program details and study design, but as a reference, a basic chemical indicator like ammonia would cost approximately \$10 per sample (\$) whereas a human DNA marker or PPCP suite would typically cost >\$250 per sample (\$\$\$).

Table 1. Relative Costs of Conventional and Advanced Tools

Tool	Description	Cost
Visual Surveys and Outfall Screening	Field observations to identify flowing outfalls and potential bacteria and nutrient sources.	\$
GIS	Essential for planning and analyzing data in relation to infrastructure. Useful prior to field investigations to target areas for more detailed investigation.	\$
Fecal Indicator Bacteria (FIB)	Basic indicator of bacterial contamination tied to regulatory receiving water limits.	\$
Basic Chemical Indicators	Includes detergents/surfactants, fluoride, ammonia, and potassium. Low-cost field kits may be useful in MS4 networks (e.g., ammonia).	\$
Dye Testing	Visual detection of dye. Useful for identifying illicit connections from sewers to storm drains.	\$
CCTV	Cameras used in the MS4. Useful for locating illicit connections, infiltration, and tracking flow sources.	\$\$
<i>Advanced Dye Testing</i>	<i>Fluorometer based detection of dye. Useful for identifying high diluted sewage such as infiltration from sewers to storm drains.</i>	<i>\$\$</i>
<i>Advanced Chemical Indicators (PPCPs)</i>	<i>Includes sucralose, caffeine, and cotinine, as well as many contaminants of emerging concern. Useful as a second line of evidence for sewage sources.</i>	<i>\$\$\$</i>
<i>Human DNA Markers</i>	<i>Most sensitive and specific tool for identifying human waste. Useful for sampling in receiving waters, outfalls, within the MS4, and groundwater.</i>	<i>\$\$\$</i>
<i>Non-Human DNA Markers</i>	<i>Able to identify non-human sources of waste including cows, dogs, birds, deer, and others. Useful after human sources have been ruled out.</i>	<i>\$\$\$</i>
<i>Stable Isotopes</i>	<i>Isotopic ratios of nitrogen and oxygen in nitrate to identify nutrient sources</i>	<i>\$\$</i>

Advanced Forensic Tools (AFTs) are shown in bold italic font.

APPENDIX E

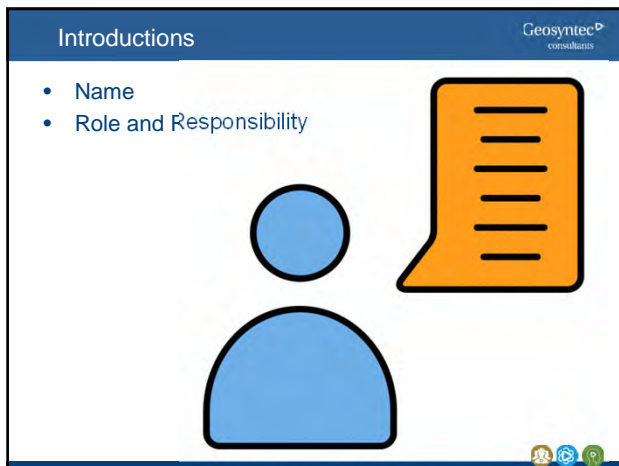
IDDE Employee Training Record

NEWMARKET LODGE ANNUAL TRAINING
JUNE 6, 2023

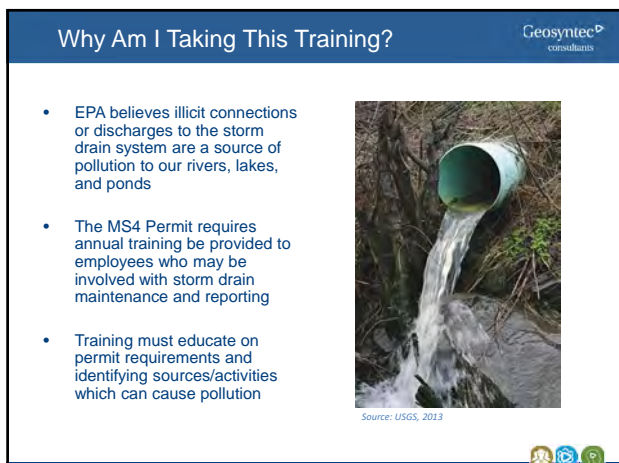
<u>NAME</u>	<u>DEPARTMENT</u>
Lyndsay Butler	DPW/Engineering
Sean T. Greig	Environmental Services
Ben Troffier	Environmental Services
DAVID CHASE	DPW / HIGHWAY
Rick MALASKY	DPW
Karen Bloom	B+G
Todd Granotti	Environmental Services
Mark Pralix	DPW
James Barlow	Environmental services
KATE PRESTON	C WWTF



1



2




3

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Training Outline



- ✓ MS4 Permit Overview
- ✓ What is an illicit discharge?
- ✓ Good Housekeeping
 - Operation & Maintenance Program
 - Infrastructure Maintenance Program
 - Additional Total Nitrogen Requirements
- ✓ Questions/Discussion



4

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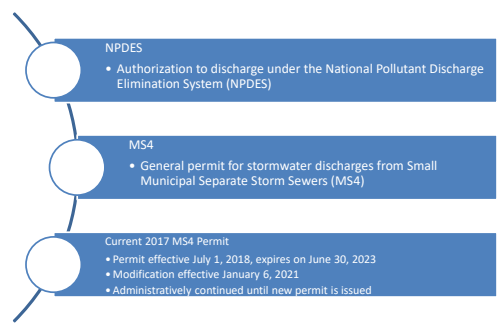
Overview of the MS4 Permit and IDDE Program




5

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MS4 Permit Overview



- NPDES**
 - Authorization to discharge under the National Pollutant Discharge Elimination System (NPDES)
- MS4**
 - General permit for stormwater discharges from Small Municipal Separate Storm Sewers (MS4)
- Current 2017 MS4 Permit**
 - Permit effective July 1, 2018, expires on June 30, 2023
 - Modification effective January 6, 2021
 - Administratively continued until new permit is issued



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MS4 Permit Overview

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2017 MS4 Permit

- Applicable to 60 NH Municipalities and 3 Non-traditional MS4s (UNH, DOT, VAMC)
- Became effective July 2018
- 5 Year Permit Period
 - July 1, 2023 starts Permit Year 6 (administratively continued)
- Detailed storm drain system mapping
- Maintenance of infrastructure
- Good Housekeeping
- Elimination of illicit connections/discharges



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MS4 Permit Overview: Minimum Control Measures

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IDDE Program Overview

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- Illicit Discharges and Sanitary Sewer Overflows (SSOs) to the MS4 are prohibited
- System mapping
- Written IDDE program
- Priority Outfall/Interconnection Ranking
- Dry Weather Screening and Sampling
- Catchment Investigation
- Wet Weather Screening and Sampling
- Illicit Discharge Removal
- Indicators of IDDE Program Progress

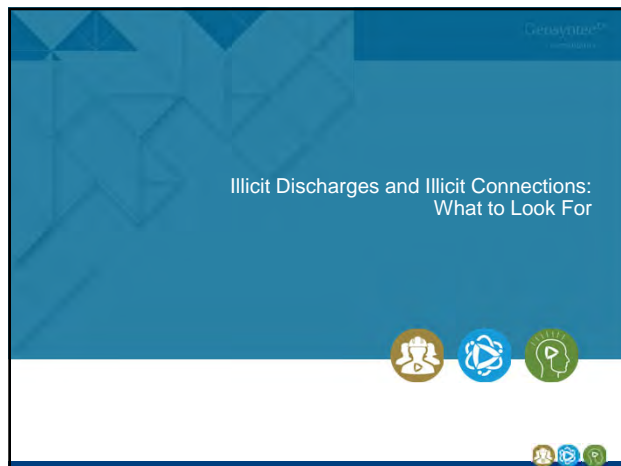


9

IDDE Program Overview

IDDE Program Requirement	Completion Date from Effective Date of Permit					
	Year 3 (by 6/30/21)	Year 4 (by 6/30/22)	Year 5 (by 6/30/23)	Year 6 (by 6/30/24)	Year 10 (by 6/30/28)	Year 13 (by 6/30/31)
Written IDDE Program Plan		X				
SSO Inventory		X				
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism or Ordinance	X					
Outfall/Interconnection Inventory and Initial Ranking		X				
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls			Begin		X	
Catchment Investigations – all Problem, High and Low Priority Outfalls						X

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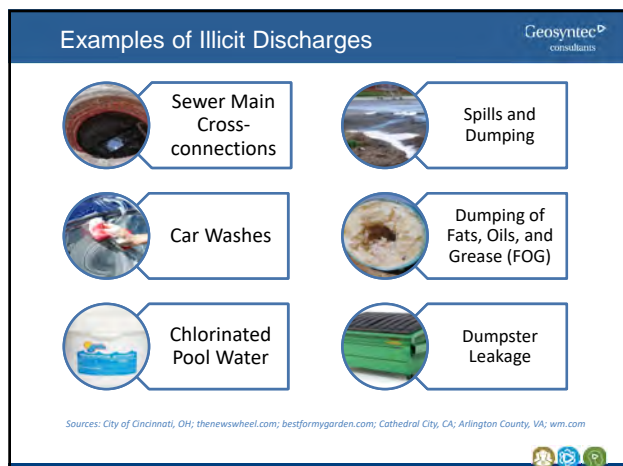
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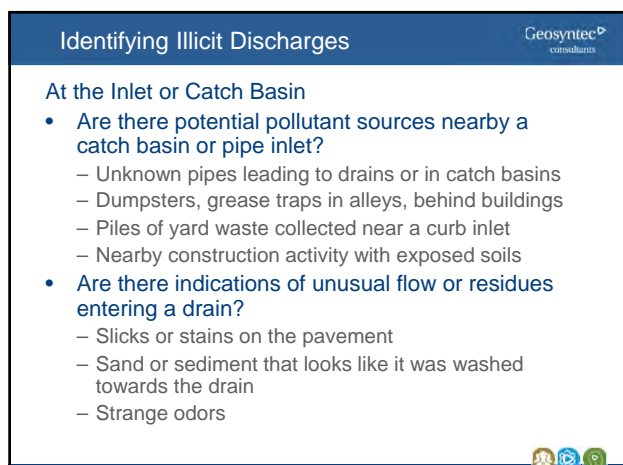
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Identifying Illicit Discharges

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At the Outlet

- Is water flowing but it hasn't rained recently?
- Does the water itself look or smell unusual?
 - Discolored, oily sheen, suds or bubbles
 - Oily, sulfur, sewage, or laundry detergent odors
- Is there evidence of past abnormal discharges?
 - Lots of algae growth in/around the pipe
 - Stains at the waterline of the pipe or on rocks downstream
 - Greasy, oily residues



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Identifying Illicit Discharges

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Illicit Discharges – What to Look For

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Oil and/or Fuels

Color: Rainbow sheen floating on top of water surface

Odor: May have strong petroleum or gasoline smell

Turbidity and Floatables: Oil sheen, red, brown, black streaks

When disturbed, sheen will swirl together



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Illicit Discharges – What to Look For Geosyntec[®]
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Grease

Color: Yellow, Golden, Brown


Odor: Stale greasy smell, petroleum, cooking grease

Turbidity and Floatables:
Material typically clumps/strings together, will most likely have other material floating within



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Sediment

Color: Orange, yellow, red, chocolate milk

Odor: None

Turbidity and Floatables:
Typically find deposits settled to bottom, water can be very turbid, may not be able to see bottom of stream



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Sewage

Color: Grey

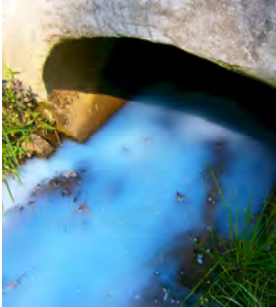
Odor: Strong sewage smell, sulfur, fecal matter

Turbidity and Floatables:
Foam, bubbles, fecal solids, food waste, toilet paper



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Illicit Discharges – What to Look For Geosyntec
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Soaps and Detergents

Color: Milky white, grey, cloudy

Odor: Fragrance like laundry detergent/soaps


Turbidity and Floatables: Bubbles, foam, highly turbid



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Allowable Non-Stormwater Discharges Geosyntec
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- Sump pumps *legally* connected to drain
- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration
- Uncontaminated pumped groundwater
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from wetlands
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents




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Dry Weather Screening






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Dry Weather Screening and Sampling


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Source: flickr.com

Dry Weather Sampling


- All outfalls inspected within 6 years of permit date (by 2024)
- Based on priority ranking
- Weather conditions
 - Less than 0.1 inches of rain in past 24-hour
 - No significant snow melt



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Dry Weather Screening and Sampling


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Source: Los Alamos National Laboratory

Record


- Unique identifier
- Receiving water
- Inspection date
- Dimensions
- Shape
- Material
- Spatial location
- Physical condition



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Dry Weather Screening and Sampling


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Source: drainiac.com

Indicators of potential non-stormwater discharges


- Presence or evidence of suspect flow
- Odor
- Color
- Turbidity
- Floatables
- Oil Sheen



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Dry Weather Screening and Sampling


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Source: sanair.com

Sampling

- Ammonia
- Chlorine
- Conductivity
- Salinity
- *E. Coli* (freshwater) or enterococcus (saline or brackish water)
- Surfactants
- Temperature
- Pollutants of Concern




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Dry Weather Flow


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Likely sewer input indicators

- Olfactory (smell) or visual evidence of sewage
- Ammonia > 0.5 mg/L
- Surfactants > 0.25 mg/L
- Bacteria levels greater than water quality criteria of receiving water or detectable levels of chlorine





Source: chesapeakestormwater.net



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Catchment Investigation

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Catchment Investigation

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Manhole inspection methodology

- Start at outfalls and work up system
- Start at upper parts of catchment and work down
- Must include an investigation of key junction manholes

Identify maps, historic plans, records and other sources of data

Isolate and confirm sources of illicit discharges

- Sandbagging
- Targeted plumbing inspection
- Dye testing
- Video inspection
- Smoke testing



Source: redbankgreen.com


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Junction Manholes

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- Junction Manholes**
 - 2 or more inlets
 - Not including private storm drains or individual catch basins
- Key Junction Manholes**
 - Can represent one or more junction manholes in storm system



Source: onlinetlabels.com

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Catchment Investigation

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- Acceptable**
 - Connections to natural streams or pond outlets
 - Perforated underdrains for infiltration
 - Strictly yard or foundation drains
- Suspicious**
 - Connections to sump pumps or foundation drains with flow
 - Variable flow, suggesting a pump or other household connection
 - Unusual color or odor



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Catchment Investigation

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- Suspicious
 - Unmapped pipe in catch basin with evidence of recent flow



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Catchment Investigation

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- Suspicious
 - Active, variable flow from unmapped pipe in the direction of a house
 - Iron color may be unrelated but helpful to document



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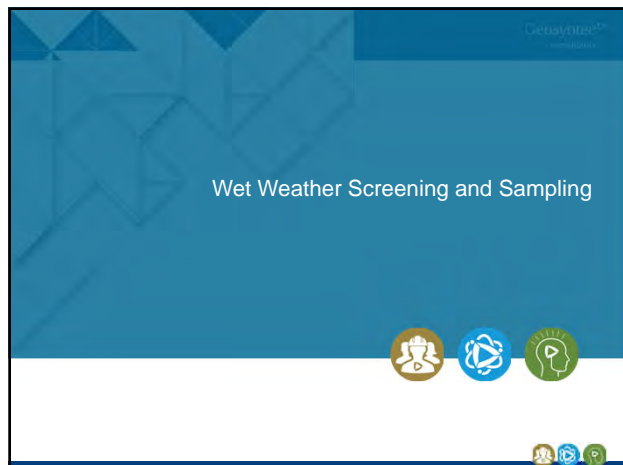
Catchment Investigation

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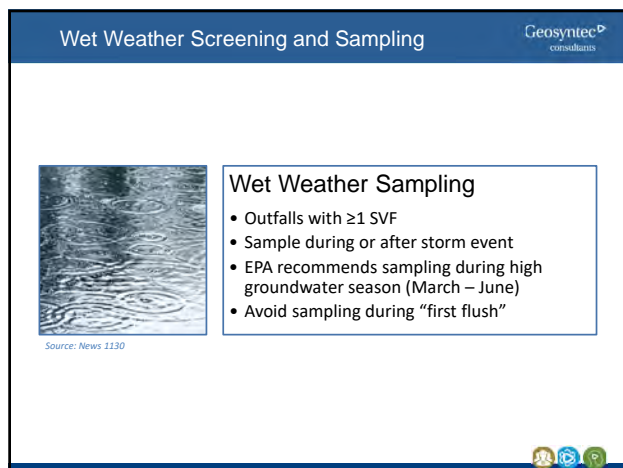
- See something say something
- Context is important
 - Would you expect to see stormwater flow in this area?
- Help target our efforts to investigate suspicious discharges



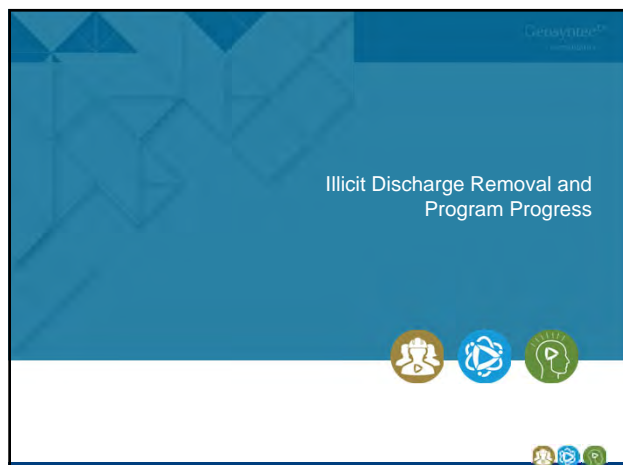
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Illicit Discharge Removal

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- **Record**
 - Location of discharge/source
 - Description
 - Method of discovery
 - Date of discovery
 - Date of elimination, mitigation, or enforcement action OR planned corrective measure and schedule
 - Estimate of volume of flow removed
 - Confirmatory screening results following 1 year of removal



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Indicators of IDDE Program Progress

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- ✓ SSOs/illicit discharges identified and removed
- ✓ Total outfall catchments evaluated
- ✓ Dry weather and wet weather screening and sampling results
- ✓ Volume of sewage removed



Source: elcr.org



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Good Housekeeping

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Good Housekeeping Measures Geosyntec[®]
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- ✓ **Operation and Maintenance Program**
 - ✓ Parks and Open Space
 - ✓ Buildings and Facilities
 - ✓ Vehicles and Equipment
- ✓ **Infrastructure Maintenance Program**
 - ✓ Catch Basin Inspection and Maintenance
 - ✓ Street Sweeping
 - ✓ Winter Road Maintenance
 - ✓ Stormwater Treatment Practices
 - ✓ SWPPP Facilities
- ✓ **Additional Nitrogen Requirements**

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Operation & Maintenance
Procedures

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Good Housekeeping Measures Geosyntec[®]
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DEPARTMENT	FACILITIES OR ACTIVITIES RESPONSIBLE FOR MAINTAINING
Facilities	<ul style="list-style-type: none"> • 17 Town-owned buildings including schools
Public Works – Highway and Buildings-Grounds	<ul style="list-style-type: none"> • Town roads and sidewalks including winter maintenance • Town-owned properties and land • Town-owned drainage system including catch basins • Administration of outside rubbish and recycling contracts • Stormwater treatment best management practices • Equipment maintenance • Cemetery • Town owned parks and grounds • Town and school owned athletic fields
Environmental Services	<ul style="list-style-type: none"> • Wastewater treatment facility • Water treatment plant
Recreation	<ul style="list-style-type: none"> • Recreational facilities such as pools, playgrounds, tennis, and basketball courts

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Parks & Open Space

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Parks / Recreation Fields / Open Space	Managed Turf	Fuel / Chemical Storage	Waste Collection	Sanitary Services	Dog Waste Station
Trails and Green Space					
Foley Brook Conservation Area	No	No	No	No	Yes
Heron Point	No	No	No	No	Yes
Hilton Esplanade	No	No	No	No	Yes
Manchester-Rochester Jct Rail Trail	No	No	No	No	Yes
Piscataway River - Lippelle Conservation Area	No	No	No	No	Yes
Piscataway River Natural Area	No	No	No	No	Yes
Riverbend Environmental Education Area	No	No	No	No	Yes
TNC Lubberland Creek - Jeff's Hill Nature Conservancy	No	No	No	No	Yes
Turtle Swamp - Grapevine Hill	No	No	No	No	Yes
Athletic Fields					
Beane-Hoscroft Field	Yes	No	No	Yes	No
Beaulieu Field	Yes	No	No	Yes	No
Leo Landroche Field	Yes	No	No	Yes	No
Parks and Outdoor Recreation					
Aqua Land Splash Pad	No	No	No	No	Yes
Beech Street Facility	No	No	No	Yes	Yes
Community Center (Terrace Drive)	No	No	Yes	Yes	Yes
Waterfront Park	No	No	No	No	Yes



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Parks & Open Space - Procedures

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- **Lawn Maintenance and Landscaping**
 - Collect grass clippings and leaves after mowing – do not blow them into street or storm drains
 - Brush off mowers – do not hose them off onto impervious surfaces
 - Properly compost organic waste
 - Maintain grass heights of 3-inches
- **General Maintenance**
 - Sweep parking lots
 - Inspect pet waste stations
 - Repair damaged landscape, mulch, or bare areas to prevent erosion
 - Store sand/salt under roof or in covered containers



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Buildings & Facilities

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Table 2-1: Town-Owned Building and Facility Inventory

Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles
Fire Department	4 Young Lane	No	No	Yes
Police Department	70 Exeter Street	No	No	No
Public Library	1 Elm Street	No	No	No
Town Hall/Offices	186 Main Street	No	No	No
Public Works Department (Includes Material Storage and Bulk Storage and Laydown Area)	4 Young Lane	Yes	Fuel and Salt Shed	Yes
Water Treatment Plant	40 Durell Drive	No	No	No
Wastewater Treatment Plant	8 Young Lane	No	No	Yes
Snow Dump	Beech Street Ext.	No	Salt Shed	No
Newmarket Transfer Station ¹	345 Ash Swamp Road	N/A	N/A	N/A



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Sanitary Sewer Pump Stations

Station Name/Location	Fuel Backup
Creeighton Street Station/ 0 Young Lane	Diesel
Bay Road Station/ 10S Bay Road	Diesel

Water Pump Station

Station Name/Location	Fuel Backup
34R Henshey Lane	Propane



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Buildings & Facilities - Procedures Geosyntec[®] consultants

- Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Buildings should be routinely inspected for areas of potential leaks.
- Streets and parking lots surrounding municipal buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system
- Use dry cleanup methods (e.g., squeegee and dustpan, sweeping, and absorbents as last step) rather than hosing down surfaces





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Vehicles & Equipment Geosyntec[®] consultants

Facility Name	Location	Fuel or Chemical Storage	Vehicle or Equipment Maintenance	Other Outdoor Storage/ Waste Receptacles
Fire Department	4 Young Lane	No	Yes	No
Police Department	70 Exeter Street	No	No	No
Public Works Department	4 Young Lane	Yes	Yes	Yes

- All vehicle maintenance and especially fluid exchanges are done inside the Public Works Facility that has multiple vehicle bays. Waste oil is stored indoors within the waste oil tank.
- Conduct routine inspections of heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.
- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches
- Vehicle washing is done indoors in bays equipped with a floor drain that is connected to a sanitary sewer.
- Smaller vehicles are also at times washed at commercial car wash facilities.



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Vehicles & Equipment - Procedures

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- Avoid discharge of any wash water directly to the storm drainage system or surface water (e.g., stream, pond, or drainage swale).
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities
- Dry cleanup methods are recommended within garage facilities. Do not wash down floors and work areas with water.
- Fuel storage facilities have secondary containment and are located in a secure area.
- Use designated areas for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors. If parts cleaning equipment is not available, then capture parts cleaning fluids.



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Infrastructure Maintenance Procedures



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Catch Basin Inspection & Maintenance

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No catch basins at any time shall be more than 50% full*

- * 50% full is $\frac{1}{2}$ the distance between the bottom interior of the catch basin to the invert of the deepest outlet

If a catch basin is more than 50% full during two consecutive cleaning events/inspections, need to investigate drainage area sources and abate contributing sources



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Catch Basin Cleanings

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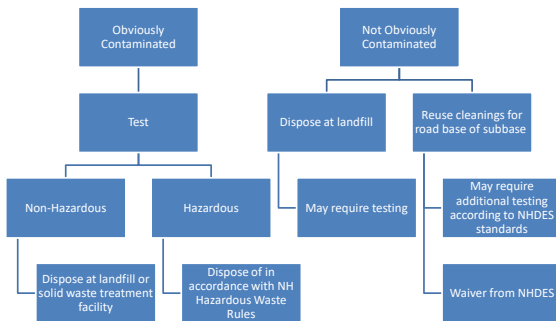
- Per MS4 Permit, CB cleanings must be properly **stored** and **contained** prior to disposal or reuse
 - Do NOT discharge to receiving waters
- Stockpile and cover CB cleanings on an impervious surface



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Catch Basin Cleanings - Contamination

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Street Sweeping Frequency

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- A minimum of twice per year
 - In spring following winter activities such as sanding
 - In fall following leaf fall
- More frequent sweeping in areas with high loading
- Report number of miles cleaned and volume or mass of material removed



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Street Sweeping Cleanings

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- Properly dispose of collected street sweeping residuals in a contained stockpile on an impervious surface
 - Does NOT discharge directly to a storm drain catch basin or nearby surface water or wetland area until tested
- See Catch Basin Cleanings slide for street sweeping disposal and testing requirements



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Winter Road Maintenance

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- When storm is predicted all equipment must be fueled up and ready to go
- Do not overland the trucks
- Follow the snow and ice control plan



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Stormwater Treatment Practices

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Annual inspection for all stormwater treatment practices

- Erosion of soil
- Poor vegetation
- Standing water
- Trash and debris
- Woody vegetation
- Inlet and outlet condition



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SWPPP Inspections


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- Quarterly inspections (3 dry weather, 1 wet weather)
- Identification of any previously unidentified discharges from the site;
- Any control measures needing maintenance or repair;
- Any failed control measures that need replacement.
- Any SWPPP changes required as a result of the inspection.

Stormwater Pollution Prevention Plan
Department of Public Works Operating Facility
4 Young Lane
Newmarket NH, New Hampshire

Stormwater Pollution Prevention Plan
Department of Public Works Snow Dump
Beech Street Extension
Newmarket NH, New Hampshire

Stormwater Pollution Prevention Plan
Wastewater Treatment Facility
8 Young Lane
Newmarket NH, New Hampshire



EPA/600/R-03/001 Final Update 10/2003

May 2022

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Additional Nitrogen Impairment Requirements

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- Use of slow-release fertilizer on Town property
 - Reduce and manage use
- Manage grass cuttings and leaf litter on Town property
 - Do not blow material onto impervious surfaces
- Increased street sweeping or leaf litter collection program
 - Streets and parking lots (two times per year)





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Snapshot: Year 6 IDDE Requirements

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- Dry Weather Screening**
 - ❖ All 27 Outfalls
 - ❖ Presence or absence of dry weather flow
 - ❖ Sampling
 - ❖ Condition assessment
- Follow up prioritization of outfalls based on dry weather screening**



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Newmarket 2022 IDDE Training

Name

Signature

Karen Bloom

Karen Bloom

Joel Drelick

Joel Drelick

Sam Heffron

Samuel T. Heffron

Todd Gianotti

Todd M. Gianotti

Mark Proolt

Mark Proolt

GERRY HAMEL

Gerald Hamel

Raig Eastman

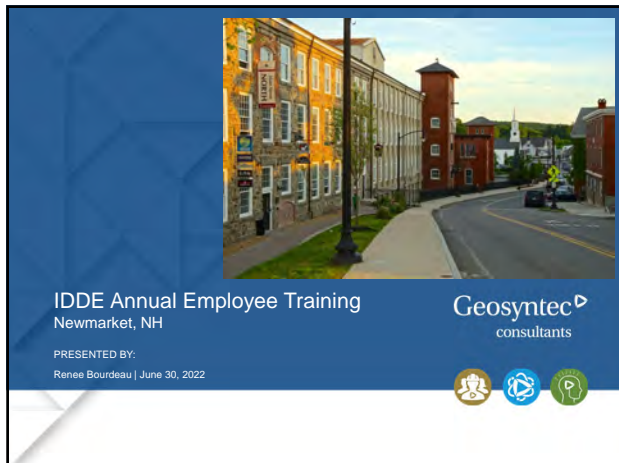
Raig Eastman

Daniel Kelley

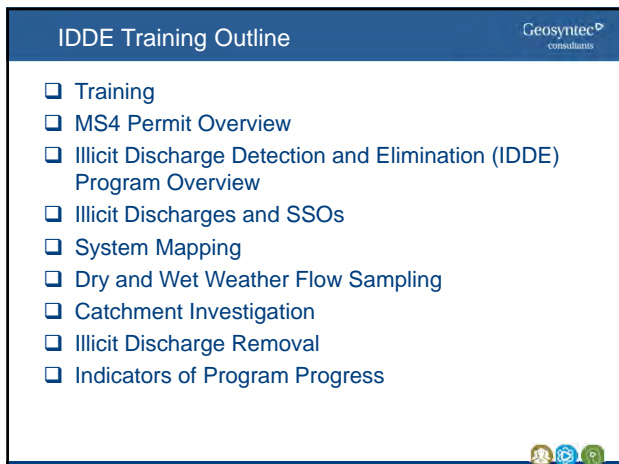
Daniel Kelley

Rick MALASKY

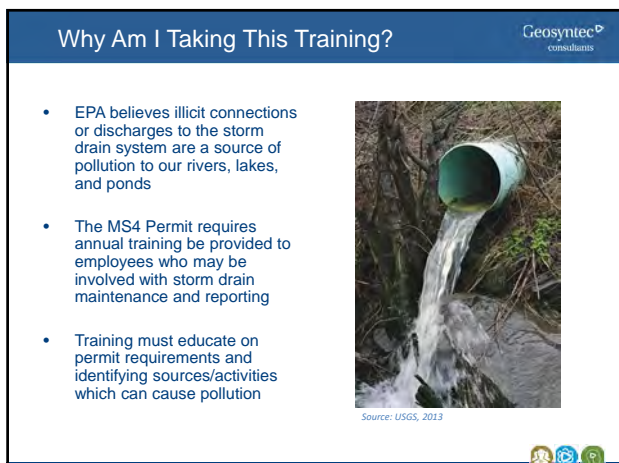
Rick Malasky



1



2



3

MS4 Permit Overview

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- NPDES**
 - Authorization to discharge under the National Pollutant Discharge Elimination System (NPDES)
- MS4**
 - General permit for stormwater discharges from Small Municipal Separate Storm Sewers (MS4)
- Permit**
 - Permit effective July 1, 2018
 - Modification effective January 6, 2021

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MS4 Permit Overview

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- Stormwater is the #1 cause of water quality impairments in NH
- New permit replaces single 2003 permit that covered MA & NH
- 5-year permit term
- Permit may cover 60 municipalities in NH
- Permit contains no end-of-pipe limits
- Addresses nutrients and flooding issues across NH

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MS4 Permit Overview: Minimum Control Measures

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- MCM 1:** Public Education and Outreach
- MCM 2:** Public Involvement
- MCM 3:** Illicit Discharge Detection Elimination
- MCM 4:** Construction Site Runoff Control
- MCM 5:** Post-Construction Site Runoff Control
- MCM 6:** Good Housekeeping

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IDDE Program Overview

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- Illicit discharges and SSOs
- System mapping
- Written IDDE program
- Priority Outfall/Interconnection Ranking
- Dry Weather Screening and Sampling
- Catchment Investigation
- Wet Weather Screening and Sampling
- Illicit Discharge Removal
- Indicators of IDDE Program Progress



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IDDE Program Overview

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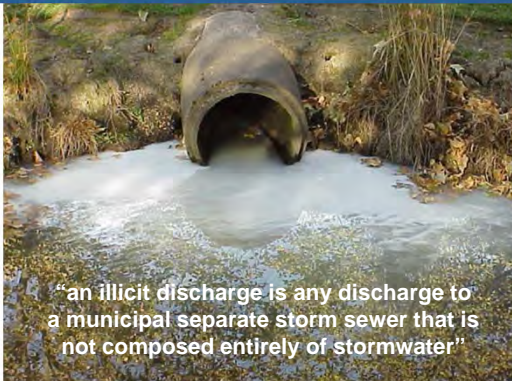
IDDE Program Requirement	Completion Date from Effective Date of Permit					
	Year 3 (by 6/30/21)	Year 4 (by 6/30/22)	Year 5 (by 6/30/23)	Year 6 (by 6/30/24)	Year 10 (by 6/30/28)	Year 13 (by 6/30/31)
Written IDDE Program Plan		X				
SSO Inventory		X				
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism or Ordinance	X					
Outfall/Interconnection Inventory and Initial Ranking		X				
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls			Begin		X	
Catchment Investigations – all Problem, High and Low Priority Outfalls						X



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Illicit Discharge

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“an illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater”

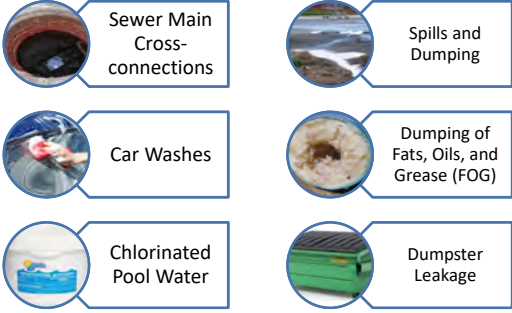
Source: City of Milwaukee, Oregon



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Examples of Illicit Discharges

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Sources: City of Cincinnati, OH; thenewswheel.com; bestformygarage.com; Cathedral City, CA; Arlington County, VA; wfm.com

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Allowable Non-Stormwater Discharges

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- Sump pumps *legally* connected to drain
- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration
- Uncontaminated pumped groundwater
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from wetlands
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

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Sanitary Sewer Overflows (SSOs)

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"a discharge of untreated sanitary wastewater from a municipal sanitary sewer"

Source: pipeandplant.com

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SSO Inventory

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- Identify all known locations where SSOs have been discharged within the previous 5 years
- SSO Inventory
 - Location
 - Statement of discharge **directly to surface water or entered MS4**
 - Date and time of SSO
 - Estimated volume
 - Description, including known or suspected causes
 - Mitigation and corrective measures completed with dates implemented
 - Mitigation and corrective measures planned with implementation schedule



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System Mapping

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- Phase I (by 2023)
 - Outfalls and receiving waters
 - Open channel conveyances
 - Interconnections with other MS4s/storm sewer systems
 - Stormwater treatment systems
 - Waterbodies by name and impairment
 - Initial catchment delineations
- Phase II (by 2031)
 - Outfall spatial location
 - Pipes
 - Manholes
 - Catch basins
 - Refined catchment delineations
 - Municipal sanitary system
 - Municipal combined sewer system

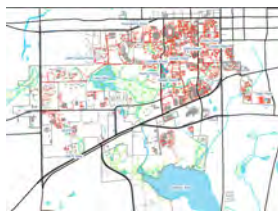


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System Mapping

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- Recommended Elements
 - Storm sewer material, pipe size, and age
 - Sanitary system material, pipe size, and age
 - Privately-owned stormwater treatment structures
 - Properties served by septic system
 - Seasonal high water-table
 - Topographic
 - Orthophotography
 - Completed work of past investigations
 - Locations of illicit discharges




Source: University of Florida



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Written IDDE Program

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Source: vectorstock.com

- Written document (digital or hardcopy)
- Includes
 - Authority the permittee will use to implement all aspects of the program
 - Statement of IDDE responsibilities
 - Program procedures

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Priority Ranking

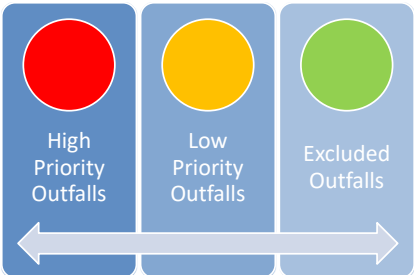
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- Past discharge complaints/reports
- Poor receiving water quality
- Density of generating sites
 - Car washes, gas stations, garden centers, industrial manufacturing areas
- Age and development of infrastructure
- Sewer conversion (formerly septic systems)
- Historic combined sewer systems
- Culverted streams
- Water quality limited waterbodies that received a discharge from the MS4

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Priority Ranking


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Dry Weather Screening and Sampling

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Source: flickr.com


Dry Weather Sampling

- All outfalls inspected within 6 years of permit date (by 2024)
- Based on priority ranking
- Weather conditions
 - Less than 0.1 inches of rain in past 24-hour
 - No significant snow melt

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Dry Weather Screening and Sampling

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Source: Los Alamos National Laboratory


Record

- Unique identifier
- Receiving water
- Inspection date
- Dimensions
- Shape
- Material
- Spatial location
- Physical condition

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Dry Weather Screening and Sampling

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Source: drainiac.com


Indicators of potential non-stormwater discharges

- Presence or evidence of suspect flow
- Odor
- Color
- Turbidity
- Floatables
- Oil Sheen

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Dry Weather Screening and Sampling


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Sampling

- Ammonia
- Chlorine
- Conductivity
- Salinity
- *E. Coli* (freshwater) or enterococcus (saline or brackish water)
- Surfactants
- Temperature
- Pollutants of Concern

Source: sanair.com




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Dry Weather Flow


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Likely sewer input indicators

- Olfactory (smell) or visual evidence of sewage
- Ammonia > 0.5 mg/L
- Surfactants > 0.25 mg/L
- Bacteria levels greater than water quality criteria of receiving water or detectable levels of chlorine



Source: chesapeakestormwater.net



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Catchment Investigation

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Manhole inspection methodology

- Start at outfalls and work up system
- Start at upper parts of catchment and work down
- Must include an investigation of key junction manholes

Isolate and confirm sources of illicit discharges

- Sandbagging
- Targeted plumbing inspection
- Dye testing
- Video inspection
- Smoke testing

Identify maps, historic plans, records and other sources of data



Source: redbankgreen.com



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Junction Manholes

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- **Junction Manholes**
 - 2 or more inlets
 - Not including private storm drains or individual catch basins
- **Key Junction Manholes**
 - Can represent one or more junction manholes in storm system



Source: onlinelabels.com

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System Vulnerability Factors (SVFs)

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- History of SSOs
- Common or twin-invert manholes serving storm and sanitary sewers
- Common trench construction serving storm and sanitary sewers
- Crossings of storm and sanitary sewers
 - Where sanitary system is shallower
- Inadequate sanitary level of surface
 - Regular surcharging, customer backups/complaints
- Areas formerly served by combined sewer systems
- Sanitary sewer infrastructure defects

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Wet Weather Screening and Sampling

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Source: News 1130

Wet Weather Sampling

- Outfalls with ≥ 1 SVF
- Sample during or after storm event
- EPA recommends sampling during high groundwater season (March – June)
- Avoid sampling during “first flush”

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Illicit Discharge Removal

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- **Record**
 - Location of discharge/source
 - Description
 - Method of discovery
 - Date of discovery
 - Date of elimination, mitigation, or enforcement action OR planned corrective measure and schedule
 - Estimate of volume of flow removed
 - Confirmatory screening results following 1 year of removal



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Indicators of IDDE Program Progress

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- ✓ SSOs/illicit discharges identified and removed
- ✓ Total outfall catchments evaluated
- ✓ Dry weather and wet weather screening and sampling results
- ✓ Volume of sewage removed



Source: elcr.org



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Snapshot: Year 5 Requirements

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- **Phase I System Mapping**
 - ❖ Outfalls and receiving waters
 - ❖ Open channel conveyances
 - ❖ Interconnections with other MS4s/storm sewer systems
 - ❖ Stormwater treatment systems
 - ❖ Waterbodies by name and impairment
 - ❖ Initial catchment delineations
- **Dry Weather Screening**
 - ❖ All 27 Outfalls
 - ❖ Presence or absence of dry weather flow
 - ❖ Sampling
 - ❖ Condition assessment



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Questions?

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APPENDIX F

Town-Wide Operations and Maintenance Program

Town-Wide Operation and Maintenance (O & M) Program

Prepared For:

**Town of Newmarket
New Hampshire**



May 2022

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ATTACHMENTS

Attachment A – Snow and Ice Plan

Attachment B – Town Catch Basin Inspection Form

Attachment C – Street Sweeping Route Map

Attachment D – Annual Stormwater BMP Inspection Forms

PURPOSE

The 2017 New Hampshire National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit requires the Town to develop a stand-alone, Operations and Maintenance (O&M) Plan to describe its Good Housekeeping and Pollution Prevention measures consistent with the requirements of Minimum Control Measure (MCM) 6 or Section 2.3.7 of the Permit.

This Town-wide O&M plan is intended to be a living document and should be updated as facilities and/or current practices change. This O&M Plan can serve as a reference guide to help maintain consistency and understanding of activities amongst the various Departments as well as to help train new employees.

This O&M Plan includes an inventory of Town-owned facilities (e.g., buildings, DPW facility, parks and recreational facilities, schools, wastewater treatment facilities, and stormwater infrastructure). It describes specific good housekeeping and pollution prevention procedures and measures used by Town personnel in the operations and maintenance activities associated with these facilities.

The Permit identifies principal best management practices (BMPs) for permittee-owned facilities or activities that should be included in the O&M Plan, these include:

- a) Parks and Open Spaces
- b) Buildings and Facilities
- c) Vehicle/Equipment Storage and Maintenance Facilities
- d) Stormwater Infrastructure (e.g., catch basins, outfalls, and treatment BMPs)
- e) Winter Road Maintenance
- f) Pesticide, Fertilizer and Herbicide Storage, Use and Disposal

The O&M activities described in this O&M Plan involve several Town Departments. These Departments and the facilities or activities they maintain are detailed in table below.

DEPARTMENT	FACILITIES OR ACTIVITIES RESPONSIBLE FOR MAINTAINING
Facilities	<ul style="list-style-type: none">• 17 Town-owned buildings including schools
Public Works – Highway and Buildings/Grounds	<ul style="list-style-type: none">• Town roads and sidewalks including winter maintenance• Town-owned properties and land• Town-owned drainage system including catch basins• Administration of curbside rubbish and recycling contracts• Stormwater treatment best management practices• Equipment maintenance• Cemetery• Town owned parks and grounds• Town and school owned athletic fields
Environmental Services	<ul style="list-style-type: none">• Wastewater treatment facility• Water treatment plant
Recreation	<ul style="list-style-type: none">• Recreational facilities such as pools, playgrounds, tennis, and basketball courts

This document is organized by best management practice (BMP) topic area and references other BMPs within each section. The best management practices are as follows:

- BMP 1 – Parks and Open Space
- BMP 2 – Buildings and Facilities

- BMP 3 – Maintenance of Vehicles and Equipment
- BMP 4 – Catch Basin Cleaning
- BMP 5 – Street/Parking Lot Sweeping
- BMP 6 – Stormwater Treatment BMPs
- BMP 7 – Winter Maintenance
- BMP 8 – Fertilizer, Pesticides and Herbicides: Use, Storage and Disposal

BMP 1: Parks and Open Space

Parks and open space operations and maintenance activities commonly involve the operation of equipment such as mowers and tractors; disposal of waste from mowing, planting, weeding, raking, pruning, and trash collection; application of pesticides, herbicides, and fertilizers; cleaning and maintenance of park amenities such as play equipment, restrooms, and structures; and snow removal. The goal of this BMP is to provide guidance to municipal employees on the operation and maintenance of parks and open space to reduce the discharge of pollutants from the MS4.

Table 1-1 provides an inventory and a summary of the various activities and control measures at each of the parks, recreation fields and open space areas maintained by the Town.

Table 1-1: Inventory of Town Parks, Recreation Fields, and Open Space Areas

Parks / Recreation Fields / Open Space	Managed Turf	Fuel / Chemical Storage	Waste Collection	Sanitary Services	Dog Waste Station
<i>Trails and Green Space</i>					
Follets Brook Conservation Area	No	No	No	No	Yes
Heron Point	No	No	No	No	Yes
Hilton Easement	No	No	No	No	Yes
Manchester-Rochester Jct Rail Trail	No	No	No	No	Yes
Piscassic River – Loiselle Conservation Area	No	No	No	No	Yes
Piscassic River Natural Area	No	No	No	No	Yes
Riverbend Environmental Education Area	No	No	No	No	Yes
TNC Lubberland Creek – Jeff's Hill Nature Conservancy	No	No	No	No	Yes
Tuttle Swamp – Grapevine Hill	No	No	No	No	Yes
<i>Athletic Fields</i>					
Beanie Howcroft Field	Yes	No	No	Yes	No
Beaulieu Field	Yes	No	No	Yes	No
Leo Landroche Field	Yes	No	No	Yes	No
<i>Parks and Outdoor Recreation</i>					
Aqua Land Splash Pad	No	No	No	No	Yes
Beech Street Facility	No	No	No	Yes	Yes
Community Center (Terrace Drive)	No	No	Yes	Yes	Yes
Waterfront Park	No	No	No	No	Yes

Procedures

Lawn Maintenance and Landscaping

The Town Buildings and Grounds crew mows and maintains the grassed and landscaped areas associated with parks and opens spaces in the Town, including school-owned properties. The Town implements the following lawn maintenance and landscaping procedures to reduce discharge of pollutants from the MS4 areas.

- Remove debris and trash from landscaped areas prior to mowing.

- Collect grass clippings and leaves after mowing. Do not blow or wash them into the street, gutter, or storm drains.
- Properly compost or dispose of organic waste after mowing, weeding, and trimming.
- Reduce mowing frequencies wherever possible by establishing low/no-mow areas in lesser-used spaces.
- Maintain grass heights of 3-inch to reduce the need for irrigation and plant stress during drought.
- Brush off mowers (reels and decks) and tractors over grassy areas or in contained washout areas.
- Leave clippings on grassy areas or dispose of them in the trash or by composting.
- Do not hose off mowers over paved areas that drain into the MS4 or directly to surface waters.
- Ensure mower blades are routinely sharpened to reduce plant damage.
- Follow proper vehicle and equipment maintenance procedures to prevent leaks.
- Do not allow grease from mowers to fall onto areas where they can be washed into the stormwater system.

General Maintenance

The Town implements the following general maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- When painting park equipment, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Sweep parking lots with a street sweeper and dispose of street sweepings in designated areas (See BMP 6 for more information).
- Never wash debris from parking lots into the storm drain.

Pesticides, Herbicides, and Fertilizers

The Town does not apply pesticides, herbicides, or fertilizer to property that it maintains. The School Facilities Department hires a licensed commercial applicator to apply any fertilizers or any other lawn maintenance chemicals on an as needed basis to maintain safe playing surfaces on the school-maintained athletic fields and other recreational areas. Use of lawn chemicals is limited to the higher intensity use fields associated with the middle and high schools. No lawn chemicals are stored onsite.

The Town implements the following pesticide, herbicide, and fertilizer procedures to reduce discharge of pollutants from the MS4 areas.

- Where appropriate, non-chemical turf management practices such as aeration, dethatching and over-seeding should be used to promote plan health and turf density.
- If fertilizers are needed, only slow-release fertilizers shall be used on Town and School maintained property.
- Also, on as needed basis, the Town will hire a licensed commercial applicator to apply weed control materials to limit excessive weed and invasive plant growth in select areas.
- See BMP 8 for more information on storage, use and disposal.

Waste Management

Trash disposal containers are managed by the Department of Public Works. Currently, the Town empties trash containers approximately three times a week during the non-winter months and less frequently during winter months. The Town also places signage in areas concerning the proper disposal of pet wastes. The Town implements the following waste management procedures to reduce discharge of pollutants.

- All waste and recycling containers must be leak-tight with tight-fitting lids or covers.
- Conduct periodic inspections of waste areas to check for leaks and spills.
- Place waste and recycling containers indoors or under a roof or overhang whenever possible.
- Clean and sweep up around outdoor waste containers regularly.
- Do not wash out waste or recycling containers outdoors or in a parking lot.
- Ensure there are enough trash and recycling containers at appropriate areas. Monitor waste and recycling containers at heavily used sites and on holidays to ensure that there is no overflow.

Pet Waste

The Town has established pet waste disposal stations and signage in popular dog walking locations, including every park. The Town has produced public education messages to promote pet waste cleanup and disposal. These messages are generally posted in the Spring during the dog relicensing period. The Town inspects the stations on a frequent basis to ensure that stations have bags and trash receptacles are emptied.

Waterfowl Congregation

The Town installed signage to discourage public feeding.

Erosion and Poorly Vegetated Areas

The Town implements the following erosion control procedures to reduce discharge of pollutants.

- Repair damage to landscaped or mulch or vegetated bare areas as soon as possible to prevent erosion. If there are areas of erosion or poor vegetation, repair them as soon as possible, especially if they are within 50 feet of a surface water (e.g., pond, lake, or river).
- In select areas, use appropriate barriers/fencing to avoid vehicle traffic and damage due to compaction and tire wear

Winter Maintenance

The Town implements the following winter maintenance procedures to reduce discharge of pollutants

- Store salt or sand for snow removal under a roof or in a covered container and on impervious surfaces.
- Implements a detailed Snow and Ice Plan, Attachment A, on Town sidewalks and streets to reduce salt and sand application.
- Any damage done to vegetated areas caused by plows or deicing materials should be repaired as early as possible in the spring.
- See BMP 7 for more information on property snow disposal and storage procedures.

BMP 2: Buildings and Facilities

Municipal buildings and facilities (schools, municipal offices, police and fire stations, etc.) often house various chemicals, such as petroleum products and hazardous materials. As a result, these buildings and facilities are potential sources of pollutant discharges to the storm drainage system. The goal of this BMP is to provide guidance to municipal employees on the use, storage, and disposal of chemicals and other stormwater pollutants to reduce the discharge of pollutants from the MS4. If services are contracted, this O&M Plan should be provided to the contractor.

Table 2-1 and **2-2** provide a listing of Town- and school-owned buildings and facilities, respectively, that use, store and/or dispose of petroleum products, materials, aggregates, or chemicals. The Town has adopted various practices to minimize exposure of stored material and/or related maintenance activities to stormwater. The School Facilities and Maintenance Department are responsible for maintaining the school grounds and athletic fields.

The Department of Public Works Facility has one main fueling station supplied by an underground storage tank. There are no catch basins within 50 feet of the fueling station limiting the potential for spills from entering the storm drain system. Additionally, overland flow from the sites flows into an open drainage swale into a stormwater best management practice. The dispensing nozzles are equipped with automatic shut-off valves triggered when fuel tanks are full.

Table 2-1: Town-Owned Building and Facility Inventory

Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles
Fire Department	4 Young Lane	No	No	Yes
Police Department	70 Exeter Street	No	No	No
Public Library	1 Elm Street	No	No	No
Town Hall/Offices	186 Main Street	No	No	No
Public Works Department (Includes Material Storage and Bulk Storage and Laydown Area)	4 Young Lane	Yes	Fuel and Salt Shed	Yes
Water Treatment Plant	40 Durell Drive	No	No	No
Wastewater Treatment Plant	8 Young Lane	No	No	Yes
Snow Dump	Beech Street Ext.	No	Salt Shed	No
Newmarket Transfer Station ¹	345 Ash Swamp Road	N/A	N/A	N/A

Table 2-2: Inventory of School Facilities and Related Operational and Maintenance Activities

Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles/ Dumpsters
Newmarket Elementary School	243 S Main Street	No	No	Yes
Newmarket Jr/Sr High School	213 S Main Street	No	No	Yes
Newmarket School District SAU 31	186 S Main Street	No	No	Yes

¹The Newmarket transfer station is located outside of the regulated MS4 area.

Sanitary Sewer System

The Wastewater Treatment Facility (WWTF) is located at 8 Young Lane and there are two sanitary sewer pump stations. The sanitary sewer pump stations have diesel storage tanks to fuel the back-up generators. **Table 2-3** lists the sanitary sewer pump stations in the MS4 area that have ancillary petroleum fuel storage. These diesel storage tanks are double-wall, steel tanks for spill and leak protection. The Town follows procedures, described below, to ensure tanks are in good condition and that there are no leaks and spills during refilling.

Table 2-3 Inventory of Sanitary Sewer Pump Stations with Petroleum Fuel Storage in the MS4 Area

Station Name/Location	Fuel Backup
Creighton Street Station/ 0 Young Lane	Diesel
Bay Road Station/ 10S Bay Road	Diesel

Water Treatment Plant

The Water Treatment Plant is located at 40 Durell Drive. As shown in **Table 2-4**, there is one water service booster/pump station within the MS4 area which has a diesel fuel tank to supply the back-up generator. The Town follows procedures, described below, to ensure tanks remain in good condition and that there are no leaks and spills during refilling.

Table 2-4 Inventory of Water Pump Stations with Petroleum Fuel Storage in the MS4 Area

Station Name/Location	Fuel Backup
34R Hershey Lane	Propane

Procedures

Handling, Storage, Transfer, and Disposal of Trash and Recyclables

The Town generally uses the following recommended hauling, storage, transfer and disposal of trash and recyclable procedures to reduce discharge of pollutants.

- All liquid and solid waste must be disposed of properly. Some of the most common sources of pollution at municipal facilities are a result of littering, improper collection of debris, and improper disposal of solid or liquid waste.
- All waste and recycling receptacles must be leak-tight with tight-fitting lids or covers.
- Keep lids on dumpsters and containers closed at all times unless adding or removing material. If using an open-top roll-off dumpster, cover it and tie it down with a tarp unless adding materials.
- Place waste or recycling receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface and install berms or curbs around the storage area to prevent run-on and run-off.
- Do not locate dumpsters over or adjacent to catch basins.
- Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Clean and sweep up around outdoor waste containers regularly.
- Clean up any liquid leaks or spills with dry cleanup methods.
- Arrange for waste or recycling to be picked up regularly and disposed of at approved disposal facilities.

- Never place hazardous materials, liquids, or liquid-containing wastes in a dumpster or recycling or trash container.
- Do not wash trash or recycling containers outdoors or in parking lots.
- Conduct periodic inspections of solid and liquid waste storage areas to check for leaks and spills.
- Conduct periodic inspections of work areas to ensure that all wastes are being disposed of properly.
- In dumpster areas, regularly pick up surrounding trash and debris and regularly sweep the area.
- In compactor areas, regularly check the hydraulic fluid hoses and reservoir to ensure that there are no cracks or leaks. Regularly sweep the area.

Building Maintenance

The Town generally uses the following recommended building maintenance procedures to reduce discharge of pollutants.

- Paint and other chemicals should not be applied on the outside of buildings when it is raining or prior to expected rain.
- When sanding, painting, power washing, etc., ensure that sites are properly prepared (e.g., use tarps) and cleaned (e.g., use dry cleaning methods) especially if they are near storm drains. Protect catch basins when maintenance work is conducted upgradient of them.
- When painting, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Buildings should be routinely inspected for areas of potential leaks.
- Do not discharge chlorinated pool water into the stormwater system. Water must be properly dechlorinated and tested before it is discharged.
- Streets and parking lots surrounding municipal buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system (refer to BMP 5 for more information).

Storage and Handling of Petroleum Products and Potential Pollutants

The Town generally uses the following recommended storage of petroleum products procedures to reduce discharge of pollutants.

- Floor drains in storage areas should be disconnected from the stormwater system.
- Routinely inspect buildings and facilities for areas of potential leaks.
- Avoid loading/unloading materials in the rain and/or provide cover.
- Retrace areas where materials have been transferred to identify spills. If spills are found, immediately clean them up.
- Time delivery and handling of materials during favorable weather conditions whenever possible (e.g., avoid receiving loads of sand during windy weather).
- Inspect containers for material compatibility and structural integrity prior to loading/unloading any raw or waste materials.
- Use dry cleanup methods (e.g., squeegee and dustpan, sweeping, and absorbents as last step) rather than hosing down surfaces.
- For storage and handling procedures for fertilizers, pesticides, and herbicides, refer to BMP 8.

Spill Response and Cleanup

Prevention of spills is preferable to even the best response and cleanup. To mitigate the effects of a contaminant release, provide proper maintenance and inspection at each facility. To protect against contaminant release, adhere to the following guidance:

- Ensure all employees are properly trained to respond in the case of a spill, understand the nature and properties of the contaminant, and understand the spill control materials and personnel safety equipment. Maintain training records of current personnel on site and retain training records of former personnel for at least three years from the date last worked at the facility.
- Implement good management practices where chemicals and hazardous wastes are stored:
 - a. Ensure storage in closed containers inside a building and on an impervious surface wherever possible.
 - b. If storage cannot be provided inside, ensure secondary containment for 110 percent of the maximum volume of the storage container.
 - c. Locate storage areas near maintenance areas to decrease the distance required for transfer.
 - d. Provide accurate labels, Material Safety Data Sheets (MSDS) information, and warnings for all stored materials.
 - e. Regularly inspect storage areas for leaks.
 - f. Ensure secure storage locations, preventing access by untrained or unauthorized persons.
 - g. Maintain accurate records of stored materials.
- Replace traditional hazardous materials such as pesticides and cleansers with non-hazardous products such as bio-lubricants which can reduce response costs in the case of a spill.

Maintain appropriately stocked spill response kits at each facility and locations where oil, chemicals, or other hazardous materials are handled and stored.

BMP 3: Maintenance of Vehicles and Equipment

Regular maintenance of both municipal and contracted vehicles and heavy equipment not only prolongs the life of municipal assets but also helps reduce the potential for leaking of fluids associated with normal wear and tear. Potential pollutants include fuels, oil, antifreeze, brake fluid, solvents, and battery acid. The goal of this BMP is to provide guidance to municipal employees to help reduce the discharge of pollutants from the MS4 because of leaks from vehicles and equipment. If services are contracted with respect to vehicles and equipment, this BMP should be provided to the contractor.

The Town conducts maintenance of vehicles and/or equipment at the facilities listed in **Table 3-1**. Vehicle maintenance is typically done inside within the maintenance bays. Used and new vehicle fluids are stored indoors on container pallets or tanks with secondary containment

Table 3-1: Building and Facilities Where Vehicle or Equipment Maintenance is Conducted

Facility Name	Location	Fuel or Chemical Storage	Vehicle or Equipment Maintenance	Other Outdoor Storage/ Waste Receptacles
Fire Department	4 Young Lane	No	Yes	No
Police Department	70 Exeter Street	No	No	No
Public Works Department	4 Young Lane	Yes	Yes	Yes

Procedures

Vehicle Maintenance

All vehicle maintenance and especially fluid exchanges are done inside the DPW Facility that has multiple vehicle bays. Waste oil is stored indoors within the waste oil tank.

School Department vehicles are leased; the maintenance occurs offsite through the company that leases the buses.

The Town generally uses the following recommended vehicle maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- Conduct routine inspections of heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.
- Perform routine preventive maintenance to ensure heavy equipment and vehicles are operating optimally.
- Recycle or dispose of waste properly and promptly.
- Sweep and pick up trash and debris as needed.
- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches.

Vehicle Washing

Vehicle washing is done indoors in bays equipped with a floor drain that is connected to a sanitary sewer. Smaller vehicles are also at times washed at commercial car wash facilities.

The Town's Police Department primarily conducts vehicle washing at a designated commercial car wash facility and not on-site. The Fire Department conducts vehicle washing within the stations vehicle bays where floor drains collect the runoff.

School Department vehicles are washed by the company that leases the buses. No vehicle washing occurs on site.

Outdoor Vehicle Washing Procedures

Outdoor washing of municipal vehicles should be avoided unless wash water is contained in a tight tank or similar structure. Where no alternative wash system is available, and full containment of wash water cannot be achieved, the Town implements the following outdoor vehicle washing procedures to reduce discharge of pollutants.

- Avoid discharge of any wash water directly to the storm drainage system or surface water (e.g., stream, pond, or drainage swale).
- Minimize the use of water to the extent practicable.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Do not use solvents except in dedicated solvent parts washer systems or in areas not connected to a sanitary sewer.
- Do not power wash, steam clean, or perform engine or undercarriage cleaning.
- Grassy and pervious (porous) surfaces may be used to promote direct infiltration of wash water, providing treatment before recharging groundwater and minimizing runoff to an adjacent stormwater system. Pervious surfaces or other infiltration-based systems should not be used within wellhead protection areas or within other protected resources.
- Impervious surfaces discharging to the storm drainage system should not discharge directly to a surface water unless treatment is provided. The treatment device should be positioned such that all drainage must flow through the device, preventing bypassing or short-circuiting.
- Periodic sweeping and/or cleaning should be completed to prevent accumulation from forming on the washing area.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.
- Heavily soiled vehicles or vehicles dirtied from salting or snow removal efforts.

Indoor Vehicle Washing Procedures

The Town generally uses the following the recommended indoor vehicle washing procedures to reduce discharge of pollutants.

- Vehicles and equipment should be washed inside whenever possible to reduce runoff to the stormwater system.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface water bodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Designate separate areas for routine maintenance and vehicle cleaning. This helps prevent contamination of wash water by motor oils, hydraulic lubricants, greases, or other chemicals.
- Dry cleanup methods are recommended within garage facilities. Do not wash down floors and work areas with water.
- Bring smaller vehicles to commercial washing stations.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Vehicle Storage

The Town generally uses the following recommended vehicle storage procedures to reduce discharge of pollutants.

- Monitor vehicles and equipment for leaks and use drip pans as needed until repairs can be performed.
- When drip pans are used, avoid overtopping.
- Drain fluids from leaking or wrecked vehicles and parts as soon as possible. Dispose of fluids properly.
- Store and park vehicles on impervious surfaces and/or under cover or indoors whenever possible.

Body Repair and Painting

The Town generally uses the following recommended body repair and painting procedures to reduce discharge of pollutants.

- Conduct all body repair and painting work indoors.
- Minimize waste from paints and thinners. Calculate paint needs based on surface area.
- Use dry cleanup methods (vacuum, sweep) to clean up metal filings and dust and paint chips from grinding, shaving, and sanding. Sweep debris from wet sanding after allowing it to dry overnight on the shop floor. Dispose of waste properly; never dump waste into storm or sanitary sewers.
- Use sanding tools equipped with vacuum capability to pick up debris and dust.

Fueling

The Town generally uses the following fueling procedures to reduce discharge of pollutants.

- Fuel storage facilities have secondary containment and are located in a secure area.
- Fueling areas should be evaluated to ensure that pollutants (e.g., gasoline or oil) do not enter the MS4.

Material Management

The Town generally uses the following recommended material management procedures to reduce discharge of pollutants.

- Store materials and waste in labeled containers under cover and in secondary containment.
- Chemicals should not be combined in containers.
- Hazardous waste must be labeled and stored according to hazardous waste regulations.
- Carefully transfer collected fluids from containers into designated storage areas as soon as possible.
- Store new and used batteries securely to avoid breakage. Store indoors or in secondary containment to contain potential acid leaks. Recycle used batteries.
- Conduct periodic inspections of storage areas to detect possible leaks.
- Do not wash or hose down storage areas unless there is prior approval to collect and discharge the water into the sanitary sewer. Use dry cleanup methods whenever possible.
- Keep lids on containers. Store them indoors or under cover to reduce exposure to rain.
- Inspect and maintain all pretreatment equipment, including interceptors, according to the manufacturer's maintenance schedule and at least once per year.

- Proper spill protocol should be followed to prevent chemicals from entering the stormwater system.

Parts Cleaning

The Town generally uses the following recommended parts cleaning procedures to reduce discharge of pollutants.

- Use designated areas for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors. If parts cleaning equipment is not available, then capture parts cleaning fluids.
- Recycle cleaning solution. Never discharge waste to the sanitary sewer or storm sewer.
- Use steam cleaning or pressure washing of parts instead of solvent cleaning. Cleaning equipment must be connected to an oil/water interceptor prior entering the sanitary sewer.
- When using solvents for cleaning, drain parts over the solvent tank to avoid drips to the floor. Catch excess solutions and divert them back to tank. Allow parts to dry over the hot tank.

Heavy Equipment Washing Procedures

The Town generally uses the following recommended procedures for equipment washing to reduce discharge of pollutants.

- Mud and heavy debris removal should occur on impervious surfaces or within a retention area.
- Maintain these areas with frequent mechanical removal and proper disposal of waste.
- Impervious surfaces with engineered storm drain systems should not discharge directly to a surface water.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface waterbodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Engine and Steam Washing Procedures

The Town generally uses to the following recommended engine and steam washing procedures to reduce discharge of pollutants.

- Maintain drip pans and smaller containers to contain motor oils, hydraulic lubricants, greases, etc. and to capture and collect spills or noticeable leaks observed during washing activities, to the extent practicable.
- Where use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Avoid cleaning with solvents except in dedicated solvent parts washer systems. Make use of pressure washing and steam cleaning.
- Recycle clean solutions and rinse water to the extent practicable.
- Wash water should discharge to a tight tank or a sanitary sewer via an oil/water separator. Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.

BMP 4: Catch Basin Cleaning

The Town has an established catch basin cleaning program, implemented by the Department of Public Works, to minimize the amount of sediment and debris accumulation in the drainage system. The Town tracks inspections and cleaning of catch basins in GIS and has identified approximately 300 catch basins within streets and parking lots maintained by the Town.

The Town has an inspection, tracking and accounting database where data is collected for each catch basin when it is cleaned. The Town uses this information to prioritize the frequency of catch basin cleaning to ensure that no basins are more than 50% full. On an annual basis, the Town uses data collected to prioritize a cleaning schedule for the coming year.

General Permit Requirement

The 2017 MS4 Permit requires that routine inspections, cleaning, and maintenance of catch basins be conducted such that the following conditions are met:

Routine Inspection, Cleaning and Maintenance Conditions	Establish a schedule with the goal of ensuring no catch basin at any time will be more than 50% full.
	Prioritize cleaning efforts based on the receiving water impairment and the potential for the MS4 to contribute to this impairment.
	Maintain a cleaning log to record which catch basins have been cleaned and the volume of material recovered
	Prioritize areas that may require more frequent catch basin cleaning due to higher sediment and/or nutrient loads resulting from nearby land use practices, steep terrain or construction activity.
	Catch basin cleanings be properly stored and contained prior to disposal or reuse such that they do not discharge to receiving waters.

Reporting Requirements

For each Annual Report, the MS4 permit requires the following items be reported:

- Number of catch basins inspected;
- Number of catch basins cleaned;
- Total mass of material removed from all catch basins; and
- Whether any changes are planned to the catch basin cleaning schedule to help ensure no sump is more than 50% full at any given time.

Inspection and Cleaning Procedure

Catch basin inspection and cleaning procedures should address both the grate opening and the catch basin structure, including the sump and any inlet and outlet pipes. During the inspection, any and all observations about the condition of the catch basin structure and water quality shall be documented.

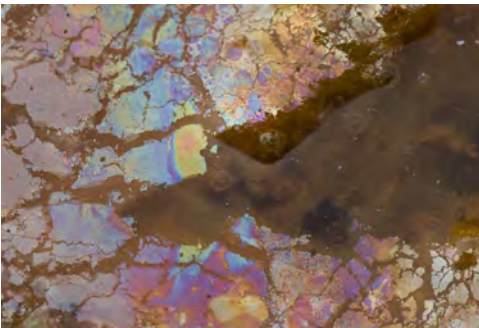
Collect data on the following conditions:

- Physical basin structure, its frame, and the grate; and
- Quality of stormwater conveyed by the structure.

Observations such as oil sheen, discoloration and trash and debris can indicate sources of pollution within the storm drain system.



Petroleum sheen on water surface. If disturbed the petroleum will remain intact and move in a swirl pattern. This type of sheen is considered a pollutant.



Iron bacteria sheen on water surface. If disturbed the bacteria will separate and appear “blocky”. This is naturally occurring sheen and is not considered a pollutant.

Observations like those below can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit discharge:

- Indications of sanitary sewage, including fecal matter or sewage odors
- Foaming, such as from detergent
- Optical enhancers, fluorescent dye added to laundry detergent

Prior to cleaning, the following information shall be collected:

- Depth to sediment from the top of the catch basin grate

All observations shall be noted by the field crew and logged into the inspection form and/or tablet with mobile data collection system (included as Attachment B).

Handling and Disposal of Catch Basin Cleanings

The Town generally uses the following recommended procedures for handling and disposal of catch basin cleaning material to reduce discharge of pollutants from the MS4 areas.

- Properly dispose of collected sediments and catch basin cleanings (solid material, such as leaves, sand, and twigs removed from stormwater collection systems during cleaning operations).
- Stockpile and cover catch basin residuals on an impervious surface that discharges to a sanitary sewer or buffered area until test results are known.
- Test catch basin residual stockpile as follows:

- If catch basin sediments are obviously contaminated (based on visual and/or olfactory examination) due to influence of sanitary wastewater, animal wastes, oil, gasoline or other petroleum products, the sediments should be tested pursuant to the hazardous waste determination requirements in ENV-Hw 502 and dispose of as follows:
 - If testing indicates non-hazardous – dispose at any permitted, lined solid waste landfill or other solid waste treatment facility permitted to accept this material.
 - If testing indicates hazardous material – dispose of in accordance with NH Hazardous Waste Rules, ENV-Hw 100-1100
- If not obviously contaminated:
 - The need and type of testing will depend on the ultimate disposal method and whether the sediments are planned for reuse and where they are planned for reuse.
 - Disposal at a licensed landfill as daily cover is an accepted disposal method, however, the land fill will likely require its own testing requirements prior to disposal.
 - Additional testing may be required for any planned reuse of catch basin cleanings to assess contamination risks. The NHDES Risk Characterization and Management Policy (RCMP) S-3 Soil Standards has set acceptable levels for metals, VOCs and PAHs for reuse as road base or subbase. In this instance, when used solely for road base material, the Town may request a waiver from the NHDES Solid Waste Bureau to avoid future testing based on testing results.
 - For any other potential reuse options, testing should be conducted to compare to the lower NHDES RCMP S-1 Soil Standards for unrestricted reuse.

BMP 5: Street/Parking Lot Sweeping

Regular sweeping of streets and municipally owned parking lots is important for maintaining clean and safe roadways. It also plays a vital role in keeping pollutants like sand, trash, and leaves out of the MS4. The Town has maintained a comprehensive street sweeping program for many years and sweeps many of its roadways on a monthly basis, if not more frequently. The highway foreman implements the street sweeping program. The Town has approximately 20 curb-lane miles of roadway and 10 acres of parking lots that it maintains as part of its sweeping program. A map of the street sweeping route is included as Attachment C.

General Permit Requirement

The 2017 MS4 Permit requires that all streets and parking lots with curb and gutter drainage and/or catch basins meet the following conditions:

Routine Maintenance Conditions	Sweep a <i>minimum of twice per year</i> including once in early spring (following winter activities such as sanding) and at least once in the fall (following leaf fall)
	More frequent sweeping of targeted areas determined based on pollutant load reduction potential based on inspections, pollutant loads, catch basin cleaning, land use and status of receiving water body.

Reporting Requirements

For each Annual Report, the MS4 permit requires the following items be reported:

- Number of miles swept; and
- Volume or mass of material removed.

Sweeping Procedure

The Town's current street sweeping program is conducted between May and October. The Town conducts more frequent sweeping in the downtown area during these months. In general, street sweeping shall be conducted according to the following procedures to reduce discharge of pollutants from the MS4 areas.

Street sweeping should be conducted in dry weather. Sweeping should not be conducted during or immediately after rainstorms.

- Dry cleaning methods should be used whenever possible, except for very fine water spray for dust control. Avoid wet cleaning or flushing of the pavement.
- When necessary, enact parking bans to facilitate sweeping on busy streets.
- Sweep in a manner that avoids depositing debris into storm drains.
- Sweeping equipment (mechanical, regenerative air, vacuum filter, tandem sweeping) should be selected depending on the level of debris. Brush alignment, sweeper speed, rotation rate, and sweeping pattern should be set to optimal levels to manage debris.
- Routinely inspect and perform maintenance on sweeping equipment to reduce the potential for leaks.

Sweepings Reuse and Disposal

The Town generally uses the following recommended handling and disposal of procedures for street sweeping debris to reduce discharge of pollutants from the MS4 areas.

- Properly dispose of collected street sweeping residuals in a contained stockpile on an impervious surface that does not discharge directly to a storm drain catch basin or a nearby surface water or wetland area until test results are known.
- For street sweeping disposal and testing requirements see section on catch basin cleaning and disposal methods above.

BMP 6: Stormwater Treatment BMP Inspection and Maintenance

Stormwater treatment BMPs are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Structural BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body. Regular inspection and maintenance of structural stormwater BMPs is critical for these engineered systems to function as designed (e.g., provide benefits to water quality, groundwater recharge, and peak flow attenuation). Inspection forms by stormwater treatment BMP type are included as Attachment D. The Town is undertaking an inventory to determine the location and types of BMPs throughout the town.

Procedures

The Town generally uses the following recommended inspection and maintenance procedures for stormwater treatment BMPs to reduce discharge of pollutants from the MS4 areas.

Bioretention Areas and Rain Gardens

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch, and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter.
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting as a filter.

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule: Bioretention ("Retention") Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year Round	Annually
Seed/mulch areas with poor vegetation cover (<75% cover)	Spring	Annually
Remove and replace dead vegetation	Spring and Fall	Bi-Annually
Remove excessive sediment and/or trash accumulation	Year Round	Annually
Inspect and remove invasive species by hand if present	Spring and Fall	Bi-Annually
Prune	Spring or Fall	Annually
Ensure outlet is free-flowing and no channel scour downstream	Year Round	Annually

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation, and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent the recharge and water quality treatment of ground water.

Extended Dry Detention Basins

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and reducing local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow

may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micro-pool or shallow marsh.

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include erosion within the basin and banks, tree growth on the embankment, damage to the emergency spillway, and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.

Maintenance Schedule: Extended Dry Detention Basins

Activity	Time of Year	Frequency
Inspect basin	Spring and Fall	Bi-annually
Examine outlet structure for clogging or high outflow release velocities	Spring and Fall	Bi-annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-annually
Remove trash and debris	Spring	Bi-annually
Remove sediment from basin	Year round	At least once every 5 years

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals, or nutrients – these materials are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite.

Two types of Media Filters are manufactured:

- Dry media filters, which are designed to dewater within 72 hours; and
- Wet media filters, which maintain a permanent pool of water as part of the treatment system.

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry media filters are required to dewater in 72 hours, thus preventing mosquito and another insect breeding. Proper maintenance is essential to prevent clogging. Wet media filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Maintenance Schedule: Proprietary Media Filters and SWT's, Underground Hydrodynamic Separators

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer's schedule	Bi-annually (minimum)
Remove trash and debris	Year round	Bi-annually
Estimate to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer's schedule	Per manufacturer's schedule

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for stormwater quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to

prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

If properly maintained, sand and organic filters have a long life. Maintenance requirements of the filters include raking the sand and removing sediment, trash, and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that the sand should be replaced.

Maintenance Schedule: Sand and Organic Filters

Activity	Time of Year	Frequency
Inspect filters and remove debris	Spring and Fall	Bi-annually (minimum)

Wet Basins

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events. If properly designed and maintained, wet basins can add fire protection, wildlife habitats, and aesthetic values to a property.

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet, and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Maintenance Schedule: Wet Basins

Activity	Time of Year	Frequency
Inspect wet basin	Spring and/or Fall	Annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-annually (minimum)
Remove sediment, trash and debris	Spring through Fall	Bi-annually (minimum)
Remove sediment from basin	Year Round	As required, once every 10 years (minimum)

Dry Wells

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24- and 48-hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop-in water level (inches) by the time elapsed (hours).

Maintenance Schedule: Dry Wells

Activity	Time of Year	Frequency
Inspect dry wells	Spring and/or Fall	Annually

Infiltration Basins

Infiltration basins are designed to contain stormwater and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site. High failure rates, however, often occur due to improper siting, inadequate pretreatment, poor design, and lack of maintenance.

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction, or low spots. Inspections should include signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, riprap condition, sediment accumulation, and turf health.

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-annually
Inspection	Spring and Fall	Bi-annually
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-annually
Remove trash, debris and organic matter	Spring and Fall	Bi-annually

BMP 7: Winter Maintenance Practices

Winter road maintenance includes snow removal and the use of salt, sand, or deicers to ensure safe winter driving conditions. Proper maintenance procedures and use and storage of materials can help reduce the discharge of pollutants, such as sand and salt, from the MS4 and to receiving waters. The goal of this written procedure is to provide guidance to municipal employees on the use and storage of salt and sand, minimizing the use of salt, evaluating opportunities for use of alternative materials, and ensuring that snow disposal activities do not result in disposal of snow into surface waters. If services are contracted, this BMP should be provided to the contractor.

The DPW clears snow on approximately 55 miles of roadway and 20 miles of sidewalks as well as parking lots including assistance with school facilities. The Town has a snow and ice procedure, Attachment A, which outlines when plowing, snow removal, and application of deicers is applied.

BMP 8: Fertilizer, Pesticide and Herbicide: Use, Storage and Disposal

The use and improper storage of pesticides, herbicides, and fertilizers can contribute to the discharge of nutrients and toxic compounds to the municipal storm drainage system and surface waters. The goal of this BMP is to provide guidance to municipal employees on proper handling and storage of pesticides, herbicides, and fertilizers to prevent the discharge of pollutants from the MS4.

The Town currently as a general practice does not use fertilizer, pesticides, or herbicides on Town property. The School Department works with a licensed applicator for fertilizer application on athletic fields, when necessary. The Town DPW occasionally hires a licensed applicator for weed control in select areas on as needed basis. All handling, transport and application of materials is handled by the commercial applicator,

Procedures

If management practices change for the Town or School Department, where the use and storage of fertilizers or pesticides may be required, the following procedures should be reviewed and adopted as they apply for the storage and use of fertilizers, pesticides, and herbicides by municipal employees. In this section, the term “pesticide” includes products used as herbicides.

Storage

- Store pesticides and fertilizers in high, dry locations in accordance with the manufacturer’s specifications.
- Store in cool, well-ventilated, and insulated areas to protect against temperature extremes.
- Store in areas that have been constructed in accordance with local fire codes for storing flammable or combustible materials.
 - Flammable products should be stored separately from non-flammable products, preferably in a fire-proof cabinet
 - Small quantities (less than 500 lbs. or 220 gallons) of pesticides can be stored in cabinets constructed of double-walled 18-gauge sheet metal.
 - Large quantities (greater than 500 lbs. or 220 gallons) of pesticides can be stored in a prefabricated Hazardous Material Storage building or in a purpose-built storage facility. It is not anticipated that many municipal facilities will store quantities in excess of 500 lbs. or 220 gallons of pesticides.
 - Building walls should have a two-hour fire rating and be impervious to the stored materials.
 - Floors should be watertight, impervious, and provide spill containment.
- Store materials in an enclosed area or in covered, impervious containment, such as a locked cabinet. The cabinet should be in a first story room or one that has direct access to the outdoors. Storage areas should be equipped with easily accessible spill cleanup materials and portable firefighting equipment. Regularly inspect storage areas for leaks and spills. Emergency eyewash stations and emergency drench showers should be located near the storage area.
- For pesticides, storage cabinets should be kept locked and the door to the storage area should contain a weatherproof sign that warns of the existence and danger of the pesticides inside. The door should be kept locked. The sign should be visible at 25 feet and should read as follows:

DANGER
PESTICIDE STORAGE AREA
ALL UNAUTHORIZED PERSONS KEEP OUT
KEEP DOORS LOCKED WHEN NOT IN USE

The sign should be posted in both English and any other language used by maintenance workers.

- Pesticides should not be stored in the same place as ammonium nitrate fertilizer.
- Separate pesticides and fertilizers from other chemical storage and other flammable materials.
- Label all containers with date of purchase. Clearly label all secondary containers. Use older materials first.
- Order for delivery as close to the time of use as possible to reduce the amount of chemicals stored at the facility.
- Order only the amount of materials needed in order to minimize excess or obsolete materials, which require storage and disposal.
- Never leave unlabeled or unstable pesticides and fertilizers in uncontrolled locations.
- Maintain a current written inventory of all pesticides and fertilizers at the storage site.
- Ensure that contaminated waste materials are kept in designated containers and stored in labeled, designated, covered, and contained areas.
- Dispose of excess or obsolete pesticides/fertilizers and associated waste materials in accordance with the manufacturer's specification and all applicable regulations.

Use and Application of Fertilizers

- Perform soil testing before choosing a fertilizer. The quantity of available nutrients already present in the soil will determine the type and amount of fertilizer that is recommended. The soil test will also determine the soil pH, humic matter, texture, and exchangeable acidity, which will indicate whether pH adjustment is required for fertilizer to work efficiently. A soil test should be completed at each facility, as soil type can vary widely within a single community. o Soil tests are recommended every 3-4 years for turf and plantings (more frequently for problem or newly planted areas) and every year for soil where phosphorus-containing fertilizers are used. Soil pH tests should be conducted every year for all sites.
- When collecting soil samples, take multiple samples for each target area at a four-inch depth; mix the samples together in a container and properly label the sample with property information and site use type. Separately sample areas that have discoloration, abnormal plant growth, or other problems. Take the sample at approximately the same time every year. If the area has been fertilized, wait eight weeks after fertilizing to test the soil to ensure nutrients have been absorbed.
- When selecting the optimal type of fertilizer to use on an area, consider the soil test results, type of turf, and type of turf use. Slow-use fertilizer should be used for turf grass.
- Calibrate application equipment regularly to ensure proper application and loading rates.
- Mix fertilizers using clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate the soil.
- Fertilizers should only be applied by properly trained personnel.
- Never apply fertilizers in quantities exceeding the manufacturer's instructions. Instead, apply small amounts throughout the growing season.
- Time fertilizer application methods for maximum plant uptake, usually in the fall and spring (e.g., between April 15 and October 15). When applying at the beginning and end of planting season, take into consideration the slower uptake rate of fertilizer by plants and adjust the fertilizer application accordingly.

- Never apply fertilizer during a drought, when the soil is dry or frozen, when it is raining, or immediately before expected rain.
- Fertilizer should be applied when the ground temperature is above 55° F.
- Apply fertilizers in amounts appropriate for the type of vegetation to minimize losses to surface water and groundwater. Use the results of the soil test to determine optimal fertilizer timing and application rates.
- Where applicable, till fertilizers into the soil rather than dumping or broadcasting (proper application techniques will depend on the type of soil and vegetation).
- Do not hose down paved areas after fertilizer application if drainage will enter into an engineered storm drain system or drainage ditch.
- Limit irrigation after fertilizer application to prevent runoff (approximately ½ inch of water per application for a week following application).
- Turn off irrigation systems during periods of adequate rainfall.
- Do not over-apply fertilizer in late fall to “use it up” before winter. The effectiveness of fertilizer does not reduce when stored.
- If phosphorus fertilizer is used when re-seeding, mix the phosphorus into the root zone. Do not apply directly to the soil surface.
- Avoid combined products such as “weed and feed,” which do not target specific problems at the appropriate time.

Use and Application of Pesticides

- Pesticides should only be applied by licensed or certified applicators.
- Calibrate application equipment regularly to ensure proper application and loading rates.
- Ensure that pesticide application equipment is capable of immediate shutoff in case of emergency.
- Conduct spray applications according to specific label directions and applicable local regulations.
- Never apply pesticides in quantities exceeding the manufacturer’s instructions.
- Apply pesticides at the life stage when the pest is most vulnerable.
- Never apply pesticides if it is raining or immediately before expected rain.
- Establish setback distances from pavement, storm drains, and waterbodies, which act as buffers from pesticide application, with disease-resistant plants and minimal mowing.
- Do not apply pesticides within 100 feet of open waters or of drainage channels.
- Spot treat infected areas instead of the entire location.
- Mix pesticides and clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate soil.
- Do not hose down paved areas after pesticide application to a storm drain or drainage ditch.
- Recycle rinsate from equipment cleaning back into product.
- Choose the least toxic pesticide that is still capable of reducing the infestation to acceptable levels.
- Use alternatives to pesticides, such as manual weed control, biological controls, and Integrated Pest Management strategies.
- For the use of herbicides, reduce seed release of weeds by timing cutting and pesticide application at seed set. Select vegetation and landscaping that is low maintenance in order to tolerate low levels of weeds without interfering with aesthetics.

Attachment A
Snow and Ice Plan

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MEMORANDUM

TO: Steve Fournier, Town Manager

FROM: Rick Malasky, Director of Public Works

DATE: November 15, 2021

SUBJECT: Snow and Ice Control Plan

Enclosed is the Department's Snow and Ice Control Plan for the 2008-2009 Winter. This Plan is to be used as a starting point for snow and ice control. Modern weather forecasting can only warn us of what is to come, but conditions change. This Plan's intent is to prepare us for what may come. The Department's preparation starts with equipment purchasing, training, and equipment maintenance. The timing of a snow and ice event is the single-most uncontrollable factor we face every winter. The Eskimos have 27 different names for snow and ice. The Department only has three responses to this list. Those being: 1.) Applying sand/salt mixture to the road surface. 2.) Plowing, and 3.) A combination of 1 and 2. This Plan's intent is to be flexible so the use of our responses is flexible as weather and road conditions change.

If you have any questions, please contact me so we can discuss your concerns.

RM:jj
enclosure

MEMORANDUM

TO: Greg Jordan, Police Chief

FROM: Rick Malasky, Director of Public Works

DATE: November 15, 2021

SUBJECT: Snow and Ice Call Out

With the threat of winter conditions upon us, I would like to confirm the past practice of the Public Works Department notification.

I request to be notified as soon as it starts to snow. Please have Dispatch notify me at home first and by pager if I'm not at home. If I cannot be reached, please contact Dave Chase, first at home and second by pager.

You and I both know the importance of early notification for the public safety. This procedure should be used for freezing rain and icy spots also. This procedure has worked out well in the past and I expect it will work well this year.

If you have any suggestions or questions, please contact me. Thank you for your cooperation.

RM/jw

cc: Steve Fournier, Town Manager
Sean Greig, Water/Sewer Superintendent
Dave Chase, Foreman

TOWN OF NEWMARKET, NH
DEPARTMENT OF PUBLIC WORKS

MISSION STATEMENT

The Town of Newmarket, NH Department of Public Works exists for the benefit of the citizens of Newmarket, NH.

To this end, our mission is to meet the demands for public works services.

So we must:

- BE PREPARED TO MEET THOSE DEMANDS
- DO OUR BEST UNDER ALL SITUATIONS
- NOT LET PROGRESS BE HAMPERED BY TRADITION
- LISTEN TO THE CITIZENS OF NEWMARKET
- HOLD PARAMOUNT THE SAFETY AND HEALTH OF OUR CITIZENS

**TOWN OF NEWMARKET, NH
DEPARTMENT OF PUBLIC WORKS**

UNIT #	NAME	PHONE #
1	Malasky, Rick	765-1106
4	Chase, Dave	918-8239
5	Puchlopek, John	817-0333
6	Eastman, Craig	842-3018
7	Proulx, Mark	236-2846
8	Bloom, Karen	834-0537
9	Baillargeon, Roger	770-5617
10	Kelley, Dan	770-0662
11	Leahy, Ben	422-2090
15	Hamel, Gerry	702-8229

SUPPLIERS

SALT

Eastern Minerals
(617) 884-0027
(978) 458-6420

Granite State Minerals
(603) 436-8505

TRUCKS & EQUIPMENT

Dover Motor Mart	742-1924	Liberty	1-800-562-3814
H. P. Fairfield	225-9571	Sleeper	1-800-358-6007
Nortrax	848-1904	National Wrecker	436-6192
Al's Automotive	778-8158	Lafogg Auto/Truck	397-7260

MISCELLANEOUS

Hometown Forecast 881-3082

Stratham Tire	772-3783	Sullivan Tire	749-1711
Port City Tech	431-1213	B & B Chain	1-800-698-2640
Rosa	659-5398	C.G.H.	659-8335
John Pecola	944-1339	Brian Knipstein	834-0374
Brian Coulstring	670-5217		

WINTER ROUTE ASSIGNMENTS

NAME	VEHICLE	AREA
Chase, Dave	Truck #10	Downtown side streets
Puchlopek, John	Truck #7	South side, 108, R&R Crossing
Eastman, Craig	Truck #9	West side of Main St. and So. Main Street
Proulx, Mark	Truck #5	New Road and north side of Lamprey River Bridge
Baillargeon, Roger	Truck #9	North Side of Grant Road And Ash Swamp Road East
Hamel, Gerry	Truck #20	All no-outlet downtown area And parking lots
Kelley, Dan	Truck #11	South side of Grant Road And Ash Swamp Road West
Leahy, Ben	Trackless #42	Sidewalks
Bloom, Karen	Trackless #21	Sidewalks/Downtown
Malasky, Rick	Truck #1	Parking lots

WHAT IS EXPECTED OF OUR SNOW AND ICE CONTROL PROGRAM

Snow and ice control is one of the most important services we provide to the public. A great deal of hardship and inconvenience can be caused due to a poor snow removal program, and a great deal of money can be wasted.

The following is a summary of what is expected of each individual:

GETTING READY FOR A STORM

When a winter event is predicted all equipment must be fueled and ready to go.

If snow is predicted, all plows and spreaders need to be installed. Depending on ice and/or freezing rain forecast, all trucks will have chains on tires.

During the preparation for a storm check all hoses, lights, cutting edges, tire chains, engine fluids, emergency equipment, wipers, etc.

All spreaders must be installed Friday afternoon before the weekend from the first weekend in November to the last weekend in March.

TREATMENT OPERATIONS

This is one of our most important duties and considered an emergency.

Before leaving the garage, check lights, wipers, fuel, oil, tie down spreader chains, and spreaders. **DO NOT OVERLOAD TRUCK.**

Follow route as shown on the map. If you feel the route can be covered more quickly in another way, notify your supervisor and it will be looked into.

There will be **NO COFFEE BREAKS** during treatment unless by sanction of the supervisor.

PLOWING OPERATIONS

ADVANTAGES OF SNOW PLOWING:

1. Eliminates salt and increases protection of the environment.
2. Provides a smooth and safe driving surface.

Before leaving the garage, check lights, wipers, fuel, oil, spreader tie-down chains, spreaders.

IMPORTANT PLOWING PROCEDURES

1. Maximum speed 18 MPH.
2. Routes are set up to plow small amounts of snow at a time. Large amounts ruin a truck.
3. Trucks should not carry a heavy load; plow 3/4 full or less.
4. Emergency light on at all times.
5. Be careful of mailboxes, fire hydrants and other obstructions. Know your route.
6. Our average truck equipped for treatment and snow plowing equipment is worth \$125,000.00. Please respect it.
7. Be sure plow cutting edges are okay. The cost is about \$1,000.00 to replace a blade. It costs about \$6,000.00 to replace a plow!
8. Be sure intersections and all snow is pushed back after a storm. **DO NOT** leave diamonds during cleanup.
9. Cul-de-sacs should be cleaned after a storm. Once around during storms, a lot of time is wasted here during storms.
10. Be sure the snow is pushed back the first part of the winter, or you will not have room for the remainder. Shelving will be done a few days after the storm.
11. **Be courteous to all citizens.**
12. Treat all the dangerous intersections, curves, and hills as you plow.
13. Please do not snap an axle if you become stuck. If you are stuck, use your truck radio or get to a telephone at once. It is only a mistake to become stuck, but poor judgment can cost money. Radios should be left on at all times and used when needed.
14. Stop and clean windshield wipers frequently. Burned-out wiper motors disable the entire truck.

OPERATION PROCEDURES

1. All routes will be treated after each storm.
2. All operators will be responsible for all pre-storm hookups.
3. Drivers are given direction to treat dangerous areas while plowing if, in their judgment, there is a hazard.
4. Burying of sidewalks will not be tolerated.
5. Once you have finished your route, you are **NOT** done. We must help each other out.
6. Due to the fact that we cannot control the weather conditions, assignments and scheduling may change within a half-hour, and then change back again.
7. Friday mornings will include a check of all trucks. This includes plows, sanders, lights, chains, hoses, etc. Any problems noted will be written and given to the Foreman directly.
8. After a storm, truck logs will be completed prior to going home. Please note any mechanical or repair needs on this form.

LET'S WORK TOGETHER!

TYPES OF SNOW/ICE CONDITIONS

These are examples of winter conditions we have experienced in the past and a plan of response. The response must be flexible to allow for changing conditions caused by weather, traffic, emergencies, etc.

1. **FREEZING RAIN:** This is a very critical condition. All trucks will be treating and all trucks to have chains.
2. **SNOW: Dusting to 1”:** Treat all roads and plow and treat sidewalks. May require a second application of treatment.
3. **SNOW: 1” to 2” to freezing rain to rain:** Treatment should be put out. Main roads may need more treatment if freezing rain is lengthy. Do not plow until temperature goes above freezing. The judgment as when to start plowing will be based on storm timing, weather predicted, traffic, road conditions, etc. Treat dangerous intersections, hills or curves. Catch basin cleanup crew(s) will be assigned at same time.

WEAR YOUR BOOTS AND RAIN SUIT!!!

4. **SNOW: 1” to 3”:** Start plowing of all roads when there is an accumulation of 1” of snow, along with plowing of sidewalks. Treat dangerous intersections, hills, or curves.
5. **SNOW: 3” to 8”:** Start plowing when accumulation reaches 1”. Treat dangerous curves, intersections and hills.
6. **SNOW: 8” and over:** Start plowing with 1” of snow and stay with storm. **DO NOT** let it get ahead of you. Treat dangerous curves, intersections and hills. Intersections can be left if snow starts to accumulate on roads.
7. **RAIN TO SNOW with fast falling temperature:** This can be a very severe condition. This is usually followed by very windy and extreme cold conditions. Treat as soon as temperature begins to drop. Start plowing as snow accumulates to prevent snow and ice from bonding to road surface.
8. **WET SNOW with light accumulation:** Scrape roads as needed. Be very careful of thin glaze as temperature drops - even though roads look black.
9. **WET SNOW with heavy accumulation:** Start plowing with less than 1” of snow. Should have chains and keep right with the storm. Treat dangerous intersections, curves and hills.

CLEAN-UP OF THE DOWNTOWN AREA

1. Snow pick up in the downtown area generally occurs after a 6" or greater snow accumulation.
2. Main Street will be cleaned up and rolled to the river side of Main Street starting around 12:00 AM during a storm.

Side streets and sidewalks will be pushed to Main Street and start around 11:00 PM to Midnight.

3. The snow field will be plowed out after each storm. After hauling operation, the snow will be pushed up. Care must be taken not to fill the B & M drainage ditch, this will cause flooding of the railroad tracks.
4. The hauling operations will start at the intersection of Penstock and proceed down Main Street, down Exeter Street to Kent and Pelczar Funeral Home. Gerry Avenue from the railroad bridge on Route 152 to Flora Ventures. Central Street. Nichols Avenue. Elm Street. Spring Street. South Street. Beech St. Extension. Maplecrest. Water Street.
5. The trackless will use the blower to remove the snow at the sidewalk along Durrell Drive, South Main Street (both sides), Packers Falls Road, North Main Street (both sides). Terrace Drive. Mockingbird Lane. Elm Street. Beech St. Extension. Beech Street. Cedar Street.

PICKUP REMINDERS

- | | | | |
|----|-------------------------|----|--|
| 1. | Emergency Lights | 4. | Do not let the blower wait for you |
| 2. | Sideboards | 5. | Watch speed -- no greater than 25 MPH |
| 3. | Dump in proper location | | |

CHAINS

Due to the fact that our vehicles are emergency vehicles, chains will be used at all times during periods of freezing rain. If before or during a storm, it is requested or determined that chains are needed they will be installed. Tire chains are a safety item similar to a hard hat or safety glasses.

THE LIFE CHAINS SAVE MAY BE YOUR OWN!!!

TOWN OF NEWMARKET, NH

DEPARTMENT OF PUBLIC WORKS

SNOW BANK AND CATCH BASIN CLEARING LIST

-DAME ROAD -	Snow bank near #41
-ELM STREET -	CB near Spring Street intersection
-PACKERS FALLS ROAD -	CB near #27
-HAM STREET -	Snow bank at Lamprey Street intersection
-LAMPREY STREET -	Snow bank at Sanborn Avenue intersection
-CEDAR STREET -	CB near Elder Street intersection
-CEDAR STREET -	CB near Grape Street intersection
-CEDAR STREET -	CB near Forrest Street intersection
-ELM STREET -	CB near RR Xing, both sides near Cedar Street
-ELM STREET -	CB across from Cemetery building
-ELM STREET -	Snow bank next to Cemetery building
-DURRELL DRIVE -	CB near Grant Road, next to sidewalk
-LANG'S LANE -	Snow bank near Route 152 intersection
-MAPLECREST -	CB
-NICHOLS AVENUE -	CB at Washington Street intersection

**TOWN OF NEWMARKET, NH
DEPARTMENT OF PUBLIC WORKS
PRIVATE & NON-TOWN MAINTAINED ROAD LIST**

**Twin Rivers Condos
Apartments off Salmon Street
Apartments off River Street
Condos off Bass Street
Pulaski Drive
Gilman Avenue (off Lamprey Street)
Lamprey River Trailer Park off Bay Road
River Moore Landing Condos
Apartments off Route 108 at the Durham Town Line
Sleepy Hollow Trailer Park off New Road
Great Cove Drive off New Road
Moonlight Drive Condos
Several Apartment Complexes off Bennett Way
Lita Lane Apartments
Bay View Drive off Bay Road
Wade Farm Condos off Dame Road
Eagle Drive
Houses off Moody Point Drive
Pinehill School Condos
Norton Woods
Class 6 Hersey Lane
Jan Lane off Route 152 at Lee Town Line
Norton Road off Ash Swamp Road
Tasker Lane at Town Pit
Class 6 portion of Neal Mill Road
Elm Drive
Lilac Lane
Pear Tree Lane
Penstock Way
Osprey Lane
Magnolia Lane
Dogwood Lane
Hillside Lane
Firefly Lane**

OUT OF SERVICE EQUIPMENT

During snow and ice control operations equipment breakdowns will occur for a number of reasons. Repairs during storms will occur if possible. When equipment will be out of service for a period of time in excess of 2 hours, routes will change.

The following are guidelines to be used in case of breakdowns:


If your truck has a major breakdown, park your truck and use the backup truck #90. Should the backup truck be out of service, the two bordering plow routes will assist.


If the Loader is out of service, the backhoe will be utilized for loading trucks.

Attachment B
Town Catch Basin Inspection Form

My Survey

Date Time

 MM/DD/YYYY

 hh:mm

Location

CB ID

Photo of CB surface with surrounding area

Select image file



Photo of CB Interior Before Cleaning

Select image file



Has CB been cleaned?

☐ Yes

☐ No

How full was the CB?

☐ Open

☐ 1/4

☐ 1/2

☐ 3/4

☐ Full

Sump Depth (Inches)

Rim To Invert (Inches)

Structure Diameter (Inches)

General Defects ▾

General Defects (Select as many as apply)

☐

Broken

☐

Broken - Soil Visible

☐

Broken - Void Visible

☐

Displaced Brick

Cracks Present ▾

Cracks Present (Select as many as apply)

☐ Crack - Circumferential

☐ Crack - Longitudinal

☐ Crack - Longitudinal Hinge

☐ Crack - Multiple

☐ Crack - Spiral

Deposits Present ▾

Deposits Present (Select as many as apply)

☐ Deposits - Attached Encrustation



Deposits - Attached Grease



Deposits - Attached Ragging



Deposits - Attached Other

Infiltration Present ▼

Infiltration Present (Select as many as apply)



Infiltration - Dripper



Infiltration - Dripper Barrel



Infiltration - Dripper Connection



Infiltration - Dripper Joing



Infiltraiton - Dripper Lateral



Infiltration - Drinner Gusher



Infiltration - Dripper Gusher Barrel

Obstructions Present ▼**Obstructions Present (Select as many as apply)**

Deposits - Attached Encrustation



Deposits - Attached Grease



Deposits - Attached Ragging



Deposits - Attached Other

Are there other defects?

Yes



No

Any Additional Notes

Photo of CB Interior After Cleaning

Select image file

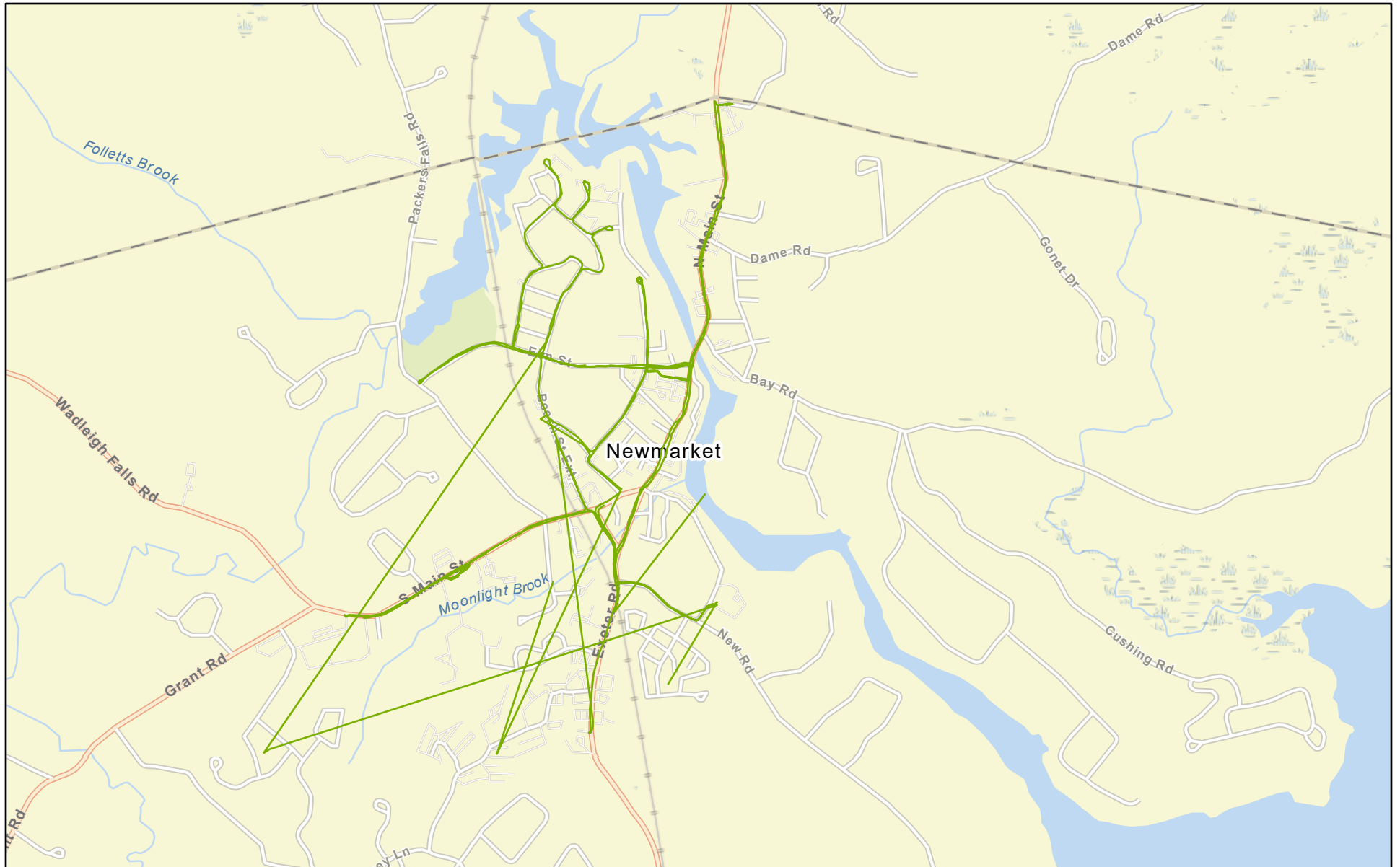


Submit

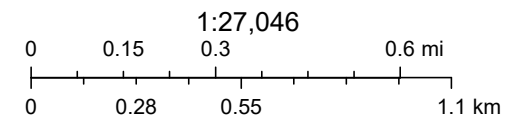
Powered by ArcGIS Survey123

Attachment C
Street Sweeping Route Map

2021 Sweeping



4/18/2022



Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community