



Weston & Sampson℠

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STORMWATER MANAGEMENT PLAN

MS4 GENERAL PERMIT COMPLIANCE

JUNE 2019
UPDATED JUNE 2022

TOWN OF
Salem
NEW HAMPSHIRE

swmp

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ANNUAL REVISIONS

This document was finalized in June 2019, in accordance with MS4 Permit requirements for Year 1. This document was updated in June 2020, June 2021 and June 2022 to reflect accomplishments during Permit Years 2, 3 and 4 respectively. The SWMP now identifies interconnections with other MS4s, includes an updated list of outfalls and receiving waters, and comments on all public education and public engagement efforts that have been completed to date. An Operation and Maintenance (O&M) Plan for municipal operations and facilities has been developed and appended to the SWMP. Standard Operating Procedures for Site Plan Review, Site Inspection, and Enforcement have also been developed and appended to this document. In addition, regulatory updates have been drafted to meet the construction and post-construction stormwater runoff control requirements of the MS4 Permit, as modified on January 6, 2021, and are highlighted in this document.

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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 _____

Signature _____ Date _____

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 results 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 dischargers 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, addressed small MS4s serving a population of less than 100,000 people in urbanized areas. 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. Appendix B of this report provides a map of the Phase II stormwater "permit compliance area" for Salem as determined by the USEPA using decennial census data from 2000 and 2010. Since Salem is located within an urbanized area, the EPA has designated the Town of Salem as a Phase 2 Community, which must comply with the NPDES regulations. In the State of New Hampshire, the EPA retains primacy as the Phase 2 permitting authority. On May 1, 2003, the EPA and the New Hampshire Department of Environmental Services (NHDES) jointly issued the NPDES General Permit for Discharges from Small MS4s and in July 2003, Salem submitted the required Notice of Intent (NOI) for inclusion under this General Permit.

The 2003 NPDES Phase 2 MS4 General Permit (2003 MS4 Permit) required the Town of Salem to develop, implement, and enforce a Stormwater Management Program (SWMP). The objectives of the

SWMP were 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.

This Stormwater Management Plan will specifically satisfy the requirements set forth by the NPDES Phase 2 regulations which expanded Phase 1's efforts to preserve, protect, and improve the nation's water resources from polluted stormwater runoff to include additional operators of "traditional" (i.e. cities and towns) and "non-traditional" (i.e. Federal and state agencies) MS4s. The 2003 MS4 Permit expired on May 1, 2008, but was administratively continued for covered permittees until a new MS4 Permit was issued on January 18th, 2017, and became effective on July 1, 2018. The 2017 MS4 Permit was modified during 2020, and the modifications became effective on January 6, 2021. A copy of the 2017 MS4 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 2017 MS4 Permit. A copy of this Notice of Intent is included in Appendix C. The Town received authorization from EPA to discharge under the 2017 MS4 Permit on May 14, 2019. A copy of the Town's Authorization to Discharge is also included in Appendix C.

Since the Town of Salem was previously covered under the 2003 Small MS4 General Permit, the Town currently has many practices and programs in place related to stormwater management and pollution prevention. This plan coordinates and incorporates these programs, policies, guidelines and practices into one document and expands their reach to encompass the requirements and goals of the 2017 MS4 Permit. The objectives of the MS4 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 their Notice of Intent, are included in Section 2.0.

1.2 Town Governance and Structure

The Board of Selectmen, which is comprised of five (5) board members, is the governing body for the Town of Salem. The Town Manager reports to the Board of Selectmen and is tasked with the day-to-day running of the Town including proper administration of all Town affairs. The Municipal Services Department, through its Director, is responsible for maintaining town roads, public utilities and facilities.

Several entities within the Town are involved in stormwater management from implementation of controls during development to general maintenance of drainage infrastructure, and include the following:

- Municipal Services Department – Engineering Division

- Municipal Services Department – Public Works
- Municipal Services Department – Utilities Division
- Community Development & Planning
- Health Department

Specific representatives from each of these departments responsible for implementation of some aspect of the SWMP are outlined in the table below:

Table 1.1
PARTIES RESPONSIBLE FOR SWMP IMPLEMENTATION

Name	Title	Affiliation
Christopher A. Dillon	Town Manager	Town Government
Roy E. Sorenson	Director of Municipal Services	Municipal Services Department
John Klipfel, PE	Director of Engineering	Municipal Services Department – Engineering Division
Vacant	Public Works Director	Municipal Services Department – Public Works
Frederick Wallace	Utilities Director	Municipal Services Department – Utilities Division
Ross A. Moldoff	Planning Director	Community Development & Planning
Brian Lockard	Health Officer	Health Department

1.3 Town Demographic Information

Salem is located in southwest Rockingham County and has a total area of 25.9 square miles (67 square kilometers). As of the 2010 census, the population was 28,776 people with a population density of 1,100 per square mile. The Town is comprised of 24.7 square miles of land and 1.2 square miles or 4.49% water. Canobie Lake is on the western boundary, Arlington Mill Reservoir to the north, and World's End Pond to the southeast.

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 MS4 permit. Salem is almost entirely comprised of urbanized area (UA) as shown in the regulated area map in Appendix B. There is a small area in the northern part of town that borders Derry and Windham that is not urbanized and therefore not included in the MS4 Permit regulated area.

Principal highways located within the boundaries of Salem include New Hampshire Route 28, which follows Broadway through the Salem central business district, becoming Rockingham Road in the northern part of town; New Hampshire Route 38, which begins in Salem at New Hampshire Route 28 and goes southwest into the Town of Pelham; New Hampshire Route 97, which begins in Salem at New Hampshire Route 28 and follows Main Street east to connect Salem to Haverhill, Massachusetts; New Hampshire Route 111, which crosses the northern portion of town connecting Windham in the

west and Hampstead in the east; and Interstate Route 93, which crosses Salem from southeast to northwest

Climate within the Town of Salem ranges from January average low temperature of 10 degrees Fahrenheit (°F) to July average high temperature of 82°F. The approximate average annual precipitation is 40.69 inches, distributed throughout the year. Historically, the rainiest month is October, with approximately 4.06 inches of rain.

1.4 Water Resources

Salem is located entirely within the Merrimack River Watershed. Impaired water bodies within Salem include Captains Pond, Captains Beach at Captains Pond, Camp Otter Swim Area Beach, Camp Y Wood Beach, Policy-Porcupine Brook, Policy Brook, Arlington Mill Reservoir at Second Street Beach, Millville Lake at Town Beach, Arlington Mill Reservoir at Arlington Pond Improvement Association, Hedgehog Pond, Camp Hadar Beach, and an unnamed tributary to Harris Brook. These water bodies are impaired for several reasons according to the 303(d) List of Impaired Waters. All impairments and any outfalls discharging to these water bodies are summarized in Table 1.2 below:

Table 1.2 RECEIVING WATERS AND IMPAIRMENTS

Water Body	Impairment	Number of Outfalls Discharging to Receiving Water
Captains Pond	Chlorophyll-a, Dissolved Oxygen, Phosphorous, pH (Source: Atmospheric Deposition – Acidity, Naturally Occurring Organic Acid)	5
Captains Beach, Captains Pond	Dissolved Oxygen, E. Coli	3
Camp Otter Swim Area Beach	Dissolved Oxygen Saturation, E. Coli	1
Camp Y Wood Beach	Dissolved Oxygen	0
Policy-Porcupine Brook	Chloride, Benthic Macroinvertebrate Bioassessments, Iron, pH, Arsenic	64
Policy Brook	Chloride	9
Arlington Mill Reservoir at Second Street Beach	E. Coli	3
Millville Lake at Town Beach	E. Coli	15
Arlington Mill Reservoir at Arlington Pond Improvement Association	E. Coli	28
Hedgehog Pond at Salem Town Beach	E. Coli, pH	0
Camp Hadar Beach	E. Coli	0

Table 1.2 RECEIVING WATERS AND IMPAIRMENTS		
Water Body	Impairment	Number of Outfalls Discharging to Receiving Water
Unnamed Tributary to Harris Brook	Chloride	4I
Shadow Lake	E. coli	3
Canobie Lake	Dissolved Oxygen Saturation, Dissolved Oxygen	7
Captains Pond Brook		10
Spicket River		6
Hitty Titty Brook		2
Prime Wetland 12		10
Prime Wetland 13		2
Bodwell Pond		4
Hawkins Pond		6
Wilson's Pond		2
Prime Wetland 1		2
Providence Hill Brook		12
Prime Wetland 19		10
Prime Wetland 20		14
Prime Wetland 40		1
Prime Wetland 15		1
Prime Wetland 25		1
Taylor Reservoir		2
Prime Wetland 6		6
Prime Wetland 37		3
Prime Wetland 5		3
Stillwater Pond		1
World End Book		7

Table 1.2 RECEIVING WATERS AND IMPAIRMENTS		
Water Body	Impairment	Number of Outfalls Discharging to Receiving Water
Prime Wetland 24		3
Prime Wetland 1		1
World End Pond		7
Widow Harris Brook		22
Wetland within Arlington Pond Watershed		12
Wetland within Canobie Lake Watershed		2
Wetlands within Captains Pond Watershed		11
Wetlands within Hitty Titty Watershed		10
Wetlands within Lower Spicket River Watershed		50
Wetlands within Millville Pond Watershed		1
Wetlands within Providence Hill Brook Watershed		24
Wetlands within Policy Brook Watershed		62
Wetlands within Porcupine Brook Watershed		40
Wetlands within Upper Spicket River Watershed		20
Wetlands within World End Brook Watershed		18
Wetlands within Widow Harris Brook Watershed		15

1.5 Interconnections

The Town of Salem also has fifty-five (55) locations where its MS4 discharges to or receives flow from a MS4 under another municipality's jurisdiction or the jurisdiction of a state entity. Discharge locations for each of these interconnections will be verified, and this information will be updated along with any applicable impairments as it becomes available. These interconnections are summarized in Table 1.3 below:

Table 1.3 INTERCONNECTIONS AND IMPAIRMENTS				
Interconnection ID	Connecting Municipality or State Entity	Discharges To/Receives Flow from MS4	Receiving Water	Impairment
CAP-6005-OPE	Atkinson	Atkinson's MS4 Discharges to Salem's MS4	Captains Pond	Chlorophyll-a, Dissolved Oxygen, Phosphorous, pH (Source: Atmospheric Deposition – Acidity, Naturally Occurring Organic Acid)
CAP-5334-OPE	Atkinson	Atkinson's MS4 Discharges to Salem's MS4	Captains Pond	Chlorophyll-a, Dissolved Oxygen, Phosphorous, pH (Source: Atmospheric Deposition – Acidity, Naturally Occurring Organic Acid)
PHB-6034-OPE	Atkinson	Atkinson's MS4 Discharges to Salem's MS4	Providence Hill Brook	
CAP-4554-CB	Atkinson	Atkinson's MS4 Discharges to Salem's MS4	Captains Pond	Chlorophyll-a, Dissolved Oxygen, Phosphorous, pH (Source: Atmospheric Deposition – Acidity, Naturally Occurring Organic Acid)
USP-2072-CB	Derry	Derry's MS4 Discharges to Salem's MS4	Upper Spicket River	
USP-5113-CB	Derry	Derry's MS4 Discharges to Salem's MS4	Upper Spicket River	

WEB-0630-DMH	Methuen	Methuen's MS4 Discharges to Salem's MS4	World End Brook	
POR-5348-OPE	Pelham	Pelham's MS4 Discharges to Salem's MS4	Porcupine Brook	
USP-2058-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Wetlands and pond between Route 111 and Main Street on the Derry/Salem border	
USP-2061-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Wetlands and pond between Route 111 and Main Street on the Derry/Salem border	
USP-2059-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Upper Spicket River	
USP-2062-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Upper Spicket River	
USP-2076-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Upper Spicket River	
LSR-2039-D	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Detention Basin off Main St. in Lower Spicket River Basin	
LSR-2637-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	No receiving water. Outfall discharges to woods along Main Street	
LSR-2290-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Unnamed tributary to the Spicket River	
LSR-2757-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Spicket River	
LSR-2753-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Spicket River	

LSR-0288-DMH	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Spicket River	
LSR-3710-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	No receiving water. Outfall discharges to woods along Main Street	
LSR-3511-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Wetlands along Geremonty Drive.	
LSR-3611-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	No Receiving water. Outfall discharges to woods along Main St.	
POL-3434-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Policy Brook	Chloride, Benthic Macroinvertebrate Bioassessments, Iron, pH, Arsenic
POL-0850-DS	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Policy Brook	Chloride, Benthic Macroinvertebrate Bioassessments, Iron, pH, Arsenic
POL-5311-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Policy Brook	Chloride, Benthic Macroinvertebrate Bioassessments, Iron, pH, Arsenic
POL-5343-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Policy Brook	Chloride, Benthic Macroinvertebrate Bioassessments, Iron, pH, Arsenic
LSR-0333-DMH	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Lower Spicket River Wetlands	
LSR-5020-CB	NHDOT	NHDOT's MS4 Discharges to	Spicket River	

		Salem's MS4		
LSR-3535-CB	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Spicket River	
LSR-0266-DMH	NHDOT	NHDOT's MS4 Discharges to Salem's MS4	Spicket River	
HIT-4790-CB	Windham	Windham's MS4 Discharges to Salem's MS4	Retention Basin off Rockingham Road	
HIT-2452-CB	Windham	Windham's MS4 Discharges to Salem's MS4	Retention Basin off Rockingham Road	
HIT-5111-CB	Windham	Windham's MS4 Discharges to Salem's MS4	Retention Basin off Rockingham Road	
CAP-0031-CB	Haverhill	Salem's MS4 Discharges to Haverhill's MS4	Discharge Location Unknown - TBD–	
LSR-0185-OF	Methuen	Salem's MS4 Discharges to Methuen's MS4	Discharge Location Unknown - TBD–	
WEB-0628-DMH	Methuen	Salem's MS4 Discharges to Methuen's MS4	Discharge Location Unknown - TBD–	
POL-1075-OF	Methuen	Salem's MS4 Discharges to Methuen's MS4	Discharge Location Unknown - TBD–	
POL-1899-CB	Methuen	Salem's MS4 Discharges to Methuen's MS4	Discharge Location Unknown – TBD	
WEB-3528-CB	Methuen	Salem's MS4 Discharges to Methuen's MS4	Discharge Location Unknown – TBD	
POL-2267-CB	Pelham	Salem's MS4 Discharges to Pelham's MS4	Discharge Location Unknown – TBD	
POL-2912-CB	Pelham	Salem's MS4 Discharges to Pelham's MS4	Discharge Location Unknown – TBD	
POR-0776-OF	Pelham	Salem's MS4 Discharges to Pelham's MS4	Discharge Location Unknown – TBD	
POR-4274-CB	Pelham	Salem's MS4 Discharges to Pelham's MS4	Discharge Location Unknown – TBD	
LSR-0423-DMH	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	

LSR-1212-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-2743-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
POL-5348-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
POL-4517-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-3959-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-3841-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-2318-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-3512-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
LSR-1047-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
WEB-3689-CB	NHDOT	Salem's MS4 Discharges to NHDOT's MS4	Discharge Location Unknown – TBD	
HIT-5108-CB	Windham	Salem's MS4 Discharges to Windham's MS4	Discharge Location Unknown - TBD–	

1.6 Endangered Species and Historic Properties Determination

The 2017 MS4 Permit requires Salem to demonstrate that all activities regulated under the MS4 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 either no critical habitat or any endangered species within its boundaries, or that if such a habitat does exist, that outfall discharges and any associated best management practices shall not interfere with that habitat. Salem 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 Salem is the northern long-eared bat. 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 this 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 or any other endangered or threatened species that may be identified in the future.

Salem was able to certify eligibility under Criterion A in their Notice of Intent filing as it relates to the Historic Properties Preservation Act. The Town has one federal historic property – The Salem Common Historic District (11000190) located at 304, 310, and 312 Main Street. The Town was previously covered under the 2003 Small MS4 Permit, and it has been determined to be very unlikely that any existing outfall discharges would impact any of these historic properties and conditions have not changed since that determination. Prior to construction of any structural BMPs, the Town will consult with the New Hampshire Division of Historical Resources to confirm that the proposed project will not impact any historic properties.

1.7 Increased Discharges

Any increased discharges (including increased pollutant loadings) through the MS4 to waters of the United States are subject to New Hampshire antidegradation regulations. Section 2.1.2 of the 2017 MS4 Permit requires the Town of Salem 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 Salem 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, USEPA or by NH DES 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.

1.8 Surface Water Drinking Supplies

Section 3.2 of the MS4 Permit requires permittees to prioritize discharges to public drinking water supply sources in implementation of the SWMP. Public drinking water supply sources in Salem include Canobie Lake and Arlington Pond. 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 avoid direct discharges to groundwater and surface water drinking water sources and ensure any discharges near source protection areas of water supply wells or intakes 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).

The following minimum setbacks apply to certain drinking water supply resources, including:

a. Discharge setbacks from water supply wells in accordance with N.H. Code Admin. R. Part Env-Wq 1508.02(a); and
b. Discharge setback of 100 feet within water supply intake protections areas as specified under N.H. Code Admin. R. Part Env-Wq 1508(b).

In groundwater protection areas and water supply intake 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 within local regulations for projects not subject to N.H. Code Admin. R. Part Env-Wq 1500.

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 a water supply. This plan includes detailed chain of command responsibilities for staff, as well as a command structure; emergency contact information; public notice guidelines; processes for threat evaluation, and a comprehensive emergency action plan for handling any potential water system contamination.

2.0 MINIMUM CONTROL MEASURES

2.1 Introduction

This section of the report provides a summary of the regulatory requirements for each of the six minimum control measures as defined under the MS4 General Permit by the EPA. It also provides a summary of those stormwater management practices that the Town currently employs. As part of the requirements of the Notice of Intent submitted to EPA on October 1, 2018, as included in Appendix C, the Town has established a list of the Best Management Practices (BMPs) that it plans to implement to comply with each of the six minimum control measures. These BMPs will be implemented over the next five years (i.e. 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 MS4 Permit. Under the 2003 MS4 Permit, the Town made progress in complying with some of the requirements of the 2017 MS4 Permit. Links to Annual Reports submitted to EPA, in compliance with the 2003 MS4 Permit, between 2004 and 2018, are included in Appendix D.

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 individuals responsible for implementation are stated in each of the respective sections for each control measure in this plan. The Engineering Division, the Department of Public Works, and the Community Development & Planning Department will be responsible for implementation and/or future enforcement of a majority of the BMPs for each of the six minimum control measures.

Compliance with requirements of the permit related to water quality limited waters and approved TMDLs is included in Section 6.

Checklists outlining requirements for Permit Years 1 through 5 are included in Appendix E.

2.2 Permit Requirements and Implementation Timeframes

2.2.1 Public Education and Outreach

The public education and outreach minimum control measure requires the Town to make educational information available to the public and other target audiences specified by the permit. Salem has been participating in public education and outreach activities since the 2003 MS4 Permit was enacted.

<u>Regulatory Requirement:</u>

Section 2.3.2 of the 2016 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."

Existing Town Practices:

Since the 2003 MS4 Permit became effective, the Town of Salem has implemented several public education initiatives. The Engineering Division includes stormwater information on their website, including the following:

- Links to various stormwater resources.
- Information about the Town's MS4 program, including copies of past annual reports submitted in compliance with the 2003 MS4 Permit, as well as the current permit.
- Information regarding outfall sampling and catchment investigations to date.
- A NHDES Fact Sheet regarding snow and ice removal by business owners.
- Information regarding the Town's Rain Barrel Program.
- A brochure on pet waste management.
- A flyer regarding protecting water quality from urban runoff.
- A flyer on lawn care and fertilizer use.
- A flyer on leaf and yard waste handling.
- Fact sheets on winter maintenance activities.
- Flyers on Septic System Maintenance.
- A flyer on the use of innovative development practices.
- A fact sheet for stormwater management at industrial facilities.

The Town also has an Engineering Division Facebook Page. Under the 2003 MS4 Permit, the Town designed and installed kiosks at Canobie Lake and Hedgehog Pond to distribute information to the public on stormwater issues. Copies of the EPA pamphlet/fact sheet "Protecting Water Quality from Urban Runoff", and pamphlet entitled "Pick it Up It's Your Doodie" are available at each kiosk. In addition, these materials were also maintained at kiosks located at Michelle Memorial Park, the Town Forest, Bill Valentine Memorial Park and the Mall at Rockingham Park.

The Town has an informational stormwater video entitled "Stormwater Runoff, There is No Away" that they have broadcast on their local cable access channel at various times throughout the 2003 permit term in an effort to educate the public about stormwater pollution. The Town has also featured a separate video demonstrating the use of canines to detect human waste in water quality samples collected from the Arlington Mill Reservoir, Captains Pond, Hedgehog Pond, and Millville Pond, and storm drains tributary to these water bodies.

The Town made copies of the EPA pamphlet/fact sheet "Protecting Water Quality from Urban Runoff", the Clean Water Campaign pamphlet entitled "Pick it Up It's Your Doodie", and the handout "Warm Weather Tips for Outdoor Water Conservation" available at the Town Hall front desk and at the DPW during the 2003 permit term. The Town also previously developed a separate pet waste brochure that is specific to Salem that discusses the impact of pet waste on public health and the environment. Under the 2003 MS4 Permit, this brochure was mailed to 300 abutters along Captains Pond and Millville Pond and has been posted to the Town's website.

In addition to the existing public education initiatives that the Town currently has in place, the new iteration of the permit requires additional messaging. Salem must distribute two messages within five years to each of the following target audiences:

1. Residents
2. Businesses, Institutions and Commercial Facilities
3. Developers (Construction)
4. Industrial Facilities

In order to accomplish this, the Town will implement the following BMPs:

BMP: Displays/Posters/Kiosks
Description: Provide stormwater information at selected kiosks located throughout Town.
Target Audience: Residents
Responsible Department/Parties: Engineering Division, DPW
Measurable Goals: The Town will monitor stormwater information placed at kiosks throughout town annually by DPW and replace/update materials as needed. The Town will ensure that stormwater information, at a minimum, is placed at kiosks that receive the most foot traffic.
Implementation Timeframe: Completed during Permit Year 1 (FY2019). In addition to placing information at kiosks, the Town also posted the EPA pamphlet/fact sheet "Protecting Water Quality from Urban Runoff", the UNH fact sheet "Green Grass & Clean Water", the Salem-specific pet waste brochure, and a Salem-specific yard waste flyer to the Town's website during Permit Year 2. These materials are included in Appendix F of the SWMP.

BMP: Brochures/Pamphlets
Description: Provide pamphlets addressing lawn/grounds maintenance, use of salt/de-icing materials and other facility specific materials.
Target Audiences: Businesses, Institutions, and Commercial Facilities
Responsible Department/Parties: Engineering Division, DPW
Measurable Goals: The Town will make pamphlets available to businesses, institutions and commercial facilities at Town Hall and track number of brochures distributed.
Implementation Timeframe: Completed during Permit Year 1 (FY2019). The NHDES Fact Sheet on Snow and Ice Removal for Business Owners was made available during Permit Year 1. This fact sheet is included in Appendix F.

BMP: Brochures/Pamphlets
Description: Distribute brochures to prospective developers and contractors providing general information on stormwater management during construction, including required sediment and erosion control measures.
Target Audiences: Developers/Contractors (construction)
Responsible Department/Parties: Engineering Division, Planning & Community Development
Measurable Goals: Make brochures available to developers/contractors at Town Hall/Building Department. Track number of brochures distributed.
Implementation Timeframe: Completed during Permit Year 2 (FY2020). The Town posted the EPA flyer "What you can do as a Developer" to its website to complete this BMP. A copy of the flyer is included in Appendix F.

BMP: Brochures/Pamphlets
Description: Distribute educational materials to industrial properties regarding stormwater best management practices, including equipment inspection, waste disposal, dumpster maintenance, use and storage of de-icing materials, and parking lot sweeping.
Target Audience: Industrial Facilities

Responsible Department/Parties: Engineering Division
Measurable Goals: The Engineering Division will distribute brochures to industrial facilities and maintain a list of all recipients.
Implementation Timeframe: Completed during Permit Year 3.

BMP: Videos
Description: Broadcast Informational Stormwater Video on Local Cable Access Channel
Target Audiences: Residents
Responsible Department/Parties: Engineering Division
Measurable Goals: Air at least two videos and keep track of dates and times that each video airs.
Implementation Timeframe: This BMP was not completed during Permit Year 3.

BMP: Web Page
Description: Update the Town's website to include information on vehicle maintenance, fertilizer use, parking lot sweeping, winter road maintenance, and waste/material storage for local businesses.
Target Audiences: Businesses, Institutions, and Commercial Facilities
Responsible Department/Parties: Engineering Division, DPW
Measurable Goals: Update the website and track the number of visitors to the website.
Implementation Timeframe: The Town posted several flyers related to stormwater management to the Town's website during Permit Year 3 which includes targeted information towards business, institutions, and commercial facilities.

BMP: Web Page
Description: Update stormwater information on the Town's website to provide access to stormwater-related materials, documentation, regulations and procedures targeting developers/contractors.
Target Audiences: Developers/Contractors (Construction)
Responsible Department/Parties: Engineering Division, Planning & Community Development
Measurable Goals: Update the website and track the number of visitors to the website.
Implementation Timeframe: The Town posted a flyer tailored to developers regarding stormwater management best practices during Permit Year 3.
BMP: Web Page
Description: Update the Town's website to describe and encourage low impact development practices such as installing on-site stormwater treatment systems and reducing impervious area footprint.
Target Audiences: Industrial Facilities
Responsible Department/Parties: Engineering Division, Planning & Community Development
Measurable Goals: Update the website and track the number of visitors to the website.
Implementation Timeframe: To be completed during Permit Year 5 (FY2023).

2.2.2 Public Involvement / Participation

Regulatory Requirement:

Section 2.3.3 of the 2017 MS4 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.

Existing Town Practices:

The Town of Salem has been proactive in providing opportunities for public participation and involvement in stormwater management activities. The Engineering Division makes rain barrels available to those residents who choose to participate in the program. The Town holds a Household Hazardous Waste Collection Day every year in September 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 grocery stores, Town Hall, the Town Library, the transfer station and are distributed. Advertisements are also placed in the local paper, on the local cable access channel and on the DPW website.

The Town of Salem has a mandatory recycling program. Recyclables are collected at the Town's transfer station and include the following: plastic, cans, bottles/glass, newspaper, cardboard, waste oil, batteries, etc. The Town also supports a roadside litter clean-up.

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. These BMPs and others that the Town has committed to under the new permit are detailed below.

BMP: Public Participation
Description: Provide for public review of the SWMP and Annual Reports.
Responsible Department/Parties: Engineering Division
Measurable Goals: The Town will make this SWMP and MS4 Annual Reports available to the public at Town Hall and/or on the Town's website.
Implementation Timeframe: Completed during Permit Years 1, 2, 3 and 4, and to be continued for the duration of the permit.

BMP: Public Participation
Description: Roadside Litter Clean-Up
Responsible Department/Parties: DPW
Measurable Goals: Continue annual roadside litter clean-up day tracking the amount of material collected and the number of miles of roadway cleaned.
Implementation Timeframe: Completed during Permit Years 1, 2, 3, and 4, and to be continued for the duration of the permit. The Year 1 roadside litter clean-up event was held between April 1 and April 5, 2019, and 3.01 tons of litter was collected. The Year 2 roadside litter clean-up event was held between April 13 and April 21, 2020, and 3.26 tons of litter was collected. The Year 3 roadside litter clean-up event was held between March 29 and April 8, 2021, and 2.06 tons of litter was collected. The Year 4 roadside litter clean-up event was held during April 2022.

BMP: Public Participation
Description: Participate in Household Hazardous Waste Collection Days.
Responsible Department/Parties: DPW
Measurable Goals: Hold Hazardous Waste Collection Days annually and track the amount and types of materials collected.
Implementation Timeframe: Completed during Permit Years 1, 2, 3, and 4, and to be continued for the duration of the permit. The Year 1 Household Hazardous Waste (HHW) Collection Day was held on October 13, 2018 and collected 50 cubic yards of material. The Year 2 HHW Collection Day was held on November 9, 2019 and collected 18.95 tons, or 37,895 pounds of materials. The Year 3 HHW Collection Day was held on October 31, 2020 and collected 19.36 tons, or 38,725 pounds of materials.

The Year 4 HHW Collection Day was held on October 23, 2021 and collected 6,000 pounds of materials. Disposal manifests from HHW Collection Days are included in Appendix F.

BMP: Public Participation
Description: Recycling Program
Responsible Department/Parties: DPW
Measurable Goals: Continue mandatory recycling program and track amount of recyclable materials collected.
Implementation Timeframe: Completed during Permit Years 1, 2, 3, and 4, and to be continued for the duration of the permit.

BMP: Public Participation
Description: Reporting Hotline
Responsible Department/Parties: DPW
Measurable Goals: Continue to maintain hotline on Town website to respond to public work order requests. Continue to log and track work order requests.
Implementation Timeframe: Completed during Permit Years 1, 2, 3, and 4, and to be continued for the duration of the permit (FY2019).

2.2.3 Illicit Discharge Detection and Elimination

Regulatory Requirement:

Section 2.3.4 of the 2017 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."

Existing Town Practices:

Under the 2003 MS4 Permit, the Town reviewed their existing regulations to determine whether they prohibit non-stormwater discharges to the storm drain system and include appropriate enforcement procedures and actions for non-compliance. Chapter 398 of the Town's existing municipal code governs the use of public sewers and prohibits the discharge of wastewater and other polluted waters to any natural outlet (Article I, Section 398-2). In addition, the regulations outline procedures and penalties for violations (Article III, Section 398-22).

Under the 2003 MS4 Permit, the Town developed a comprehensive map of their drainage system that exceeded the requirements of the 2003 MS4 Permit. The Town also screened several of their outfalls during dry and wet weather. The Town inspects all new and updated sewer connections to ensure proper connection to the Town's sanitary sewer as required in their Land Use Control regulations.

The Town developed a comprehensive Drainage GIS, which is updated annually to incorporate mapping of outfalls, drain manholes, and catch basins associated with new construction and road reconstruction projects. The Town also collected some asset information for most of their drainage structures, including pipe invert elevation data, pipe size, material, and asset condition.

Seasonal dry weather screening and sampling was performed at stormwater outfalls that discharge to

Captains Pond, Millville Pond, Arlington Pond and Canobie Lake in an effort to identify those drainage areas that are contributing to the high bacteria counts at these ponds. Catchment investigations were also completed of previously identified "hotspot" outfalls to Arlington Pond, Canobie Lake and Captains Pond. All sampling and investigations completed were consistent with the requirements of the Final 2017 NH MS4 Permit.

Under the new MS4 Permit, the Town is required to implement their Illicit Discharge Detection and Elimination Program by presenting a defined approach to investigate, identify and remove illicit connections. The Town is required to develop the written plan in Year 1 and then continue to implement the plan throughout the permit term. The Town developed their IDDE Plan during Permit Year 1 and continues to update the plan as new information becomes available. The Town will continue to update their drainage system map, as needed, as additional investigation is performed through drain pipe segment isolation, as well as TV, smoke and dye testing of sewer and drain pipes to identify illicit connections. Lastly, the Town will continue their effort to extend IDDE educational outreach by making information available to the public through the Town's website, and continue to train employees on illicit discharge detection and elimination.

The new permit requirements will be met through implementation of the following BMPs:

BMP: SSO Inventory
Description: Develop an inventory of where Sanitary Sewer Overflows (SSOs) have discharged to the Town's MS4 and/or receiving waters within the 5 years prior to the permit effective date and update this inventory annually going forward. The inventory must include the following: SSO location, whether the discharge entered the MS4 or a surface water directly, date and time that the SSO occurred, estimated discharge volume, known or suspected cause of the discharge, and mitigation or corrective measures completed or planned with implementation timeframes.
Responsible Department/Parties: DPW, Engineering Division
Measurable Goals: Develop and maintain a list of SSOs, including corrective measures taken.
Implementation Timeframe: Completed during Permit Years 1, 2, 3, and 4, and updated annually.

BMP: Storm Sewer System Map
Description: The Town developed a very comprehensive drainage map under the 2003 MS4 Permit. Update drainage map in accordance with permit conditions and update annually during IDDE program implementation.
Responsible Department/Parties: Engineering Division
Measurable Goals: Update the Town's existing drainage map to include a full inventory of the Town's storm drain system including the following within 2 years of the permit effective date:

- all outfalls and receiving waters *(mapped),*
- open channel conveyances *(mapped),*
- interconnections with other MS4s *(mapped)*,
- municipally-owned stormwater treatment structures *(at least mapped in part)*,
- impaired water bodies (mapped),
- and initial catchment delineations *(mapped)*.

Within 10 years of the permit effective date, this map shall also include:

- location of outfalls with an accuracy of +/- 30 feet *(mapped)*,
- all pipes *(mapped)*,
- manholes *(mapped)*,
- catch basins *(mapped)*,
- refined catchment delineations, and
- municipal sanitary sewer system *(mapped)*.

In addition, EPA suggests adding any information regarding:

- storm and sanitary sewer material, size and age *(some data already mapped)*,
- privately-owned stormwater treatment structures *(some already mapped)*,
- septic systems and areas likely to be affected by septic leaching,
- seasonal high-water table elevations,
- topography,
- orthography,
- alignments, dates and representation of illicit discharge remediation and locations of suspected, confirmed and corrected illicit discharges

Implementation Timeframe: The Town developed a comprehensive drainage map under the 2003 Permit, which they continue to update annually. The permit requires that a full system map be developed within 10 years of the permit effective date (FY2019) (FY2028). The Town will continue to report on progress in their annual reports.

BMP: Written IDDE Program
Description: Create a written IDDE plan that documents all elements of the Town's IDDE Program, including program responsibilities and procedures, and meets the conditions of the permit.
Responsible Department/Parties: Engineering Division
Measurable Goals: Develop a written IDDE plan and continue to follow and implement the guidelines and practices in the program.
Implementation Timeframe: Completed during Permit Year 1 and updated during Permit Year 4 (FY2021).

BMP: Implement IDDE Program
Description: Implement catchment investigations according to program and permit conditions, including TV inspection, smoke testing and dye testing as needed to isolate and identify illicit connections.
Responsible Department/Parties: Engineering Division
Measurable Goals: Implement and enforce practices set forth in written IDDE plan and bylaw. Track the number of illicit connections that are identified and removed annually.
Implementation Timeframe: Begin after IDDE plan is written, starting investigations in problem catchments and then moving to high and low priority areas in that order. The Town began investigations in some catchments under the 2003 Permit, although investigations are not complete in any given catchment. Catchment investigations resumed during Permit Year 4 with funding obtained through the State Revolving Fund Loan Program. All problem, high and low priority catchments must be investigated within 10 years of the permit effective date (FY2020, FY2028).

BMP: Employee Training
Description: Train employees on IDDE plan components and IDDE program implementation.

Responsible Department/Parties: Engineering Division
Measurable Goals: Conduct annual training on the Town's IDDE Program. Track the number of employees that receive training annually and the dates on which training is held.
Implementation Timeframe: Begin after IDDE plan is written in Year 1 and continue annually for duration of permit (FY2019). Training for Permit Year 4 was completed in April 2022.

BMP: Conduct Dry Weather Screening
Description: Conduct dry weather screening of all regulated outfalls and interconnections in accordance with outfall screening procedures and permit conditions.
Responsible Department/Parties: Engineering Division
Measurable Goals: Complete all dry weather screening and sampling within 3 years of the permit effective date. Track number of outfalls that are screened and sampled annually.
Implementation Timeframe: Dry weather screening was completed during Permit Year 3.

BMP: Conduct Wet Weather Screening
Description: Conduct wet weather screening and sampling at outfalls/interconnections in catchments where System Vulnerability Factors are present in accordance with permit conditions.
Responsible Department/Parties: Engineering Division
Measurable Goals: Complete all wet weather screening and sampling within 10 years of permit effective date. Track number of outfalls that are screened and sampled annually.
Implementation Timeframe: Begin wet weather screening and sampling after dry weather screening is complete, and complete sampling no later than 10 years from permit effective date (FY2028).

BMP: Ongoing Screening
Description: Conduct Dry and Wet weather screening (as necessary).
Responsible Department/Parties: Engineering Division
Measurable Goals: Complete ongoing outfall screening upon completion of IDDE investigations.
Implementation Timeframe: To be performed once all catchments have been investigated (FY2029).

BMP: Catchment Prioritization and Ranking
Description: Assess and rank the potential for all catchments to have illicit discharges. Identify catchments with System Vulnerability Factors (SVFs) that will necessitate wet weather sampling.
Responsible Department/Parties: Engineering Division
Measurable Goals: Assess the potential for delineated catchments to have illicit discharges by obtaining and evaluating data regarding the following:

- Past discharge complaints
- Receiving water quality
- Density of generating sites
- Age of development and infrastructure
- Areas once served by septic systems that have been converted to sewer
- Surrounding density of aging septic systems
- Culverted streams
- Water quality limited waters and water bodies with approved TMDLs

Rank catchments as problem, high, low or excluded based on applicability of those factors evaluated. Then, identify catchments with the following System Vulnerability Factors (SVFs) that will necessitate wet weather sampling:

- History of SSOs
- Common trench construction
- Crossing of storm and sanitary sewer alignments
- Presence of sewers with underdrains
- Areas of sewer surcharging or back-ups
- Presence of sanitary sewer defects
- Sewer and storm drain infrastructure are greater than 40 years old.
- Widespread code-required septic system upgrades at property transfer
- History of multiple Board of Health actions addressing widespread septic system failures

Implementation Timeframe: Completed during Permit Year 1 (FY2019).

BMP: Follow-up Ranking
Description: Update catchment prioritization and ranking as additional dry weather screening information becomes available.
Responsible Department/Parties: Engineering Division
Measurable Goals: The outfall ranking described above shall be amended by the Town as new sampling results become available after dry-weather screening and sampling is completed.
Implementation Timeframe: Update completed during Permit Year 3 (FY2021).

BMP: Catchment Investigation Procedures
Description: Develop written catchment investigation procedures and incorporate into the IDDE Plan.
Responsible Department/Parties: Engineering Division
Measurable Goals: Amend written IDDE Plan to include catchment investigation procedures.
Implementation Timeframe: Completed During Permit Year 2 (FY2020).

2.2.4 Construction Site Stormwater Runoff Control

Regulatory Requirement:

Section 2.3.5 of the 2017 MS4 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.

Existing Town Practices:

The 2003 MS4 Permit required the Town to develop, implement and enforce a program to address stormwater runoff from construction activities that disturb greater than one acre and discharge into the MS4. That program was also to include projects that disturb less than one acre if the project is part of a larger common plan of development which disturbs greater than one acre. As part of that program, the Town was to develop a new or update an existing regulatory mechanism to address construction runoff.

The Town's Land Use Control regulations require erosion and sediment control measures at construction sites. The regulations reference the "Stormwater Management and Erosion and Sediment

Control Handbook for Urban and Developing Areas in New Hampshire," as well as applicable state and federal requirements. Erosion control requirements are included under Section 8.9 of the Subdivision Regulations.

To attain compliance with the 2017 MS4 Permit, the Town will implement the BMPs identified below. This may include supplementing the existing requirements identified in the following regulatory documents, as appropriate: *Chapter 268 – Site Plan Review Regulations, Chapter 278- Subdivision Regulations, Chapter 417 – Stormwater Management* and/or developing separate Standard Operating Procedures. These updates will be adopted and implemented as soon as possible.

BMP: Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures
Description: Update existing Subdivision and Site Plan Review Regulations, as needed, to include written site inspection and enforcement procedures identifying who is responsible for site inspections as well as who has authority to implement enforcement procedures, including sanctions to ensure compliance.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Update written procedures as needed and continue to enforce erosion and sediment control measures and report on the number of site inspections and enforcements that occur annually.
Implementation Timeframe: Existing regulatory procedures are adequate to meet permit requirements. The Town developed a written SOP for Site Plan Review, Inspection and Enforcement during Permit Year 1.

BMP: Site Plan Review
Description: Develop written procedures for conducting site plan reviews, inspection and enforcement.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Create and implement site plan review procedures and report on the number of site plan reviews conducted, inspections conducted, and enforcement actions taken annually.
Implementation Timeframe: Completed within 1 year of the effective date of the permit (FY2019) through development of a written SOP for Site Plan Review, Inspection and Enforcement. Continue to report on the number of site plan reviews conducted, inspections conducted, and enforcement actions taken annually.

BMP: Erosion and Sediment Control
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 & Community Development, Engineering Division
Measurable Goals: Continue to enforce existing sediment and erosion control requirements, and update regulations as needed.
Implementation Timeframe: The Town's existing regulations meet permit requirements.

BMP: Waste Control

Description: The Town's existing regulations require proper disposal of construction debris. Update regulations as needed to control of all wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Review and update the Town's existing regulations as needed and implement.
Implementation Timeframe: The Town's existing regulations require control of construction debris. Chapter 417, Stormwater Management, has been updated to include additional language regarding control of construction debris, and is under review by Town officials and will be adopted as soon as possible.

2.2.5 Post-Construction Stormwater Management

Regulatory Requirement:

Section 2.3.6 of the 2017 MS4 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."

New Development is defined as construction activity that results in a total earth disturbance area equal to or greater than one acre on land that did not have any impervious area before work began.

Redevelopment is defined as any construction activity that disturbs greater than or equal to one acre and does not meet the requirements to be designated as new development.

Existing Town Practices and Amendments:

The Town of Salem has incorporated some post-construction stormwater management control measures into *Chapter 268 – Site Plan Review Regulations and Chapter 278- Subdivision Regulations. The Town has updated Chapter 417 – Stormwater Management in Year 3 to fully meet the post-construction stormwater runoff control requirements of the MS4 Permit and these updates will be adopted as soon as possible.*

In order to comply with the requirements of the 2017 MS4 Permit, the Town will implement the following BMPs:

BMP: As-Built Plans for Onsite Stormwater Control
Description: Review and update, as needed, existing procedures that require submission of as-built drawings and long-term operation and maintenance of BMPs to meet permit requirements.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Require submission of as-built plans and long-term O&M for completed projects and update as needed to meet permit requirements within 3 years of the permit effective date.
Implementation Timeframe: Regulatory updates drafted during Permit Year 3 and updated regulations to be formally adopted as soon as possible.

BMP: Target Properties to Reduce Impervious Areas
Description: Identify permittee-owned properties that could be modified or retrofitted with BMPs to reduce frequency, volume, and pollutant loads associated with stormwater discharges, and update annually.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: This goal can be achieved through identification of properties where impervious surfaces can be disconnected by introducing low impact development and green infrastructure practices. Report annually on progress and retrofitted properties identified through this effort.
Implementation Timeframe: Completed during Permit Year 4. The Town developed an inventory of BMP retrofit projects that can be implemented in future permit years as opportunities present themselves, as part of capital improvements to storm and sanitary sewer infrastructure, road reconstruction projects, or municipal building upgrades. As BMP retrofit projects are completed, the Town will continue to identify potential sites for BMP retrofits and report on progress in annual reports.

BMP: Allow for Green Infrastructure
Description: Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Complete assessment and implement recommendations of the report, where feasible.
Implementation Timeframe: Completed during Permit Year 4.

BMP: Street Design and Parking Lot Guidelines
Description: Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Complete assessment and implement recommendations of the report, where feasible.
Implementation Timeframe: Completed during Permit Year 4.

BMP: Ensure any Stormwater Controls or Management Practices for New Development and Redevelopment Meet the Retention or Treatment Requirements of the Permit
Description: Review and update existing regulatory mechanisms that govern post-construction stormwater management to meet the retention and treatment requirements of the permit.
Responsible Department/Parties: Planning & Community Development, Engineering Division
Measurable Goals: Review and update existing regulatory mechanisms within 3 years of the permit effective date.
Implementation Timeframe: Regulatory updates drafted during Permit Year 3 and updated regulations to be formally adopted as soon as possible.

2.2.6 Pollution Prevention / Good Housekeeping

Regulatory Requirement:

Section 2.3.7 of the 2017 MS4 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 form 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 MS4 infrastructure.

Existing Town Practices:

Salem continues to employ several good housekeeping measures that were adopted during the 2003 MS4 Permit. The Town currently sweeps all streets and municipally owned parking lots once per year in the spring. Catch basins are typically cleaned once every three years on a rotating schedule by Town personnel and outside subcontractors if budget is available. The Town follows proper disposal practices for removal of residual materials from catch basin cleaning and street sweeping activities with disposal at the Shannon Road landfill. Salt spreaders are calibrated each year, salt usage is monitored, and the Town follows proper snow disposal practices. The Town holds at least one Household Hazardous Waste Drop-Off Day annually. They train public works employees on good housekeeping techniques and continue to implement all existing SWPPPs for municipal-owned properties.

To comply with the 2017 MS4 Permit, catch basins must be no more than 50% full at any given time. To achieve this, all structures must be cleaned, measured, logged and monitored to develop an optimization plan to ensure that each catch basin is no more than 50% full. In addition, street sweeping must take place twice a year in catchments tributary to phosphorus-impaired waters - once in the fall and once in the spring at a minimum, to meet requirements for phosphorus impaired waters. These measures are summarized in the following BMP practices:

BMP: O&M Practices
Description: Update existing written operation and maintenance (O&M) procedures addressing parks and open space, buildings and facilities, vehicles and equipment, and infrastructure operations and maintenance.
Responsible Department/Parties: DPW
Measurable Goals: Update and implement standard operation and maintenance procedures for all municipal activities and facilities.
Implementation Timeframe: Completed during Permit Year 2 (FY2020).

BMP: Inventory all Permittee-Owned Property
Description: Update existing inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment and update annually.
Responsible Department/Parties: DPW
Measurable Goals: Update existing inventory annually.
Implementation Timeframe: Completed during Permit Year 2 (FY2020).
BMP: Infrastructure O&M
Description: Establish and implement a program for repair and rehabilitation of MS4 infrastructure.
Responsible Department/Parties: DPW

Measurable Goals: Create and implement an operation and maintenance plan for stormwater infrastructure.
Implementation Timeframe: Completed during Permit Year 2 (FY2020).

BMP: Stormwater Pollution Prevention Plan (SWPPP)
Description: The Town has in place a SWPPP for their Transfer Station under the MSGP. The Town has a draft SWPPP for their DPW Facility. Finalize SWPPP for DPW Facility.
Responsible Department/Parties: DPW
Measurable Goals: Complete and implement within 2 years of permit effective date and provide inspections quarterly and training annually thereafter. Track number of employees trained annually. The SWPPP shall include practices to address minimizing or preventing exposure, good housekeeping, preventative maintenance, spill prevention responses, erosion and sediment control, runoff management, salt pile storage, employee training, and other control measures specific to the town.
Implementation Timeframe: Completed during Permit Year 2 (FY2020).

BMP: Catch Basin Cleaning
Description: Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule.
Responsible Department/Parties: DPW
Measurable Goals: Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually during both cleanings in the fall and in the spring. The Town shall optimize the cleaning effort such that all catch basins have been located, measured, cleaned and monitored to ensure that each basin does not become more than 50% full of debris and refuse.
Implementation Timeframe: Complete and implement catch basin optimization plan within two years of permit effective date (FY2020) or develop schedule for collecting remaining data needed to develop optimization plan, and clean catch basins annually to ensure that each catch basin is no more than 50% full. The Town began collecting data in 2018 to use in developing a Catch Basin Cleaning Optimization Plan. The Town continues to collect data annually and is still working to collect sufficient data to develop the plan. Once the plan is developed, it will be implemented to ensure that catch basin sumps remain less than 50% full.

BMP: Street Sweeping Program
Description: Sweep all streets and permittee-owned parking lots in accordance with permit conditions.
Responsible Department/Parties: DPW
Measurable Goals: Sweep all streets and permittee-owned parking lots once in the spring and once in the fall to meet permit requirements including requirements specific to impaired waters. Track number of miles swept, or mass or volume of debris removed.
Implementation Timeframe: Completed during Permit Year 1 and will continue throughout the permit term.

BMP: Road Salt Use Optimization Program
Description: Develop and implement procedures for winter road maintenance including the use and storage of salt and sand; to minimize the use of sodium chloride and other salts, and evaluate opportunities for use of alternative materials; and ensure that snow disposal activities do not result in discharge of snow into waters of the U.S.
Responsible Department/Parties: DPW

Measurable Goals: Document existing procedures, identify opportunities for enhancement, and implement modifications to existing procedures as needed.
Implementation Timeframe: Completed within 1 year of the permit effective date (FY2019).

BMP: Inspection and Maintenance of Stormwater Treatment Structures
Description: Create an inventory of all municipally-owned BMPs, and inspect and maintain annually.
Responsible Department/Parties: DPW
Measurable Goals: Inspect and maintain treatment structures at least annually. Track number of structures maintained and inspected annually.
Implementation Timeframe: Inventory completed and updated during Permit Year 2 (FY2019). Only some municipal BMPs were inspected and maintained during Permit Years 2 and 3.

BMP: Catch Basin Cleaning Optimization
Description: Develop and Implement a plan to optimize inspection, cleaning and maintenance of catch basins to ensure that permit conditions are met.
Responsible Department/Parties: DPW, Engineering Division
Measurable Goals: Collect date to develop optimization plan, including depth from bottom of sump to invert of outlet pipe, depth from bottom of sump to catch basin rim, and depth from top of sediment to catch basin rim and implement.
Implementation Timeframe: The Town began collecting data in 2018 to use in developing a Catch Basin Cleaning Optimization Plan. The Town continues to collect data annually and is still working to collect sufficient data to develop the plan.

3.0 REGULATORY STANDARDS

3.1 Introduction

In order to prevent pollutants from entering the drainage system and being discharged to the environment with stormwater, Salem has implemented a wide variety of Best Management Practices (BMPs) categorized under the six minimum control measures as discussed earlier in this document. The control measures for Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, and Post-Construction Stormwater Management are focused on improving stormwater pollution prevention into the future through implementation of the following:

- Regulatory mechanisms establishing legal authority, prohibitions and requirements
- Design and construction standards governing stormwater infrastructure
- Requirements for long-term Operation and Maintenance (O&M) of structural BMPs

Additional information regarding the Town's current regulatory mechanisms adopted under the 2003 MS4 Permit, as well as the status of the Town's compliance with the 2017 MS4 Permit regulatory requirements are included in this section.

3.2 Existing Stormwater Regulatory Mechanisms

Under the 2003 MS4 Permit, the Town developed new rules and regulations to comply with the permit, and updated their existing regulations, as needed, to improve stormwater management town wide.

3.2.1 Chapter 398 – Sewer Use

The 2003 MS4 Permit required the Town to prohibit non-stormwater discharges into the MS4 and implement appropriate enforcement procedures and actions. A regulatory mechanism was required to be implemented to provide the Town with adequate legal authority to accomplish the following tasks:

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

Language currently in the Town's Bylaws, which addresses the above requirements includes:

- Chapter 398 of the Town's existing municipal code governs the use of public sewers. Under Article III, Use of Public Sewers Required, Section 398-5 discusses restrictions on discharges to natural outlets indicating that "it shall be unlawful to discharge to any natural outlet within

the Town of Salem any wastewater or other polluted waters, except where suitable treatment has been provided…". Indirectly, since the MS4 discharges to natural outlets, this Article prohibits illicit discharges to the MS4.

- Under Article VII, Enforcement Agency and Inspectors, Section 264-38 outlines Right of Entry Requirements.

- Article X outlines procedures for violations and penalties.

Excerpts from these regulations as they pertain to illicit discharge detection and elimination are included in Appendix G.

The Town has enhanced this existing language by amending Chapter 417, Stormwater Management, of the Town's municipal code, which will be adopted as soon as possible, to include language on illicit discharges.

3.2.2 Chapter 268 – Site Plan Review Regulations

The Town's Site Plan Review Regulations are administered by the Planning Board and govern review of non-residential site plans and non-agricultural uses, whether or not such development includes a subdivision or re-subdivision of the site. The latest version of the Town's Site Plan Review Regulations was adopted on July 17, 2012. Excerpts from these regulations as they pertain to stormwater management are included in Appendix G.

The 2003 MS4 Permit required the Town to develop, implement and enforce a program to address stormwater runoff from construction activities and post-construction stormwater runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the MS4. That program was also to include projects that disturb less than one acre if the project is part of a larger common plan of development which disturbs greater than one acre. As part of that program, the Town was to develop an ordinance or other regulatory mechanism to address construction runoff.

The Town's Site Plan Review Regulations appear to cover all types of construction activities. Notable exemptions are listed under Section 268-4:6, and the threshold for disturbance, where an exemption may be allowed, appears to be 500 square feet. This is well below the one-acre threshold required by the MS4 permit.

The Site Plan Review regulations govern all nonresidential and nonagricultural projects regardless of area disturbed. They also govern multi-family and condominiums, but exempt one- and two-family dwellings.

Section 268-5:8 states that all improvements shall be designed and constructed in accordance with Article 6 of the Subdivision Regulations, Design and Construction Standards.

3.2.3 Chapter 278 – Subdivision Regulations

The latest version of the Town's Subdivision Regulations was adopted on July 17, 2012. The Town's Subdivision Regulations pertain to all subdivisions regardless of the amount of disturbance. The Subdivision Regulations govern all subdivision, consolidation and lot-line adjustment. All construction and/or development activities are required to incorporate design standards for erosion and sedimentation control. Applicants are required to prepare a plan for minimizing soil erosion and sedimentation during construction. Site inspection procedures, as well as enforcement procedures for non-compliance, are included in this regulation, as well as requirements as they relate to post-construction stormwater management.

Excerpts from these regulations as they pertain to stormwater management are included in Appendix G.

3.2.4 Chapter 417 – Stormwater Management

Chapter 417 of the Town's municipal code primarily discusses connections to the storm drain system as they relate to sump pumps and basement drains. The Town has amended this chapter to incorporate additional requirements regarding use of the public storm drain system as well as additional requirements for construction and post-construction stormwater management, which are required to be implemented during Year 3 of the MS4 Permit based on permit modifications that became effective in January 2021. These updates are currently under review by various Town departments/officials and will be adopted as soon as possible. A copy of Chapter 417, as it's currently written, is included in Appendix G.

3.3 Review of Regulatory Mechanisms for Compliance with the 2017 MS4 Permit

A comprehensive review was conducted to evaluate whether the Town's existing regulatory mechanisms for construction and post-construction stormwater management comply with the 2017 MS4 Permit requirements, and identify what modifications, are needed to bring the Town into compliance.

3.3.1 Construction Site Stormwater Runoff Control

The 2017 MS4 Permit builds on the requirements of the 2003 MS4 Permit for construction site runoff control and requires the following (Year 1 requirements):

Site Inspection & Enforcement

Permit Requirement: Development of written procedures for site inspections and enforcement of sediment and erosion control measures. These procedures shall clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The program shall provide that the permittee may, to the extent authorized by law, impose sanctions to ensure compliance with the local program. These procedures and regulatory authorities shall be documented in the SWMP.

Excerpts from Salem's Regulations that Support Permit Requirement: Chapter 268, Site Plan Review Regulations and Chapter 278, Subdivision Regulations regulates all development within town.

Section 278-6:9 of the Town's Subdivision Regulations covers erosion control and requires that "all construction and/or development activities incorporate design standards for erosion and sedimentation control, which at a minimum reflect the recommendations of the publication *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*." Section 278-4:1.15 requires the applicant to prepare a plan for minimizing soil erosion and sedimentation during construction and operation of the proposed development, unless deemed unnecessary by the Planning Board. Site inspection procedures are identified under Sections 278-6:12 and 278-6:13. The Town Engineer is responsible for performing visual inspections. Administration, enforcement, and penalties for non-compliance are referenced under Sections 278-9:1, 278-9:2, and 278-9:3 of the same regulations.

Section 268-5:8 of the Town's Site Plan Review Regulations states that all improvements shall be designed and constructed in accordance with Article 6 of the Subdivision Regulations, Design and Construction Standards, which outlines sediment and erosion control requirements as well as site inspection procedures.

Proposed Regulatory Updates:
Chapter 417, Stormwater Management, has been revised to incorporate the following language regarding sediment and erosion controls: "Proper sediment and erosion controls shall be used at construction sites during land disturbance activities to ensure that pollutants are not introduced into stormwater. All construction or development activities shall incorporate design standards for erosion and sedimentation control which at a minimum reflect the recommendations of the New Hampshire Storm Water Manual (Volumes I, II, III), December 2008 and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire ("The Green Book") prepared for the NH Department of Environmental Services by the Rockingham County Conservation District in cooperation with the USDA Soil Conservation Service, August 1992 as amended. Specific requirements included in Section 278-6:9, Erosion Control, of the Subdivision Regulations shall also apply to projects that fall under Site Plan Review and any disturbance of land."

The Town also developed a written SOP for Site Plan Review, Inspection and Enforcement during Permit Year 1, which is included in Appendix G.

Sediment and Erosion Control BMPs

Permit Requirement: Requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site. The program may include references to BMP design standards in state manuals or design standards specific to the MS4. EPA supports and encourages the use of design standards in local programs. Examples of appropriate sediment and erosion control measures for construction sites include local requirements to:

- *Minimize the amount of disturbed area and protect natural resources*
- *Stabilize sites when projects are complete, or operations have temporarily ceased*

- *Protect slopes on the construction site*
- *Protect all storm drain inlets and armor all newly constructed outlets*
- *Use perimeter controls at the site*
- *Stabilize construction site entrances and exists to prevent off-site tracking*
- *Inspect stormwater controls at consistent intervals*

Excerpts from Salem's Regulations that Support Permit Requirement: Section 278-6:9 of the Town's Subdivision Regulations covers erosion control and requires that "all construction and/or development activities incorporate design standards for erosion and sedimentation control, which at a minimum reflect the recommendations of the publication *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*."

Proposed Regulatory Updates:
Chapter 417, Stormwater Management, has also been revised to incorporate the following language regarding sediment and erosion controls: "Proper sediment and erosion controls shall be used at construction sites during land disturbance activities to ensure that pollutants are not introduced into stormwater. All construction or development activities shall incorporate design standards for erosion and sedimentation control which at a minimum reflect the recommendations of the New Hampshire Storm Water Manual (Volume I, II, III), December 2008 and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire ("The Green Book") prepared for the NH Department of Environmental Services by the Rockingham County Conservation District in cooperation with the USDA Soil Conservation Service, August 1992 as amended. Specific requirements included in Section 278-6:9, Erosion Control, of the Subdivision Regulations shall also apply to projects that fall under Site Plan Review and any disturbance of land."

Control of Wastes

Permit Requirement: Requirements for construction site operators within the MS4 jurisdiction to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. These wastes may not be discharged to the MS4.

Excerpts from Salem's Regulations that Support Permit Requirement: Section 278-6:1.25 of the Town's Subdivision Regulations states that "all construction debris shall be disposed of in a proper manner which complies with all federal and state regulations." Section 268-5:8 of the Town's Site Plan Review Regulations states that all improvements shall be designed and constructed in accordance with Article 6 of the Subdivision Regulations, Design and Construction Standards, and therefore incorporates the waste control requirement by reference.

Proposed Regulatory Updates:
Chapter 417, Stormwater Management, has been revised to incorporate the following language regarding waste control at construction sites: "All construction debris, including, but not limited to, discarded building materials, concrete truck wash out, chemicals, litter and sanitary waste, shall be disposed of in a proper manner that complies with all federal and state regulations. These wastes shall not be discharged to the municipal storm drain system. "

Site Plan Review Inspection and Enforcement

Permit Requirement: Development of written procedures for site plan review, inspection and enforcement. The site plan review procedure shall include a pre-construction review by the permittee of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development. The review procedure shall incorporate procedures for the consideration of potential water quality impacts, and procedures for the receipt and consideration of information submitted by the public. The site plan review procedure shall also include evaluation of opportunities for use of low impact design and green infrastructure. When the opportunity exists, the permittee shall encourage project proponents to incorporate these practices into the site design. The procedures for site inspection conducted by the permittee shall include the requirement that inspections occur during construction of BMPs as well as after construction of BMPs to ensure they are working as described in the approved plans, clearly defined procedures for inspections including qualifications necessary to perform the inspections, the use of mandated inspections forms if appropriate, and procedure for tracking the number of site reviews, inspections, and enforcement actions.

Excerpts from Salem's Regulations that Support Permit Requirement: The Town requires submission of comprehensive Site Plan Review and Subdivision Plan Checklists as part of the review process. Site inspection procedures are identified under Sections 278-6:12 and 278-6:13 of the Town's Subdivision Regulations. Section 278-6:12 identifies milestones when inspections are required on site. The Town Engineer is responsible for performing visual inspections. Section 278-6:13 provides additional information regarding the inspection process and requirements during the inspections. Administration, enforcement, and penalties for non-compliance are referenced under Sections 278-9:1, 278-9:2, and 278-9:3 of the same regulations. Section 268-5:8 of the Town's Site Plan Review Regulations states that all improvements shall be designed and constructed in accordance with Article 6 of the Subdivision Regulations, Design and Construction Standards, which outlines site inspection procedures. Section 268-1:6 outlines penalties for non-compliance. During Permit Year 1, the Town developed a written SOP for Site Plan Review, Inspection and Enforcement, which is included in Appendix G. The Town tracks in a database that they maintain the number of site reviews, inspections, and enforcement actions taken annually.

3.3.2 Post-Construction Stormwater Management

The 2017 MS4 Permit builds on the requirements of the 2003 MS4 Permit for post construction runoff from new development and redevelopment. Requirements that must be completed in Year 3 are outlined in this section. In those cases where the Town has existing language in their regulations to support the requirement, that language has been referenced. The Town has updated Chapter 417, Stormwater Management, of the Town's municipal code to meet the post-construction stormwater management requirements of the permit and these updates will be adopted as soon as possible.

Stormwater Best Management Practices (BMPs)

Permit Requirement: Develop or modify, as appropriate, an ordinance or other regulatory mechanism… to be at least as stringent as Section 4, Element C and Element D of the Southeast

Watershed Alliance's Model Stormwater Standards for Coastal Watershed Communities (SWA Model Standards). Pollutant removal for Stormwater Best Management practices shall be evaluated consistent with Attachment 3 to Appendix F and the Stormwater Best Management Practices (BMP) Performance Analysis or other tools provided by EPA Region 1 consistent with these resources. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or State approved BMP design guidance or performance standards (e.g. State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance.

Proposed Regulatory Updates:
Chapter 417, Stormwater Management, has been revised to incorporate language regarding BMP selection and design in accordance with this requirement. A copy of Chapter 417, as it's currently written, is included in Appendix G.

Submission of As-Builts

Permit Requirement: The permittee shall require the submission of as-built drawings within a specified timeframe, not to exceed two years from completion of construction projects at a minimum. The as-built drawings must depict all on site controls designed to manage the stormwater associated with the completed site (post construction stormwater management).

Proposed Regulatory Updates:
The Town has added language under Section 417-302, Stormwater Management for New Development and Redevelopment, that states that "as-built drawings shall be submitted to the Municipal Services Department in accordance with the Site Plan Review Regulations (Chapter 268) and Subdivision Regulations (Chapter 278) within six months after completion of construction. Drawings shall depict all on-site controls designed to manage the stormwater associated with the site post construction." Article 5:5.2 of the Town's Site Plan Review Regulations outline and Article 6:13.2 of the Town's Subdivision Regulations outline as-built submission requirements.

Long-term Operation & Maintenance

Permit Requirement: The new development/redevelopment program shall have procedures to ensure adequate long-term operation and maintenance of stormwater management practices that are put in place after the completion of a construction project. These procedures may include the use of dedicated funds or escrow accounts for development projects or the acceptance of ownership by the permittee of all privately owned BMPs. These procedures may also include the development of maintenance contracts between the owner of the BMP and the permittee. Alternatively, these procedures may include the submission of an annual certification documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures. The procedures to require submission of as-built drawings and ensure long term operation and maintenances shall be a part of the SWMP.

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-302, Stormwater Management for New Development and Redevelopment, that states that "the owners of private storm drains, stormwater management systems, and BMPs shall be responsible for the long-term maintenance of all such systems in accordance with N.H. Code Admin. R. Part

Env-Wq 1507.07. Prior to issuance of the certification of occupancy, a written operation and maintenance plan for each stormwater system shall be submitted for approval by the Planning Board and Engineering Division. The plan must provide guidance to the party responsible for maintenance in understanding how the system functions and the maintenance activities needed to maintain that function on a perpetual basis. The plan shall clearly identify inspection activities, schedules, record keeping requirements, and contingency measures for ensuring the long-term proper function of the stormwater system. The plan shall identify each BMP used on the site and its specific maintenance activities and schedules.

In addition to the above, the Applicant shall provide the Planning Board with a covenant, signed by the owners(s) of the site on which new or re-development has occurred, that identifies long-term operation and maintenance requirements. The protective covenant shall be approved by the Engineering Division and run with the land. The protective covenant shall include all maintenance easements required to access and inspect the stormwater treatment practices, and to perform routine maintenance as necessary to ensure proper functioning of the stormwater system. The protective covenant shall be recorded by the Applicant, at Applicant's sole expense, at the Rockingham County Registry of Deeds. The owner of such facilities shall maintain a written record describing the date and type of all cleaning, maintenance and inspections performed, and the identity and qualifications of the person who performed such tasks. Records shall be maintained for six years and shall be made available for inspection and copying by the Engineering Division. By March 31st of each year, the owner shall submit to the Engineering Division a written record of the date and type of all maintenance, cleaning, and inspection performed during the prior calendar year. Records shall be specific to the site, system, and work performed. The Engineering Division may reject any records that are not site specific and those records shall be resubmitted with the proper information. If the owner(s) fail to comply with the required maintenance, the Town, at its discretion, may perform the maintenance and back-charge the owners for all such work, including reasonable attorney's fees."

Phosphorous Impairment:

Permit Requirement: For discharges to water quality limited water bodies and their tributaries where phosphorous is the cause of the impairment, the Town's regulatory mechanism for Stormwater Management in New Development and Redevelopment (Year 3 Permit Requirement), shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal.

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-304, Discharges to Impaired or Water Quality Limited Waters, that states that "any stormwater BMP constructed or employed within the watershed of a water body impaired for phosphorous shall be optimized for phosphorous removal. Selection of each BMP shall be supported by a rationale included in the site plan design narrative to substantiate its use."

Chloride Impairment:

Permit Requirement: For discharges to water quality limited water bodies where chloride is the cause of the impairment, the Town's regulatory mechanism for Stormwater Management in New

Development and Redevelopment (Year 3 Permit Requirement), shall include a requirement for private parking lot owners and operators and private street owners and operators that (1) any commercial salt applicators used for applications of salt to their parking lots or streets be trained and certified in accordance with Env-Wq 2203, and (2) to report annual salt usage within the municipal boundaries using the UNH Technology Transfer Center online tool (http://www.roadsalt.unh.edu/Salt/) or report salt usage directly to the permittee, in which case this information should be reported on the permittees annual report. In addition, the regulatory mechanism shall include requirements for new development and redevelopment to minimize salt usage, and to track and report amounts used using the UNH Technology Transfer Center online tool (http://www.roadsalt.unh.edu/Salt/).

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-304, Discharges to Impaired or Water Quality Limited Waters, that states that "Any owner or operator of a private street or parking lot with 10 or more parking spaces, whether part of existing, new or redevelopment, located within the watershed of a water body impaired for chloride and draining to the municipal storm drain system is subject to the requirements of Appendix F, Part I and Appendix H, Part IV of the MS4 General Permit."
Section 417-104, which discusses applicability provides further clarification and states that "Article III, Construction and Post-Construction Stormwater Management, Section 417-304, Part B shall apply to owners and operators of all existing and proposed private parking lots with 10 or more spaces, and all existing and proposed private streets located within the watershed of a water body impaired for chloride."

Metals Impairment:

Permit Requirement: For discharges to water quality limited water bodies where iron is the cause of the impairment, the Town's regulatory mechanism for Stormwater Management in New Development and Redevelopment (Year 3 Permit Requirement), shall include a requirement that new development and redevelopment stormwater management BMPs designed on commercial and industrial land use area draining to the water quality limited water body shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. EPA also encourages the permittee to require any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration as calculated using the methodologies contained in the EPA document: Stormwater Best Management Practices (BMP) Performance Analysis (2010). of the same volume of runoff to be infiltrated, prior to infiltration.

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-304, Discharges to Impaired or Water Quality Limited Waters, that states that "Any stormwater BMP designed on commercial or industrial land use area within the watershed of a water body impaired for solids, metals or oil and grease shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event."

Additional State Regulatory Requirements:

Permit Requirement: To meet NH specific MS4 requirements outlined in the MS4 Permit, the Town must when updating stormwater ordinances as required for Stormwater Management in New Development and Re-development (Year 3 Permit Requirement) consider adding the provisions identified in N.H. Code Admin. R. Part Env-Wq 1507.04 for groundwater recharge, and N.H. Code Admin. R. Part Env-Wq 1507.05 for channel protection and N.H. Code Admin. R. Part Env-Wq 1507.06 for peak runoff control to address concerns about streambank erosion and flooding which may cause both water quality violations and significant property damage or loss of life.

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-302, Stormwater Management for New and Redevelopment Projects, that states the following:

"All new development and redevelopment sites must retain and treat stormwater runoff onsite. All BMPs must be designed in accordance with applicable sections of N.H. Code Admin. R. Part Env-Wq 1500 to retain the water quality volume to the maximum extent practicable. Channel protection and peak runoff control shall be considered, where applicable, to proactively address concerns about stream bank erosion and flooding which may cause both water quality violations and significant property damage or loss of life."

Permit Requirement: To meet NH Public Drinking Water Requirements (No Adoption Timeframe Specified in Permit):

1) *The Town shall avoid direct discharges to groundwater and surface water drinking water sources and ensure any discharges near source protection areas of water supply wells or intakes 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). The following minimum setbacks apply to certain drinking water supply resources, including:*

    a. *Discharge setbacks from water supply wells in accordance with N.H. Code Admin. R. Part Env-Wq 1508.02(a); and*
    b. *Discharge setback of 100 feet within water supply intake protections areas as specified under N.H. Code Admin. R. Part Env-Wq 1508(b).*

2) *In groundwater protection areas and water supply intake 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 within local regulations for projects not subject to N.H. Code Admin. R. Part Env-Wq 1500.*

3) *The permittee is encouraged to adopt similar requirements or reference these state rule requirements under N.H. Code Admin. R. Part Env-Wq 1500 within local regulations for projects not subject to N.H. Code Admin. R. Part Env-Wq 1500.*

Proposed Regulatory Updates:
Under Chapter 417, Stormwater Management, the Town has added language under Section 417-305, Discharges to Drinking Water Sources, that states the following:

"A. All storm drain system outfalls shall be prohibited from directly discharging to a surface or groundwater drinking water supply source. Any discharge located near a source protection area must meet the minimum setback requirements from a water supply well and an intake site as defined in N.H. Code Admin. R. Part Env-Wq 1500.

B. In groundwater protection areas and water supply intake protection areas, infiltration and filtration shall provide additional vertical separation to the seasonal high-water table in accordance with N.H. Code Admin. R. Part Env-Wq 1500 for projects not subject to N.H. Code Admin. R. Part Env-Wq 1500."

4.0 IDDE MONITORING AND PROGRESS

4.1 IDDE Plan

Under the 2003 MS4 Permit, the Town reviewed their existing regulations to determine whether they prohibit non-stormwater discharges to the storm drain system and include appropriate enforcement procedures and actions for non-compliance. Chapter 398 of the Town's existing municipal code governs the use of public sewers and prohibits the discharge of wastewater and other polluted waters to any natural outlet (Article I, Section 398-2). In addition, the regulations outline procedures and penalties for violations (Article III, Section 398-22). The Town has amended existing language in Chapter 417 of the Town's municipal code, which covers *Stormwater Management. Proposed updates to* Chapter 417, which cover illicit discharges, will be adopted as soon as possible. Under the new MS4 Permit, the Town is required to implement their Illicit Discharge Detection and Elimination Investigation Program by presenting a defined approach to investigate, identify and remove illicit connections. The Town is required to develop the written plan in Year 1 and then continue to implement the plan throughout the permit term.

As part of Minimum Control Measure No. 3, Illicit Discharge Detection and Elimination (IDDE), the Town is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. This includes, but is not limited to, the following measures:

1. Developing a comprehensive map of the Town's drainage system that builds upon the outfalls and receiving waters that were previously mapped under the 2003 MS4 Permit.
2. Ensuring that appropriate regulatory mechanisms and enforcement procedures, as required under the 2003 MS4 Permit, are in place to prohibit illicit discharges.
3. Developing and implementing a written plan to detect and eliminate illicit discharges, which references the Town's authority to implement all aspects of the IDDE program, clearly identifies responsibilities with regard to eliminating illicit discharges, and outlines written procedures for dry and wet weather outfall screening and sampling and catchment investigations.
4. Providing training annually to employees involved in the IDDE program about the program, including how to recognize illicit discharges and SSOs.

Salem has developed a comprehensive written IDDE Plan, under separate cover, to meet the requirements of the 2017 MS4 Permit.

Such measures will be performed with the goal of finding and removing illicit discharges, which include fixed point source discharges such as illegal/improper sanitary or floor drain connections and cross connections between the sanitary and drainage infrastructure, in addition to all isolated or recurring discharges such as illegal dumping and improper disposal of waste from boats. Illicit Discharges could also be indirect sources that infiltrate into the drainage system through cracks/defects in infrastructure, such as sanitary wastes from failing sewer pipes. Exceptions do exist in the regulation for the discharge of clean water from sources such as water line flushing, fire-fighting operations, non-contact cooling waters, and for other discharges that have separately obtained a permit from the NPDES Program.

4.1.1 Mapping

The Town has already developed a comprehensive map of their drainage system, which includes outfalls, pipes, manholes, catch basins, interconnections with other MS4s, some municipally owned stormwater treatment structures and impaired water bodies. Outfalls and interconnection have been analyzed to create a defined catchment area that includes surface runoff to catch basins tributary to the identified outfall or interconnection. The catchment delineation process considered each catch basin upstream from the outfall or interconnection and the area that would conceivably drain to that catch basin based on topography and impervious cover. As drainage infrastructure mapping becomes more complete over the course of the investigations performed throughout the permit term, this exercise will be refined and updated.

The Town has approximately:

- 85 miles of gravity pipe/culverts ranging from 4-inches to 52-inches in size constructed of cast iron, vitrified clay, reinforced concrete, corrugated metal, ductile iron, HDPE, PVC, and steel;
- 4,967 catch basins;
- 741 storm drain manholes;
- 934 municipal outfalls;
- 149 non-municipal outfalls; and
- 55 interconnections with other MS4s.

Mapping has been in accordance with the 2017 MS4 Permit's accuracy guidelines and has been recorded on a publicly available town map, the most recent version of which can be found attached to the NOI included in Appendix C of this report.

The Town is also in the process of mapping privately-owned stormwater treatment structures. The Town already has in place a comprehensive map of their municipal sanitary sewer system.

Salem has reviewed drainage infrastructure within town boundaries to determine ownership. Private infrastructure or infrastructure owned and operated by another municipality or a state entity has been determined and designated in the Town's drainage GIS.

The mapping will serve as a planning tool for the implementation and phasing of the Town's IDDE Program and demonstration of the extent of complete and planned investigations and corrections. The Town will update their mapping as needed to reflect newly discovered information and required corrections or modifications. The Town will report annually on progress toward completion of the system map in their MS4 Annual Report.

4.1.2 Catchment Prioritization and Ranking

The Town completed an initial inventory and priority ranking to assess the illicit discharge and SSO potential of each regulated catchment and the related public health significance. The ranking will determine the priority order for screening of outfalls and interconnections, catchment investigations for evidence of illicit discharges, and provide the basis for determining permit milestones. Major factors considered in the prioritization and ranking of catchments include:

- Past discharge complaints and reports

- Receiving water quality, including any dry weather sampling conducted under the 2003 MS4 Permit
- Density of generating sites as it relates to commercial and industrial sites
- Age of development and infrastructure
- Culverted streams
- Water body impairments

This inventory and ranking has been documented in the Town's IDDE Plan and will be updated annually throughout the permit term to reflect new findings from dry and wet-weather sampling and other IDDE program activities, and will be documented in the Town's MS4 Annual Reports. The ranking was updated during Permit Year 3 to incorporate results from dry weather outfall screening and sampling completed during Permit Year 3. The ranking was updated again during Permit Year 4 to incorporate results from IDDE investigations and wet weather sampling completed during Permit Year 4.

4.1.3 Field Investigation

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

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

- Sandbagging - If no flow is observed at a particular junction manhole or key junction manhole at the time of inspection, the drain segment in the area of concern can be isolated by placing sandbags within outlets to manholes to form a temporary dam that collects any intermittent flow for a 24 to 48-hour dry weather period to determine if any intermittent dry-weather flow is present. If intermittent flow is captured, grab samples will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. If it is determined that no flow is captured behind the sandbag after a 24 to 48-hour period, the tributary drainage pipes can be excluded as the source of any intermittent discharge.
- Dye Testing - dyed water is poured into plumbing fixtures and downstream drainage is observed to confirm connections.
- ZoomCam Inspections - in selected tributary areas, or where indicated based on findings from other field investigation work, drainage structures will be inspected with a "zoom camera-on-a-stick" in an attempt to gather additional information and narrow the location of observed dry-weather flow.
- Smoke Testing - non-toxic smoke is introduced into drainage segments containing suspected illicit discharges and adjacent buildings are observed for signs of a connection, or smoke emanating from floor drains or sump pump connections.
- CCTV/Video Inspections – drainage pipes are internally inspected to pinpoint and evaluate connections through the use of a closed-circuit television camera through all or a portion of the drain segment believed to contain the connection.

Upon location of an illicit discharge, the Town will work to eliminate the illicit discharge as expeditiously as possible. When the specific source of an illicit discharge is identified, the Town of will exercise its authority as necessary to require its removal. The Town will notify all responsible parties of any such discharge and require immediate cessation of improper disposal practices in accordance with its legal authorities.

4.1.4 Sanitary Sewer Overflows

Sanitary Sewer Overflows (SSOs) are included in the MS4 Permit's definition of illicit discharges and can be defined as discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, power failures, vandalism, and sewer defects. This includes SSOs resulting during dry or wet weather, from inadequate conveyance capacities, or where interconnectivity of the storm and sanitary sewer infrastructure allows for communication of flow between the systems.

Salem will maintain and update annually an inventory, that identifies all known locations where SSOs have discharged to the MS4 within the five (5) years prior to the effective date of the MS4 Permit (July 1, 2018), and any SSOs that have occurred thereafter. This includes SSOs resulting, during dry or wet weather, from inadequate conveyance capacities, or where interconnectivity of the storm and sanitary sewer infrastructure allows for transmission of flow between the systems. The inventory will include the following information, when available:

- Location (approximate street crossing/address and receiving water, if any);
- A clear statement of whether the discharge entered a surface water directly or entered the MS4
- Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge);
- Estimated volume 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.

Upon detection of an SSO, Salem will provide oral notice to EPA within 24 hours, a written notice to EPA within five (5) days and shall include the information in the updated inventory as identified above, and mitigate it as expeditiously as possible taking interim measures to minimize the discharge of pollutants to and from its MS4 until elimination is completed.

Salem has had four (4) documented SSO occurrences in the five years prior to the permit effective date to present. These include the following:

- An SSO occurred on April 16-17, 2018 near #142 and #152 Main Street. Flow discharged overland from a sewer manhole and then entered Policy Brook and then ultimately the Spicket River via the drainage system. The volume of the sanitary sewer overflow is estimated at approximately 50,000 gallons, based on the estimated discharge rate and the duration of the event. The cause of the incidence was infiltration and inflow entering the sewer system during a wet weather event and reducing the amount of available system capacity. Mitigation measures taken include isolation and monitoring of the drainage system

including nearby catch basins and tributary outfalls. Capital improvements planned post-incident to prevent this from re-occurring include inflow/infiltration identification and removal, and the construction of a new sewer on South Broadway, which is planned for 2018-2019.

- SSOs occurred from November 13-14, 2018 near #142 and #152 Main Street. Flow discharged overland from a sewer manhole and then entered Policy Brook and then ultimately the Spicket River via the drainage system. The volume of the sanitary sewer overflow is estimated at approximately 5,000 gallons, based on the estimated discharge rate and the duration of the event. The cause of the incidence was infiltration and inflow entering the sewer system during a wet weather event and reducing the amount of available system capacity. Mitigation measures taken include isolation and monitoring of the drainage system including nearby catch basins and tributary outfalls. Capital improvements planned post-incident to prevent this from re-occurring include inflow/infiltration identification and removal, the construction of a new sewer on South Broadway, which is planned for 2018-2019, as well as sewer interceptor rehabilitation in December 2018.

- SSOs occurred from November 27-30, 2018 near #142 and #152 Main Street. Flow discharged overland from a sewer manhole and then entered Policy Brook and then ultimately the Spicket River via the drainage system. The volume of the sanitary sewer overflow is estimated at approximately 140,000 gallons, based on the estimated discharge rate and the duration of the event. The cause of the incidence was infiltration and inflow entering the sewer system during a wet weather event and reducing the amount of available system capacity. Mitigation measures taken include isolation and monitoring of the drainage system including nearby catch basins and tributary outfalls. Capital improvements planned post-incident to prevent this from re-occurring include inflow/infiltration identification and removal, the construction of a new sewer on South Broadway, which is planned for 2018-2019, as well as sewer interceptor rehabilitation in December 2018.

- An SSO occurred from December 2-3, 2018 near #142 and #152 Main Street. Flow discharged overland from a sewer manhole during a wet weather event and then entered Policy Brook and ultimately the Spicket River via the drainage system. The volume of the sanitary sewer overflow is estimated at approximately 30,000 gallons, based on the estimated discharge rate and the duration of the event. The cause of the incident was infiltration and inflow entering the sewer system during a wet weather event and reducing the amount of available system capacity. Mitigation measures taken include monitoring of the drainage system including nearby catch basins and tributary outfalls. Capital improvements planned post-incident include a new sewer on South Broadway, which is planned for 2018-2019, as well as sewer interceptor rehabilitation in December 2018.

The Town will maintain this SSO inventory as part of this plan and the Town's IDDE Plan. Information will also be included in the Town's MS4 Annual Reports, including the status of mitigation and corrective measures to address each identified SSO.

4.1.5 Dry Weather Outfall Screening

The Town conducted dry weather screening of their 594 regulated outfalls and 22 outgoing interconnections during Permit Year 3. In accordance with outfall screening procedures and permit

conditions, any outfalls found to be flowing during dry weather were sampled for temperature, salinity, conductivity, chlorine, ammonia, surfactants, E. coli, and pollutants of concern. There were 58 outfalls and interconnections sampled for dry weather flow.

4.1.6 Wet Weather Outfall Screening

Under the 2003 MS4 Permit, the Town screened and sampled 27 outfalls during wet weather conditions. All wet weather screening and sampling was consistent with the requirements of the Final 2017 NH MS4 Permit. The Town sampled 5 additional outfalls discharging to Captains Pond under wet weather conditions during Permit Year 4 to aid in the development of the Captains Pond Phosphorus Source Identification Report. The Town plans to resume wet weather screening and sampling during Permit Year 5.

4.1.7 Catchment Investigations

Under the 2003 MS4 Permit, the Town began catchment investigations of previously identified "hotspot" outfalls to Arlington Pond, Canobie Lake and Captains Pond in Permit Year 3. All sampling and investigations completed were consistent with the requirements of the Final 2017 NH MS4 Permit. The Town continued investigations in these and begin investigation in other high priority catchments during Permit Year 4. The Town plans to continue catchment investigations during Permit Year 5.

5.0 STANDARD OPERATING PROCEDURES

5.1 MS4 Permit Requirement

As part of the minimum control measure for Pollution Prevention/Good Housekeeping for Municipal Operations, the MS4 Permit requires permittees to implement an Operations and Maintenance (O&M) program for permittee-owned facilities and activities to prevent or reduce pollutant runoff and protect water quality. The O&M Program is required to include the following elements:

1) An inventory of all permittee-owned facilities.
2) Written O&M procedures for the following activities:
    a. Parks and open space
    b. Buildings and facilities where pollutants are exposed to runoff
    c. Vehicles and equipment
3) A written program detailing the activities and procedures the permittee will implement so that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4, to include:
    a. Optimization of routine inspections, cleaning and maintenance of catch basins.
    b. Implementation of procedures for sweeping and/or cleaning streets, and permittee-owned parking lots.
    c. Proper storage and disposal of catch basin cleanings and street sweepings.
    d. Implementation of procedures for winter road maintenance.
    e. Implementation of inspection and maintenance frequencies and procedures for storm drain systems and stormwater treatment structures.
4) Written records for all maintenance activities, inspections and training.

5.2 Inventory of Municipal Facilities

Salem has developed a comprehensive Operations and Maintenance Plan (O&M) Plan to meet permit requirements. The inventory of municipally-owned facilities and property, including vehicles, equipment, and stormwater treatment structures is included in Appendix C of the O&M Plan.

5.3 Operation and Maintenance Procedures for Municipal Activities and Facilities

To address MS4 Permit requirements, Standard Operating Procedures (SOPs) associated with the identified municipal activities and facilities are required to be developed within two years of the permit effective date, except for procedures for winter road maintenance, which are required to be developed within one year of the permit effective date. All required SOPs were developed during Permit Years 1 and 2 and are appended in Appendix H of this SWMP.

5.4 Catch Basin Cleaning and Optimization

The Town currently has approximately 4,967 catch basins. Frequency of catch basin cleaning is approximately 30-35% of all basins per year. To meet the anticipated requirements of the 2017 MS4

Permit, the Town will need to optimize catch basin inspection, cleaning and maintenance such that the following conditions are met:

- Inspection and maintenance of catch basins located near construction activities (roadway construction, residential, commercial, or industrial development or redevelopment) are prioritized. Catch basins in such areas must be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loading.

- A schedule must be established such that the frequency of routine cleaning ensures that no catch basin at any time will be more than 50 percent full. A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.

- If a catch basin sump is more than 50 percent full during two consecutive routine inspections/cleaning events, the town must document the finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contributing sources.

- The Town shall maintain documentation, including metrics and other information, used to reach the determination that the established plan for cleaning and maintenance is optimal and meets the requirements of the MS4 Permit, including a log of catch basins cleaned and inspected.

- The Town must track and report the following information to EPA annually:

    - Total number of catch basins town-wide
    - Number of catch basins inspected
    - Number of catch basins cleaned
    - Total volume or mass of material removed from all catch basins

The Town has collected data to develop their Catch Basin Cleaning Optimization Plan annually since 2018, to ensure that no catch basin is more than 50% full. The Town generally cleans 30-35% of their catch basins annually. The Town will continue to collect additional data to develop their optimization plan. Data collected includes depth from the catch basin rim to the top of sediment, to the bottom of the basin, and to the invert of the outlet pipe. This data will be integrated into the Town's GIS and utilized to identify those catch basins that are filling up more frequently, and will therefore need to be cleaned more than once annually to ensure that the catch basin sump is never more than 50% full.

6.0 TMDLS AND WATER QUALITY LIMITED WATERS

6.1 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 USEPA 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 Total Maximum Daily Load 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, there are several approved TMDLs applicable to Salem. These include:

Table 6.1 Approved TMDLs Applicable to Salem

Impaired Water Body	Applicable TMDL
Captains Beach, Captains Pond	NH Statewide Bacteria TMDL
Camp Otter Swim Area Beach	NH Statewide Bacteria TMDL
Arlington Mill Reservoir at Second Street Beach	58 Bacteria Impaired Waters TMDL
Millville Lake at Town Beach	58 Bacteria Impaired Waters TMDL
Arlington Mill Reservoir at Arlington Pond Improvement Association	44 Bacteria Impaired Waters TMDL
Hedgehog Pond at Salem Town Beach	44 Bacteria Impaired Waters TMDL
Camp Hadar Beach	Final TMDL for Camp Hadar Beach on Captains Pond
Policy-Porcupine Brook	TMDL Study for Water Bodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Policy-Porcupine Brook in Salem and Windham, NH

In addition to identifying water bodies for which a Total Maximum Daily Load 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. In Salem, impairments commonly found in stormwater and impacted water bodies include Policy Brook, which is impaired for chloride and iron; an unnamed tributary to Harris Brook, which is impaired for chloride; and Captains Pond, which is impaired for phosphorus.

6.2 Phosphorus Impairments

Captains Pond is impaired for phosphorous and requires the development of a TMDL. A TMDL for phosphorus was approved for Captains Pond in September 2017. However, since this TMDL was approved after the permit became final, the Town is only subject to the requirements of the permit as they relate to Captains Pond's designation as a water quality limited water body for phosphorus. The Town has a number of outfalls, which discharge directly to this receiving water and therefore, the Town is subject to the requirements of Appendix H of the MS4 Permit, which outlines requirements related to discharges to water quality limited water bodies and their tributaries where phosphorus is the cause of the impairment.

6.2.1 Public Education and Outreach

The Town must distribute additional educational messages to residential property owners, businesses, and commercial institutions about the proper use and disposal of grass clippings, and to encourage the use of slow release and phosphorous-free fertilizers annually in the spring, between March and April. An additional pet waste message must also be distributed to residents annually in the summer, between June and July, encouraging the proper management of pet waste and noting any existing bylaws where appropriate. In the Fall (August/September/October), an educational message detailing the proper disposal of leaf litter must be distributed to residential and commercial property owners.

6.2.2 Regulatory Updates

The Town of Salem updated Chapter 417 of their municipal code, which covers *Stormwater Management,* to require that new development and redevelopment stormwater management BMPs constructed within town be optimized for phosphorous removal. A comprehensive review of all existing rules and regulations was performed during Permit Year 2. Updates to the Town's regulatory mechanisms regarding stormwater management will be adopted as soon as possible.

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

6.2.3 Good Housekeeping and Pollution Prevention

The Town shall develop and implement a program to manage grass clippings and leaf litter on all permittee-owned property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces, within 2 years of the permit effective date. This plan was developed during Permit Year 2. The SOP is included in Appendix A of the Town's O&M Plan and in Appendix H of this SWMP.

The Town shall increase street and municipal parking lot sweeping frequencies to a minimum of two times per year, in the spring after snowmelt and sanding practices have subsided, and in the fall after leaf fall events (September 1st to December 1st) in catchments tributary to Captains Pond. A street sweeping schedule shall be included in this plan and in the Town's Annual Reports. The Town

completed a SOP for sweeping the streets and permittee-owned parking lots during Permit Year 2. That SOP is included in Appendix J of the Town's O&M Plan and in Appendix H of this SWMP.

6.2.4 Phosphorus Source Identification

The Town must develop a comprehensive Phosphorus Source Identification Report. This report must include the following elements:

- Calculation of the total MS4 regulated area draining to Captains Pond. The analysis will reflect any updated MS4 mapping and catchment delineations.
- All screening and monitoring results for outfalls tributary to Captains Pond. Outfalls discharging directly to Captains Pond must be tested for phosphorus during dry and wet weather sampling events, where flowing.
- Calculation of Impervious Area and Directly Connected Impervious Area for each catchment.
- Identification, delineation and prioritization of potential catchments with high phosphorous loading.
- Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment, including the removal of impervious area to reduce phosphorous loadings.

This report must be appended to the Town's Year 4 Annual Report and to this SWMP upon completion. The Town received funding from the Clean Water State Revolving Fund (CWSRF) Loan Program to develop the plan.

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

- The next planned infrastructure, resurfacing 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 5 years of the permit effective date, and a plan and schedule for implementation must be included in the Year 5 Annual Report. The Town must plan and install at least one structural BMP as a demonstration project within the drainage area of Captains Pond within 6 years of the permit effective date. This BMP must target a catchment with high phosphorus load potential. Any other identified BMP retrofit project must be installed according to the schedule outlined in the Year 5 Annual Report. For those 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 phosphorus removed in mass per year by the BMP

The Town has completed two retrofit projects to outfalls tributary to Captains Pond.

The Town developed a Phosphorus Source Identification Report for Captains Pond during Permit year 4 and identified candidates for BMP retrofit within the Captains Pond Watershed as part of the report. These potential MBP retrofit opportunities will be evaluated further during Permit Year 5.

6.3 Bacteria Impairments

There are numerous water bodies with an approved TMDL for bacteria located within Salem. These are summarized with the applicable TMDL in Table 6.1, which was previously presented in this section. Shadow Lake was also added to the List of Impaired Waters 303(d) List, with an impairment requiring a TMDL for E. coli.

Therefore, the Town is subject to both the requirements of Appendix F and Appendix H of the MS4 Permit, which outlines requirements related to discharges to water quality limited water bodies where bacteria or pathogens is the cause of the impairment.

6.3.1 Public Education and Outreach

The Town 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 Captains Beach, Camp Otter Swim Area Beach, Arlington Mill Reservoir at Second Street Beach and at Arlington Pond Improvement Association, Millville Lake at Town Beach, Hedgehog Pond at Salem Town Beach ad Camp Hadar Beach.

The Town must supplement its residential public education program by distributing information to pet owners within those catchments tributary to these water bodies about the proper management of pet waste, including noting any existing bylaws. This message must be disseminated to all residents annually and pet owners at the time of pet license issuance and renewal, beginning in the first year of the permit. This informational campaign can be combined with the phosphorus education requirements outlined in Section 6.2.1.

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

6.3.2 Illicit Discharges

In implementing their Illicit Discharge Detection and Elimination Program, the Town will designate all catchments that are 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.

6.4 Chloride Impairments

Water bodies within Salem with chloride impairments include Policy-Porcupine Brook, Policy Brook and an unnamed tributary to Harris Brook. There is an existing TMDL for Policy-Porcupine Brook entitled, “Total Maximum Daily Load (TMDL) Study for Water Bodies in the Vicinity of the I-93 Corridor from

Massachusetts to Manchester, NH: Policy-Porcupine Brook in Salem and Windham, NH, and therefore the Town is subject to the requirements of Appendix F of the MS4 Permit. The Town has been proactive to date in fulfilling the TMDL's intent through calibration of salt spreaders, implementation of the NH Certified Green SnowPro Program, and participation by municipal staff in the winter maintenance T2 workshops and training offered by UNH.

Both Policy Brook and the unnamed tributary to Harris Brook require the development of a TMDL for chloride, and therefore the Town is subject to the requirements of Appendix H of the MS4 Permit, which outlines requirements related to discharges to water quality limited water bodies where chloride is the cause of the impairment, but there is no approved TMDL.

The requirements under the MS4 Permit for chloride-impaired water bodies with and without an approved TMDL are the same. The only difference relates to the year of implementation. For Policy-Porcupine Brook, which has an approved TMDL, the Chloride Reduction Plan was developed in Year 1. For Policy Brook and the unnamed tributary to Harris Brook, both which require a TMDL for chloride, the existing Chloride Reduction Plan developed for Policy-Porcupine Brook was updated during Permit Year 3 to include these receiving waters.

6.4.1 Chloride Reduction Plan

The Town is required to develop Chloride Reduction Plans for these receiving waters that include specific actions designed to achieve chloride reduction on municipal roads, municipal facilities, and on private facilities that drain to the MS4.

For municipally maintained surfaces, Salem must track the amount of salt applied to all municipally owned and maintained surfaces and report salt use beginning in the Town's Year 2 MS4 Annual Report. The Town has utilized the NHDES Salt Usage Report Form during Permit Year 3 and Permit Year 4. Salem is also responsible for identifying and implementing activities to reduce salt on municipally owned surfaces which may include, but are not limited to:

- Operational changes such as pre-wetting, pre-treating the salt stockpile, increasing plowing prior to de-icing, monitoring of road surface temperature, etc.;
- Implementation of new or modified equipment providing pre-wetting capability, better calibration rates, or other capability for minimizing salt use;
- Training for municipal staff and/or contractors engaged in winter maintenance activities;
- Adoption of guidelines for application rates for roads and parking lots;
- Regular calibration of spreading equipment;
- Designation of no-salt and/or low salt zones;
- Public education regarding impacts of salt use, methods to reduce salt use on private property, modifications to driving behavior in winter weather, etc.; and
- Measures to prevent exposure of salt stockpiles to precipitation and runoff.

The Town is responsible for estimating the total tonnage of salt reduction expected by each activity implemented and preparing a schedule for implementation of planned activities, including immediate implementation of operational and training measures, continued annual progress on other measures, and full implementation of the Plan by the end of the permit term.

For privately maintained facilities that drain to the MS4, Salem must:

- Identify private parking lots with 10 or more parking spaces draining to the Town's storm drain system;
- For private parking lot owners and operators, and private street owners and operators, require the following:
  (1) that any commercial salt applicators used for applications of salt to their parking lots or streets be trained and certified in accordance with Env-Wq 2203, and
  (2) to report annual salt usage within the municipal boundaries using the UNH Technology Transfer Center online tool (http://www.roadsalt.unh.edu/Salt/) or report salt usage directly to the Town, in which case this information should be reported on the Town's MS4 Annual Report.
- Update their stormwater regulations to include requirements for new development and redevelopment to minimize salt usage, and to track and report amounts used using the UNH Technology Transfer Center online tool (http://www.roadsalt.unh.edu/Salt/).

6.5 Metal Impairments

Since Policy Brook is impaired for iron and requires the development of a TMDL, the Town is subject to the requirements of Appendix H of the MS4 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.

6.5.1 Regulatory Updates

The Town of Salem drafted updates to Chapter 417 of the municipal code, which covers *Stormwater Management,* to require that all new development and redevelopment stormwater management BMPs located on commercial or industrial land within the watershed of Policy Brook incorporate designs that allow for shutdown and containment to isolate the drainage system in the event of an emergency spill or other unexpected event. EPA also encourages the Town to require that any BMPs designed to infiltrate stormwater on commercial and industrial sites be designed to obtain a level of pollutant removal that is equal to or greater than the level of pollutant removal provided by a comparable biofiltration system treating the same volume of runoff. This review was completed during Permit Year 2 and any necessary changes have been drafted and will be adopted as soon as possible. Required regulatory updates were also identified and addressed in Section 3.3.2.

6.5.2 Good Housekeeping and Pollution Prevention

The Town must also increase the frequency of street sweeping of all municipally owned streets and parking lots in catchment areas tributary to Policy Brook with the potential for high pollutant loads. Commercial areas, high-density residential areas, and drainage areas with a large amount of impervious area must be considered priorities. The Town must include the street sweeping schedule developed to target these areas with higher pollutant loads in their annual reports to EPA each year.

Also, catch basins that drain to those outfalls tributary to Policy Brook must be inspected more frequently to ensure that the sump for each basin is no more than 50% full at any given time. For those catch basins where excessive sediment or debris is located, catch basins must be cleaned more often. This

will be accomplished through development and implementation of the Town's catch basin cleaning optimization plan as discussed in Section 5.4.

7.0 REPORTING, EVALUATION AND MODIFICATION

7.1 MS4 Permit Reporting

The MS4 Permit requires submission of annual reports assessing the effectiveness of the proposed BMPs and reporting if the minimum control measures were met. The initial report was due 90 days from the close of the reporting period, or September 30th, 2019, and annually thereafter. Reports are to be submitted to both EPA and NHDES. At a minimum, the report should include the following:

- The status of compliance with permit 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 best management practices or measurable goals for any minimum control measure.
- Notice of relying on another governmental entity to satisfy some of the permit obligations, if applicable.

As indicated in an earlier section, copies of past annual reports submitted by Salem are referenced in Appendix D of this SWMP. The Town will append future annual reports in compliance with the 2017 MS4 Permit as they are prepared in Appendix I and will also post on the Town's website at the following location: https://www.townofsalemnh.org/engineering-projects/pages/storm-water-reporting.

7.2 Evaluation of SWMP Success

This SWMP should be considered a dynamic document that is modified as necessary to account for changes such as in drainage infrastructure, laws and regulations, and Town leadership and policy. The success of programs implemented by the SWMP – such as IDDE – 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. In addition, the SWMP should be reviewed and revised as necessary to keep text and appendices current. For example:

- After each year of stormwater monitoring to update appended findings and priorities.
- As needed to keep appended IDDE investigation, identification and removal documentation current.

- After each NPDES stormwater permit renewal to incorporate new requirements, as well as append copies of new permits and associated Notices of Intent (NOIs).

- After adoption of any new or revised ordinances or other regulatory mechanisms related to stormwater or drainage infrastructure.

Salem undertook this SWMP, in part, in order to ensure the protection of its water resources and the large investment in drainage infrastructure. Periodic review and revision of this written document will help achieve these goals on a perpetual basis.

7.3 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 NPDES Permit require an official process. In accordance with the MS4 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, Salem does not anticipate any major modifications to the SWMP or NOI requiring official notification.





Weston & Sampson SM

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Reading, MA 01867
tel: 978.532.1900

STORMWATER MANAGEMENT PLAN APPENDICES

MS4 GENERAL PERMIT COMPLIANCE

JUNE 2019
UPDATED JUNE 2022

TOWN OF
Salem
NEW HAMPSHIRE

swmp APPENDICES

APPENDIX A

Abbreviations and Definition

ABBREVIATIONS AND 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.

Common Plan of Development - A "larger common plan of development or sale" is a contiguous area where multiple separate and distinct construction activities may be taking place at different times different schedules under one plan. For example, if developer buys a 20-acre lot and builds roads, installs pipes, and runs electricity with the intention of constructing homes or other structures sometime in the future, this would be considered a larger common plan of development or sale. If the land is parceled off or sold, and construction occurs on plots that are less than one acre by separate, independent builders, this activity still would be subject to stormwater permitting requirements if the smaller plots were included on the original site plan.

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 Environmental Protection Agency 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 fire fighting 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 MS4 discharges to another MS4 or other storm sewer 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 - 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) - 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.

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 40 126.26(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.

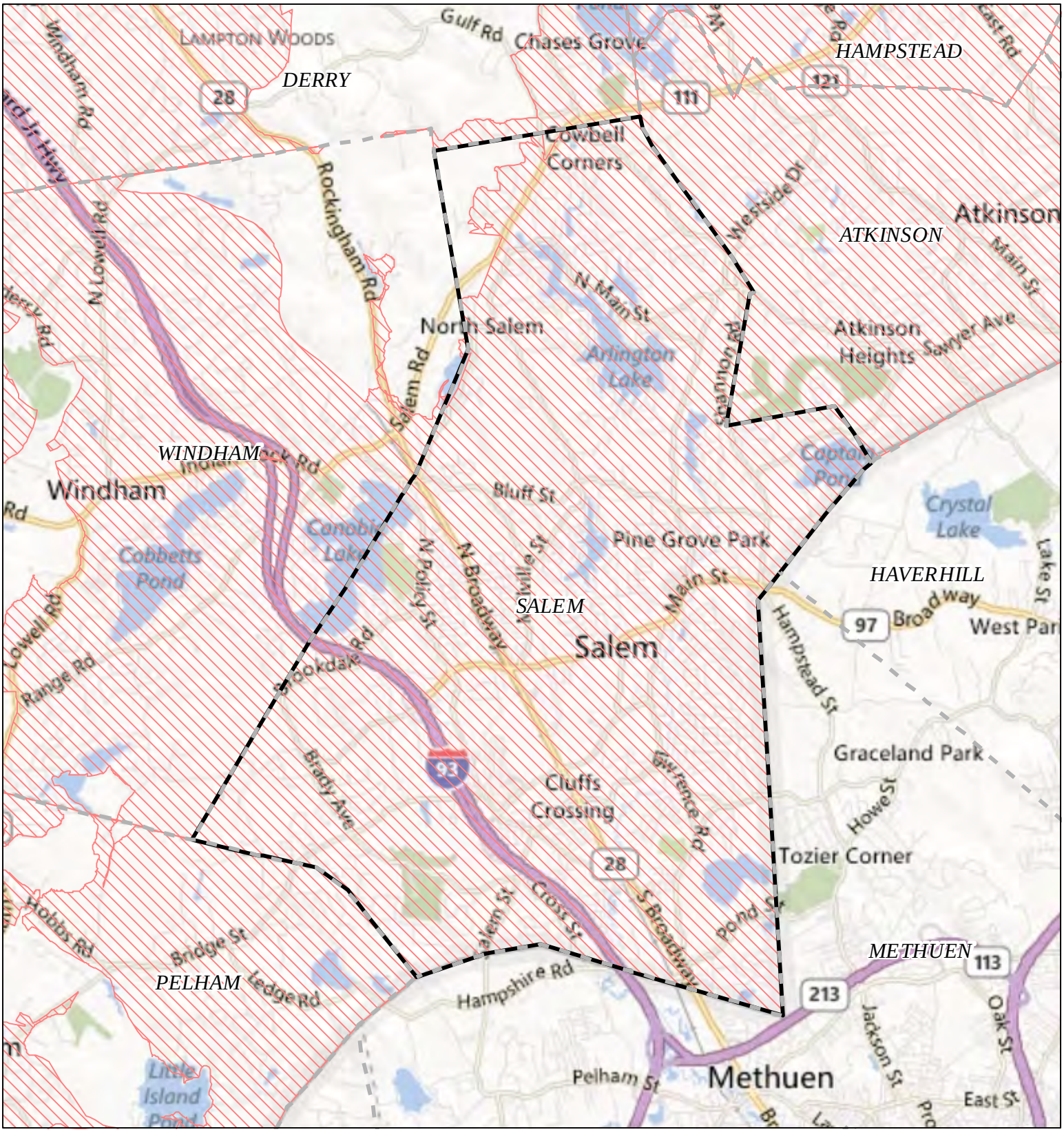
Water Quality Limited Water – for the purposes of this permit, a water quality limited water is any water body that does not meet applicable water quality standards, including but not limited to waters listed in categories 5 or 4b on the most recent (as of the permit effective date) EPA-approved New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

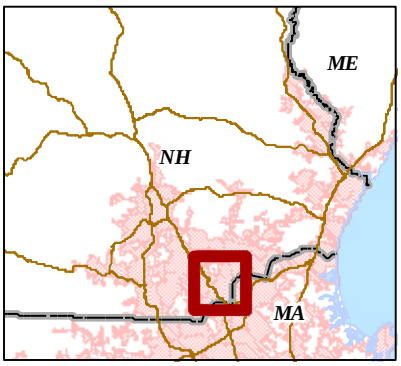
Water Quality Standards - A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and EPA adopt WQS to protect public health or welfare, enhance the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

ABBREVIATIONS AND ACRONYMS
BMP – Best Management Practice
BPJ – Best Professional Judgment
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
USFWS – U. S. Fish and Wildlife Service
IA – Impervious Area
IDDE – Illicit Discharge Detection and Elimination
LA – Load Allocations
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
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
NSPS – New Source Performance Standard
PCP – Phosphorus Control Plan
SHPO – State Historic Preservation Officer
SPCC – Spill Prevention, Control, and Countermeasure
SWMP – Stormwater Management Program
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
WLA – Wasteload Allocation
WQS – Water Quality Standard

APPENDIX B

Regulated Area Map





NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Salem NH

Regulated Area (2000 + 2010 Urbanized Area)

0 1 2 3 4 5 Kilometers

0 1 2 3 4 Miles

Town Population: 28776

Regulated Population: 28501

(Populations estimated from 2010 Census)

N W E S

EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)

Base map © 2010 Microsoft Corporation and its data suppliers

US EPA Region 1 GIS Center Map #8824, 11/19/2012

APPENDIX C

2017 MS4 Permit Notice of Intent

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

Part I: General Conditions

General Information

Name of Municipality or Organization: Salem

State: NH

EPA NPDES Permit Number (if applicable): NHR041031

Primary MS4 Program Manager Contact Information

Name: Roy E. Sorenson

Title: Director of Municipal Services

Street Address Line 1: 21 Cross Street

Street Address Line 2:

City: Salem

State: NH

Zip Code: 03079

Email: rsorenson@salemnh.gov

Phone Number: (603) 890-2150

Fax Number:

Other Information

Stormwater Management Program (SWMP) Location: To Be Completed During Permit Year 1 and Posted to Town Website (2018-2019)

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Yes

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

National Historic Preservation Act (NHPA) Determination Complete? Yes

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

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

MS4 Infrastructure (if covered under the 2003 permit)

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

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

Web address where MS4 map is published:

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

A PDF of the Town's Drainage Map, including outfalls and receiving waters, is attached.

Regulatory Authorities (if covered under the 2003 permit)

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

Effective Date or Estimated Date of Adoption (MM/DD/YY): 08/25/86

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

Effective Date or Estimated Date of Adoption (MM/DD/YY): 07/17/12

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

Effective Date or Estimated Date of Adoption (MM/DD/YY): 07/17/12

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

Part II: Summary of Receiving Waters

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

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.

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
Captain Pond	5	☐	☒	☒	☐	☐	☒	☐	☐	☐	pH (Source: Atmospheric Deposition - Acidity Naturally Occurring Organic Acid)
Captain's Beach, Captain Pond	3	☐	☐	☒	☐	☐	☐	☐	☒	☐	
Camp Otter Swim Area Beach	2	☐	☐	☒	☐	☐	☐	☐	☒	☐	
Camp Y Wood Beach	0	☐	☐	☒	☐	☐	☐	☐	☐	☐	
Policy-Porcupine Brook	59	☒	☐	☐	☐	☐	☐	☐	☐	☐	Benthic-Macroinvertebrate Bioassessments, Iron, pH, Arsenic
Arlington Mill Reservoir at Second Street Beach	3	☐	☐	☐	☐	☐	☐	☐	☒	☐	
Millville Lake at Town Beach	15	☐	☐	☐	☐	☐	☐	☐	☒	☐	
Arlington Mill Reservoir at Arlington Pond Improvement Assoc.	32	☐	☐	☐	☐	☐	☐	☐	☒	☐	
Hedgehog Pond at Salem Town Beach	0	☐	☐	☐	☐	☐	☐	☐	☒	☐	pH
Camp Hadar Beach	0	☐	☐	☐	☐	☐	☐	☐	☒	☐	
Unnamed Tributary to Harris Brook	0	☒	☐	☐	☐	☐	☐	☐	☐	☐	
Spicket River	63	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Canobie Lake	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Captain's Pond Brook	11	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Providence Hill Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Shadow Lake	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Hitty Titty Brook	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Prime Wetland 12	10	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 13	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Bodwell Pond	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Hawkins Pond	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wilson's Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 1	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Providence Hill Brook	12	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 19	10	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 20	14	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 40	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 15	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 25	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Taylor Reservoir	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 6	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 37	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 5	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Stillwater Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
World End Brook	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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**
Prime Wetland 24	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prime Wetland 1	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
World End Pond	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Widow Harris Brook	22	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Arlington Pond Watershed	12	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Canobie Lake Watershed	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Captain's Pond Watershed	11	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Hitty Titty Watershed	10	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Lower Spicket River Watershed	51	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Millville Pond Watershed	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Providence Hill Brook Watershed	24	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Policy Brook Watershed	67	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Porcupine Brook Watershed	40	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Upper Spicket River Watershed	21	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within World End Brook Watershed	18	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wetlands within Widow Harris Brook Watershed	15	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

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**
Displays/Posters/Kiosks	Provide stormwater information at selected kiosks located throughout Town.	Residents	Engineering/DPW	Track # of pamphlets added annually by DPW and # of pamphlets taken by residents.	FY2019
Brochures/Pamphlets	Provide pamphlets addressing lawn/ grounds maintenance, use of salt/de-icing materials and other facility specific materials.	Businesses, Institutions and Commercial Facilities	Engineering/DPW	Make pamphlets available to businesses, institutions and commercial facilities at Town Hall and track number of brochures distributed.	FY2020
Brochures/Pamphlets	Distribute brochures to prospective developers and contractors providing general information on stormwater management during construction, including required sediment and erosion control measures.	Developers/Contractors (construction)	Planning/Engineering	Make brochures available to developers/ contractors at Town Hall/Building Department. Track number of brochures distributed.	FY2020

Brochures/Pamphlets	Distribute educational materials to industrial properties regarding stormwater best management practices, including equipment inspection, waste disposal, dumpster maintenance, use and storage of de-icing materials, and parking lot sweeping.	Industrial Facilities	Engineering/DPW	Distribute brochure and maintain a list of recipients.	FY2021
Videos	Broadcast Informational Stormwater Video on Local Cable Access Channel	Residents	Engineering	Air at least two videos & keep track of dates that each video airs.	FY2021
Web Page	Update the Town's website to include information on vehicle maintenance, fertilizer use, parking lot sweeping, ice removal optimization, and waste/material storage for local businesses.	Businesses, Institutions and Commercial Facilities	Engineering/DPW	Update the website and track number of visitors to the website.	FY2022
Web Page	Update stormwater information on Town website to provide access to stormwater-related materials, documentation, regulations and procedures targeting developers/ contractors.	Developers/Contractors (construction)	Engineering, Planning	Update the website and track number of visitors to the website.	FY2022

Web Page	Update the Town's website to describe and encourage low impact development practices such as installing on-site stormwater treatment systems and reducing impervious area footprint.	Industrial Facilities	Engineering/Planning	Update the website and track number of visitors to the website.	FY2023

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

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Categorization	Brief BMP Description (enter your own text to override the drop down menu)	Responsible Department/Parties (enter your own text to override the drop down menu)	Additional Description/ Measurable Goal	Beginning Year of BMP Imple-mentation
Public Review	SWMP Review	Engineering	Make SWMP and Annual Reports available to the public on the Town's website and at Town Hall.	FY2019
Public Participation	Cleanups - Roadside/General	DPW	Continue annual roadside litter clean-up day tracking the amount of material collected and the number of miles of roadway cleaned.	FY2019
Public Participation	Household haz. waste/used oil collection	DPW	Continue to facilitate and promote a hazardous waste collection day annually, and track type and amount of materials collected.	FY2019
Public Participation	Recycling Program	DPW	Continue mandatory recycling program and track amount of recyclable materials collected.	FY2019
Public Participation	Hotline/webline - reporting problems/violations	DPW	Continue to maintain hotline on Town website to respond to public work order requests. Continue to log and track work order requests.	FY2019

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 inventory of where SSOs have discharged in the last 5 years.	Engineering/DPW	Complete within 1 year of the permit effective date and update SSO inventory annually.
Storm sewer system map	The Town developed a very comprehensive drainage map under the 2003 MS4 Permit. Update drainage map as needed in accordance with permit conditions and update annually during IDDE program investigations.	Engineering	Update map within 2 years of effective date of permit and complete full system map 10 years after permit effective date.
Written IDDE program development	Create written IDDE program to meet permit conditions.	Engineering	Complete within 1 year of the effective date of permit and update as required.
Implement IDDE program	Implement catchment investigations according to program and permit conditions.	Engineering	Begin within two years of permit effective date, and complete 10 years after effective date of permit. Track annually the number of illicit connections that are identified and removed.
Employee training	Train employees on IDDE plan components and IDDE program implementation.	Engineering	Provide annual training and track number of employees trained each year.
Conduct dry weather screening and sampling	Continue to conduct dry weather outfall screening and sampling in accordance with permit conditions.	Engineering	Complete within 3 years of permit effective date. Track number of outfalls that are screened and sampled annually.

Conduct wet weather screening	Continue to conduct wet weather outfall screening and sampling in accordance with permit conditions.	Engineering	Complete within 10 years of permit effective date. Track number of outfalls that are screened and sampled annually.
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Engineering	Complete ongoing outfall screening upon completion of IDDE investigations.
Priority Ranking	The Town is already actively working on assessing and ranking the potential for all catchments to have illicit discharges, and has been identifying catchments with System Vulnerability Factors that will necessitate wet weather sampling. Update catchment prioritization matrix as additional information becomes available.	Engineering	Complete within 1 year of the permit effective date.
Update Ranking	Update catchment prioritization and ranking as dry weather screening information becomes available.	Engineering	Complete within 3 years of the effective date of the permit.
Catchment Investigation Procedures	Develop written catchment investigation procedures and incorporate into the IDDE Plan.	Engineering	Complete within 18 months of the permit effective date.

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

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)
Site inspections and enforcement of Erosion and Sediment Control (ESC) measures	Update existing Subdivision and Site Plan Review Regulations to include specific written procedures for site inspections and enforcement of erosion control measures.	Planning Department/Engineering	Complete within 1 year of the permit effective date. Track the number of site inspections performed annually, and the number of enforcement actions taken on an annual basis.
Site plan review	Develop written procedures for site plan review, inspection and enforcement and begin implementation.	Planning Department/Engineering	Complete within 1 year of the permit effective date. Track the number of site reviews and inspections performed annually, and the number of enforcement actions taken on an annual basis.
Erosion and sediment control	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 Stornwater 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.	Planning Department/Engineering	Complete within 1 year of the permit effective date.

Waste control	The Town's existing regulations require proper disposal of construction debris. Update regulations as needed to control of all wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.	Planning Department/Engineering	Complete within 1 year of the permit effective date.

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	Update existing regulations to include requirements for the long-term operation and maintenance of private BMPs, and to require submission of as-builts no later than two years from completion of construction.	Planning Department/Engineering	Update regulations within two years of permit effective date.
Target & rank properties for BMP retrofitting	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce frequency, volume, and pollutant loads associated with stormwater discharges, and update annually.	Engineering/DPW	Complete 4 years after effective date of permit and report annually on retrofitted properties.
Allow green infrastructure practices	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.	Planning Department/Engineering	Complete 4 years after effective date of permit and implement recommendations of report, where feasible.
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/Engineering	Complete 4 years after effective date of permit and implement recommendations of report, where feasible.

Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit	Update post-construction stormwater management requirements included in the Town's Subdivision and Site Plan Review Regulations to meet permit requirements.	Planning Department/Engineering	Complete within two years of permit effective date.

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

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
O&M procedures	Update existing written O&M procedures including all requirements contained in 2.3.7.1 for parks and open spaces, buildings and facilities, and vehicles and equipment.	DPW	Update existing written procedures and implement within two years of permit effective date.	FY2020
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Update inventory	DPW	Update inventory within two years of permit effective date, and update annually thereafter.	FY2020
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure.	DPW	Complete within two years of permit effective date.	FY2020
Stormwater Pollution Prevention Plan (SWPPP) Development, Inspections, and Training	The Town has in place a SWPPP for their Transfer Station under the MSGP. The Town has a draft SWPPP for their DPW Facility. Finalize SWPPP for DPW Facility and develop SWPPPs for any other waste handling facilities as needed.	DPW	Complete and implement within 2 years of permit effective date, and provide inspections quarterly and training annually thereafter. Track number of employees trained annually.	FY2020

Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule.	DPW	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material removed annually.	FY2019
Street sweeping program	Sweep all streets and permitee-owned parking lots in accordance with permit conditions.	DPW	Sweep all streets and permitee-owned parking lots once per year in the spring. Sweep selected streets a second time in the fall to meet requirements specific to impaired waters. Report annually the number of miles cleaned or the volume or mass of material removed.	FY2019
Road salt use optimization program	Establish and implement a program to minimize the use of road salt.	DPW	Implement salt use optimization during deicing season.	FY2019
Inspection and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies.	DPW	Inspect all stormwater treatment structures annually. Conduct maintenance as necessary. Track number of structures inspected and maintained annually.	FY2019
Catch Basin Optimization	Develop and implement a plan to optimize inspection, cleaning, and maintenance of catch basins to ensure that permit conditions are met.	DPW	Complete within two years of permit effective date.	FY2020

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.

Applicable TMDL	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
I-93 Corridor: Policy-Porcupine Brook in Salem & Windham (Chloride)	Adhere to requirements in Part I.1 of Appendix F	Engineering/Planning
58 Bacteria Impaired Waters (Bacteria)	Adhere to requirements in Part II.1 of Appendix F	Engineering
New Hampshire Statewide (Bacteria)	Adhere to requirements in Part II.1 of Appendix F	Engineering
44 Bacteria Impaired Waters TMDL	Adhere to requirements in Part II.1 of Appendix F	Engineering
Bacteria TMDL for Camp Hadar Beach on Captain Pond	Adhere to requirements in Part II.1 of Appendix F	Engineering

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

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Requirements Related to Water Quality Limited Waters

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

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Phosphorus	*Captain Pond (NHLAK700061102-03-01)*	*Adhere to requirements in part II of Appendix H*	*Engineering/Planning/DPW*
Chloride	*Policy Brook (NHRIV700061102-17)*	*Adhere to requirements in part IV of Appendix H*	*Engineering/Planning/DPW*
Chloride	*Unnamed Tributary to Harris Brook (NHRIV700061102-21)*	*Adhere to requirements in part IV of Appendix H*	*Engineering/Planning/DPW*
Iron	*Policy Brook (NHRIV700061102-18)*	*Adhere to requirements in part V of Appendix H*	*Engineering/Planning/DPW*

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.

Through consultation with the US Fish & Wildlife, it was determined that the only threatened species within Salem is the northern long-eared bat. Actions currently proposed within this Notice of Intent will not affect this species. As Best Management Practices are constructed in the future, the Town will consult with US Fish & Wildlife prior to construction activities.

The Town is currently working to adopt a more comprehensive bylaw that governs use of the municipal storm drain system, which is anticipated to be effective in March 2019.

The MS4 Permit states that approved TMDLs are those that have been approved by EPA as of the issuance date of the permit. The Phosphorus TMDL for Captain Pond was approved in September 2017 after the MS4 Permit was issued in April 2017. It is the Town's understanding that there are currently no changes to the requirements for this impaired water body under the Permit. The Town will meet requirements included in Appendix G, Part II as they relate to water quality limited water bodies where the impairment is phosphorus.

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: Christopher A. Dillon Title: Town Manager

Signature: Date: 10/1/18

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

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

NOI Submission

Please submit the form electronically via email using the "Submit by Email" button below or send in a CD with your completed NOI. You may also print and submit via mail using the address below if you choose not to submit electronically. The outfall map required in Part I of the NOI (if applicable) can be submitted electronically as an email attachment OR as a paper copy.
Permittees that choose to submit their NOI electronically by email or by mailing a CD with the completed NOI form to EPA, will be able to download a partially filled Year 1 Annual Report at a later date from EPA.

Submit by Email — Submit by email using this button. Or, send an email with attachments to: stormwater.reports@epa.gov

Save — Save NOI for your records

EPA Submittal Address:

United States Environmental Protection Agency
5 Post Office Square - Suite 100
Mail Code - OEP06-1
Boston, Massachusetts 02109-3912
ATTN: Thelma Murphy

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 16, 2018
Consultation Code: 05E1NE00-2018-SLI-2780
Event Code: 05E1NE00-2018-E-06510
Project Name: General BMP installation and MS4 permit compliance

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-2780

Event Code: 05E1NE00-2018-E-06510

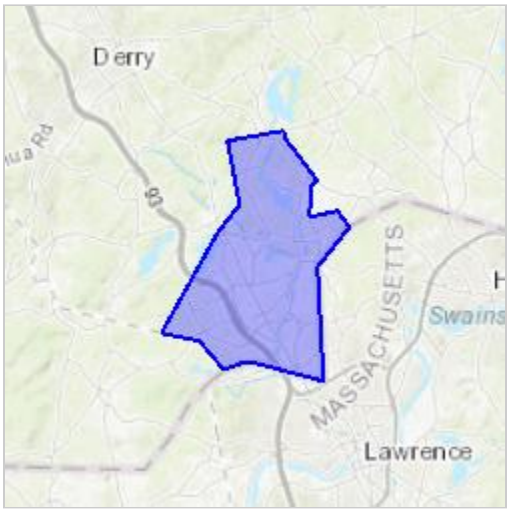
Project Name: General BMP installation and MS4 permit compliance

Project Type: LAND - MANAGEMENT PLANS

Project Description: Criterion C determination for NOI for 2016 small MS4 permit.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.79474406402275N71.21904212350113W



Counties: Essex, MA | Hillsborough, NH | Rockingham, NH

Endangered Species Act Species

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

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

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

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

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

Mammals

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

Critical habitats

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

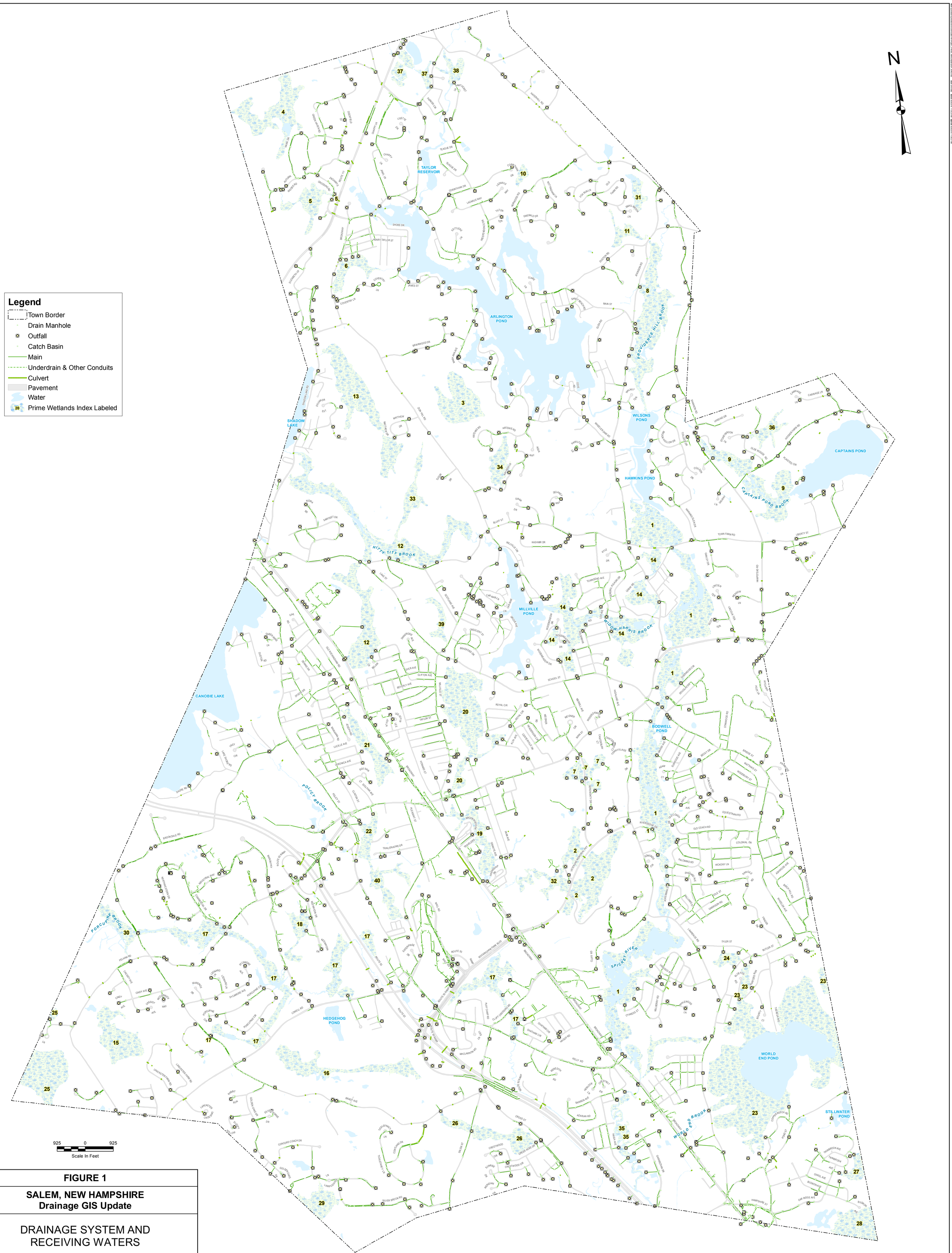


FIGURE 1

SALEM, NEW HAMPSHIRE
Drainage GIS Update

DRAINAGE SYSTEM AND RECEIVING WATERS

SEPTEMBER 2018 SCALE: NOTED

Weston & Sampson

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

VIA EMAIL

May 14, 2019

Christopher A. Dillon
Town Manager

And;

Roy E. Sorenson
Director of Municipal Services
21 Cross Street
Salem, NH 03079
rsorenson@salemnh.gov

Re: National Pollutant Discharge Elimination System (NPDES) Permit ID: NHR041031, Town of Salem, NH

Dear Roy E. Sorenson:

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,



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

APPENDIX D

2003 MS4 Annual Reports Reference

EPA 2003 MS4 PERMIT ANNUAL EVALUATIONS

Year 1 Annual Report (2003-2004)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2004/SalemNH04.pdf

Year 2 Annual Report (2004-2005)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2005/Salemnh05rpt.pdf

Year 3 Annual Report (2005-2006)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2006/Salemnh06rpt.pdf

Year 4 Annual Report (2006-2007)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2007/SalemNH07.pdf

Year 6 Annual Report (2008-2009)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2009/SalemNH09.pdf

Year 7 Annual Report (2009-2010)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2010/SalemNH10.pdff

Year 8 Annual Report (2010-2011)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2011/SalemNH11.pdf

Year 9 Annual Report (2011-2012)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2012/SalemNH12.pdf

Year 10 Annual Report (2012-2013)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2013/SalemNH13.pdf

Year 11 Annual Report (2013-2014)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2014/SalemNH14.pdf

Year 12 Annual Report (2014-2015)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2015/SalemNH15.pdf

Year 13 Annual Report (2015-2016)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2016/SalemNH16.pdf

Year 14 Annual Report (2016-2017)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2017/SalemNH17.pdf

Year 15 Annual Report (2017-2018)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/nh/reports/2018/SalemNH18.pdf

APPENDIX E

MS4 Checklists by Permit Year

Checklist for Year 1 MS4 Permit Requirements – Salem, NH

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
10/1/2018	Notice of Intent (NOI)	Prepare and Submit NOI for Permit Coverage 90 days from the permit effective date	1.7.2 & Appendix E	Yes
6/30/2019	Stormwater Management Plan (SWMP)	Develop written SWMP	1.10	Yes
6/30/2019	Bacteria TMDLs	Implement public education initiatives; Rank tributary catchments as high for IDDE Investigation	F.II.1.a	Yes
6/30/2019	Policy-Porcupine Brook Chloride TMDL	Develop Chloride Reduction Plan	F.I.1.	Yes
6/30/2019	Phosphorus Impaired Water Bodies	Implement public education initiatives; Sweep streets and municipal parking lots a minimum of two times per year in catchments tributary to phosphorus impaired water bodies	H.II.1.a.i.1; H.II.1.a.i.3	Not all Public Education Requirements Were Met; Sweeping Requirement Was Met
6/30/2019	Iron Impaired Water Bodies	Increase frequency of sweeping of public streets and municipal parking lots to a schedule determined by the Town to target areas with potential for high pollutant loads and large amounts of impervious area; Prioritize inspection and maintenance of catch basins to ensure that no sump is more than 50% full, and cleaning of catch basins more frequently if inspection and maintenance activities indicate excessive sediment and debris loadings.	H.V.1.a.i.2	Yes; Optimization Planning Ongoing
6/30/2019	Public Education	Fulfill public education initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.2	Yes
6/30/2019	Public Participation	Fulfill public participation initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.3	Yes
6/30/2019	Sanitary Sewer Overflow (SSO) Inventory	Document all SSOs that have occurred in the last 5 years	2.3.4.4.b	Yes

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2019	Illicit Discharge Detection and Elimination (IDDE) Plan	Develop written IDDE plan to satisfy permit requirements.	2.3.4.6	Yes
6/30/2019	Catchment Delineation	Delineate outfall & interconnection catchment areas.	2.3.4.5	Yes
6/30/2019	Catchment Prioritization & Ranking	Assess and rank the potential for all catchments to have illicit discharges.	2.3.4.7	Yes
6/30/2019	IDDE Employee Training	Continue to train municipal employees on illicit discharge detection and monitoring.	2.3.4.11	Yes
6/30/2019	Construction Site Runoff Control Regulatory Updates/SOPs	Create written procedures for inspection of construction sites for proper sediment & erosion controls, and conducting site plan reviews. Incorporate requirements for waste control. Reference Stormwater Manual for Sediment & Erosion Control BMPs.	2.3.5.c	Yes
6/30/2019	Street Sweeping	Sweep streets a minimum of once a year in the spring. Include miles cleaned or volume or mass of material removed in the annual report.	2.3.7.a.iii.3	Yes
6/30/2019	Catch Basin Cleaning	Clean catch basins annually to ensure that no catch basin is more than 50% full. Report catch basins cleaned and volume of material removed annually.	2.3.7.a.iii.3	Yes – Catch Basin Optimization Planning in Progress
6/30/2019	Winter Road Maintenance SOP	Develop and implement winter road maintenance procedures including use and storage of sand/salt, and snow storage practices.	2.3.7.a.iii.5	Yes
6/30/2019	Stormwater BMP Inspection & Maintenance	Inspect all stormwater treatment structures (BMPs) at least annually and conduct maintenance as necessary. Track number of structures maintained and inspected annually.	2.3.7.a.iii.6	No – Only Some BMPs were inspected.

Checklist for Year 2 MS4 Permit Requirements – Salem, NH

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2020	Stormwater Management Plan (SWMP)	Update written SWMP	1.10	Yes
6/30/2020	Bacteria TMDLs	Implement public education initiatives	F.II.1.a	Partial Compliance
6/30/2020	Phosphorus Impaired Water Bodies	Implement public education initiatives; Modify stormwater regulations to require that new development and redevelopment BMPs are optimized for phosphorus removal; Development of a program to manage grass clippings and leaf litter on permittee-owned property; Sweep streets and municipal parking lots a minimum of two times per year in catchments tributary to phosphorus impaired water bodies	H.II.1.a.i.1; H.II.1.a.i.2; H.II.1.a.i.3	Yes to All Except Regulatory Updates Moved to Year 3
6/30/2020	Iron Impaired Water Bodies	Modify stormwater regulations to require that stormwater management systems designed on commercial and industrial land use area draining to the impaired water body incorporate designs that allow for shutdown and containment; Increase frequency of sweeping of public streets and municipal parking lots to target areas with potential for high pollutant loads and large amounts of impervious area; Prioritize inspection and maintenance of catch basins to ensure that no sump is more than 50% full, and clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment and debris loadings.	H.V.1.a.i; H.V.1.a.ii	Yes to All Except Regulatory Updates Moved to Year 3; Catch Basin Optimization Planning is Ongoing

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2020	Public Education	Fulfill public education initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.2	Yes
6/30/2020	Public Participation	Fulfill public participation initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.3	Yes
6/30/2020	Update Drainage Map	Update town-wide MS4 mapping to include impaired waters, BMPs, interconnections, and open channel conveyances.	2.3.4.5	Yes
6/30/2020	IDDE Employee Training	Continue to train municipal employees on illicit discharge detection and monitoring.	2.3.4.11	No due to Covid-19 – To Be Completed Summer/Fall 2020
6/30/2025	IDDE Investigation of Problem Catchments	Begin investigation of problem catchments	2.3.4.8.a	Conducted from 2016 to 2018; Resume Work in Permit Year 3
6/30/2020	Post-Construction Stormwater Runoff Control Regulatory Updates	Update existing stormwater regulations as needed to meet post-construction stormwater management requirements including as-built requirements and provisions for long term operation & maintenance of BMPs.	2.3.6.a.ii	Moved to Permit Year 3
6/30/2020	Inventory of Municipal Facilities	Develop an inventory of all permittee-owned facilities.	2.3.7.a.ii	Yes
6/30/2020	Operation and Maintenance Procedures	Develop a written set of O&M procedures for municipal facilities, activities and MS4 infrastructure	2.3.7.a.i & 2.3.7.a.iii	Yes
6/30/2020	Stormwater Pollution Prevention Plans (SWPPP)	Develop written SWPPPs for municipal waste handling facilities.	2.3.7.b	Yes
6/30/2020	Street Sweeping	Sweep streets a minimum of once a year in the spring. Include miles cleaned or volume or mass of material removed in the annual report.	2.3.7.a.iii.3	Yes

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2020	Catch Basin Cleaning Optimization	Develop and implement a catch basin cleaning schedule with a goal of ensuring no catch basin is more than 50 % full. Document catch basins inspected and cleaned, including total mass removed and proper disposal.	2.3.7.a.iii.2	Yes – Still working to collect some data for optimization planning
6/30/2020	Stormwater BMP Inspection & Maintenance	Inspect all stormwater treatment structures (BMPs) at least annually and conduct maintenance as necessary. Track number of structures maintained and inspected annually.	2.3.7.a.iii.6	No – Only Some BMPs were inspected.

Checklist for Year 3 MS4 Permit Requirements – Salem, NH

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2021	Stormwater Management Plan (SWMP)	Update written SWMP	1.10	Yes
6/30/2021	Bacteria TMDLs	Implement public education initiatives	F.II.1.a	Yes
6/30/2021	Phosphorus Impaired Water Bodies	Implement public education initiatives; Sweep streets and municipal parking lots a minimum of two times per year in catchments tributary to phosphorus impaired water bodies	H.II.1.a.i.1; H.II.1.a.i.3	Yes
6/30/2021	Chloride Impaired Water Bodies	Develop a Chloride Reduction Plan	H.IV.2	Yes
6/30/2021	Iron Impaired Water Bodies	Increase frequency of sweeping of public streets and municipal parking lots to a schedule determined by the Town to target areas with potential for high pollutant loads and large amounts of impervious area; Prioritize inspection and maintenance of catch basins to ensure that no sump is more than 50% full, and cleaning of catch basins more frequently if inspection and maintenance activities indicate excessive sediment and debris loadings.	H.V.1.a.ii	Yes
6/30/2021	Public Education	Fulfill public education initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.2	Yes
6/30/2021	Public Participation	Fulfill public participation initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.3	Yes
6/30/2021	Update Drainage Map	Update town-wide drainage mapping as needed to include MS4 infrastructure.	2.3.4.5	Yes
6/30/2021	IDDE Employee Training	Continue to train municipal employees on illicit discharge detection and monitoring.	2.3.4.11	No, due to Covid-19.

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2021	Dry Weather Outfall Screening and Sampling	Sample all outfalls and interconnections (excluding problem outfalls and excluded outfalls) for dry weather flow and sample flow if present.	2.3.4.7.b	Yes
6/30/2021	Update Catchment Ranking	Update catchment ranking and prioritization based on dry weather outfall sampling data.	2.3.4.7.b.iii.c.iii	Yes
6/30/2025	Continue IDDE Investigation of Problem Catchments	Continue investigation of problem catchments	2.3.4.8.a	Conducted from 2016 to 2018; Resume Work in Permit Year 4
6/30/2028	Begin IDDE Investigation of High and Low Priority Catchments	Begin investigation of high and low priority catchments	2.3.4.8.a	Work to begin in Permit Year 4.
6/30/2020	Post-Construction Stormwater Runoff Control Regulatory Updates	Update existing stormwater regulations as needed to meet post-construction stormwater management requirements including as-built requirements and provisions for long term operation & maintenance of BMPs.	2.3.6.a.ii	Updates completed, to be adopted as soon as possible.
6/30/2021	Street Sweeping	Sweep streets a minimum of once a year in the spring. Include miles cleaned or volume or mass of material removed in the annual report.	2.3.7.a.iii.3	Yes
6/30/2021	Catch Basin Cleaning	Clean catch basins annually to ensure the no catch basin is more than 50% full. Report catch basins cleaned and volume of material removed annually.	2.3.7.a.iii.3	Yes – Still working to collect some data for optimization planning
6/30/2021	Stormwater BMP Inspection & Maintenance	Inspect all stormwater treatment structures (BMPs) at least annually and conduct maintenance as necessary. Track number of structures maintained and inspected annually.	2.3.7.a.iii.6	Partial Completion

Checklist for Year 4 MS4 Permit Requirements – Salem, NH

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2022	Stormwater Management Plan (SWMP)	Update written SWMP	1.10	Yes
6/30/2022	Bacteria TMDLs	Implement public education initiatives	F.II.1.a	Yes
6/30/2022	Phosphorus Impaired Water Bodies	Implement public education initiatives; Inventory and priority ranking of permittee-owned property and infrastructure that can be retrofitted with BMPs to include consideration of BMPs that infiltrate stormwater Sweep streets and municipal parking lots a minimum of two times per year in catchments tributary to phosphorus impaired water bodies; Develop Phosphorus Source Identification Report;	H.II.1.a.i.1; H.II.1.a.i.2; H.II.1.a.i.3; H.II.1.b	Yes
6/30/2022	Iron Impaired Water Bodies	Increase frequency of sweeping of public streets and municipal parking lots to a schedule determined by the Town to target areas with potential for high pollutant loads and large amounts of impervious area; Prioritize inspection and maintenance of catch basins to ensure that no sump is more than 50% full, and cleaning of catch basins more frequently if inspection and maintenance activities indicate excessive sediment and debris loadings.	H.V.1.a.ii	Yes
6/30/2022	Public Education	Fulfill public education initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.2	Yes
6/30/2022	Public Participation	Fulfill public participation initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.3	Yes
6/30/2022	Update Drainage Map	Update town-wide drainage mapping as needed to include MS4 infrastructure.	2.3.4.5	Yes

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2022	IDDE Employee Training	Continue to train municipal employees on illicit discharge detection and monitoring.	2.3.4.11	Yes
6/30/2025	Continue IDDE Investigation of Problem Catchments	Continue investigation of problem catchments	2.3.4.8.a	Yes
6/30/2028	Continue IDDE Investigation of High and Low Priority Catchments	Continue investigation of high and low priority catchments	2.3.4.8.a	Yes. Work to continue during Permit Year 4.
6/30/2028	Begin Wet Weather Outfall Screening and Sampling	Begin sampling outfalls and interconnections with System Vulnerability Factors during wet weather	2.3.4.8.c	Yes. Work to continue during Permit Year 4.
6/30/2022	Street Design and Parking Lot Guidelines	Develop a report assessing requirements that affect the creation of impervious cover to determine if design standards for streets and parking lots can be modified to support low impact design options.	2.3.6.b	Yes
6/30/2022	Green Infrastructure Practices	Develop a report assessing the barriers and incentives for Green Infrastructure/LID techniques.	2.3.6.c	Yes
6/30/2022	BMP Retrofit Identification	Identify permittee-owned properties that could be retrofitted with stormwater BMPs.	2.3.6.d	Yes
6/30/2022	Street Sweeping	Sweep streets a minimum of once a year in the spring. Include miles cleaned or volume or mass of material removed in the annual report.	2.3.7.a.iii.3	Yes
6/30/2022	Catch Basin Cleaning	Clean catch basins annually to ensure the no catch basin is more than 50% full. Report catch basins cleaned and volume of material removed annually.	2.3.7.a.iii.3	Yes – Still working to collect some data for optimization planning
6/30/2022	Stormwater BMP Inspection & Maintenance	Inspect all stormwater treatment structures (BMPs) at least annually and conduct maintenance as necessary. Track number of structures maintained and inspected annually.	2.3.7.a.iii.6	Partial Completion

Checklist for Year 5 MS4 Permit Requirements – Salem, NH

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2023	Stormwater Management Plan (SWMP)	Update written SWMP	1.10	
6/30/2023	Bacteria TMDLs	Implement public education initiatives	F.II.1.a	
6/30/2023	Phosphorus Impaired Water Bodies	Implement public education initiatives; Sweep streets and municipal parking lots a minimum of two times per year in catchments tributary to phosphorus impaired water bodies; Evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation or identified in the Phosphorus Source Identification Report & Develop implementation plan and schedule	H.II.1.a.i.1; H.II.1.a.i.3; H.II.1.c	
6/30/2023	Iron Impaired Water Bodies	Increase frequency of sweeping of public streets and municipal parking lots to a schedule determined by the Town to target areas with potential for high pollutant loads and large amounts of impervious area; Prioritize inspection and maintenance of catch basins to ensure that no sump is more than 50% full, and cleaning of catch basins more frequently if inspection and maintenance activities indicate excessive sediment and debris loadings.	H.V.1.a.i.2	
6/30/2023	Public Education	Fulfill public education initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.2	
6/30/2023	Public Participation	Fulfill public participation initiatives aimed at target audiences as outlined in the Town's NOI and this SWMP	2.3.3	
6/30/2023	Update Drainage Map	Update town-wide drainage mapping as needed to include MS4 infrastructure.	2.3.4.5	

Completion Due Date	Requirement	Task	Permit Section for Reference	Completed?
6/30/2023	IDDE Employee Training	Continue to train municipal employees on illicit discharge detection and monitoring.	2.3.4.11	
6/30/2025	Continue IDDE Investigation of Problem Catchments	Continue investigation of problem catchments	2.3.4.8.a	
6/30/2028	Continue IDDE Investigation of High and Low Priority Catchments	Continue investigation of high and low priority catchments	2.3.4.8.a	
6/30/2028	Continue Wet Weather Outfall Screening and Sampling	Begin sampling outfalls and interconnections with System Vulnerability Factors during wet weather	2.3.4.8.c	
6/30/2023	Street Sweeping	Sweep streets a minimum of once a year in the spring. Include miles cleaned or volume or mass of material removed in the annual report.	2.3.7.a.iii.3	
6/30/2023	Catch Basin Cleaning	Clean catch basins annually to ensure the no catch basin is more than 50% full. Report catch basins cleaned and volume of material removed annually.	2.3.7.a.iii.3	
6/30/2023	Stormwater BMP Inspection & Maintenance	Inspect all stormwater treatment structures (BMPs) at least annually and conduct maintenance as necessary. Track number of structures maintained and inspected annually.	2.3.7.a.iii.6	

APPENDIX F

Public Education Materials

Anti-Icing

NH Best Management Practices

GET OUT EARLY

Typically anti-icing is most effective if applied 1-2 hours before the precipitation begins however it can be applied up to 24 hours in advance.

TRY IT FIRST

Trying anti-icing for the first time? Make a 23.3% brine solution and before a storm spray pavement on your own property using a masonry/ plant sprayer. Use this experiment to determine how best to use it with your clients.

LEAVE SOME PAVEMENT BARE

It's always best to use stream nozzles instead of fan tip to avoid creating a slippery condition. If the anti-icing liquid freezes the bare pavement will still provide a traction surface.

USE A FILTER

Having a filter in your liquid dispensing system will reduce clogs in your nozzle. Automotive in line fuel filters work quiet well. If your liquid dispenser is not functioning properly be sure to check the filter first.

A Proactive Treatment

Anti-Icing before a storm is very similar to using a non-stick spray on a pan before cooking. Just like a non-stick spray prevents food from bonding to the pan, anti-icing prevents snow and ice from bonding to the pavement so that it can be plowed away. Anti-icing can save you money as it costs 50% less than reactive deicing.





Make Your Own Salt Brine

When making brine it is important to add enough salt to produce a 23.3% solution which freezes around 0°F. Roughly 2.5lb per gallon of water will produce a 23.3% solution. You can verify using a salometer (~$20) a 23.3% solution will have a specific gravity of 1.176, or 85% salinity. Consult the Brine Making BMP sheet for more info.

How Much Should I Use and When?

You can apply brine up to 24 hours in advance of the storm. Typical application rates range from 0.5 to 0.75 gallon per 1000 sq.ft. (10' x 100' area). Other chemicals such as magnesium are also available—consult your supplier for application rates. Anti-icing is not advised prior to freezing rain events.





Getting Started

Try making your own salt brine by putting 13 lb of salt in 5 gallons of water to get a 23.3% salt brine solution. Mix the brine until all of the salt is dissolved. Using a masonry sprayer apply the liquid several hours before a storm. Start by applying about 0.25—0.5 gallons to a 10' x 50' area. Adjust the application rates based on your experience. Being careful not to over apply and cause a slippery condition.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT

When salt brine is 23% salt (measured with a hydrometer: 1.176, or with a salimeter: 85%) it has the lowest freeze point possible (about 0°F).

BRINE STORAGE

23% brine solution may be stored outside, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE

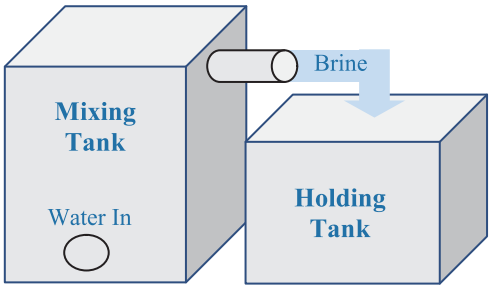
Calcium chloride brine costs about 7¢ / gallon (assuming $58/ton for salt) after you have your equipment setup.

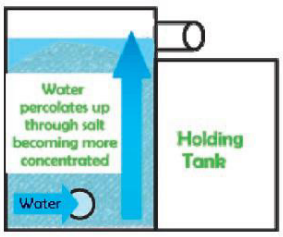
MULTIPLE USES

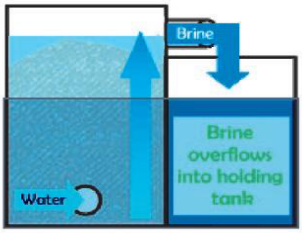
Brine can be used directly for anti-icing, for prewetting salt as it is dispensed from your truck, or to pretreat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salimeter.





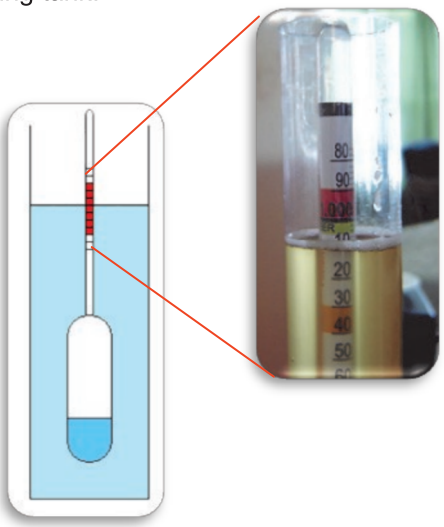


Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.



Step 2: Check Concentration

Float a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water



Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

9 ANTI-ICING

A relatively new weapon in the sustainable snowfighting arsenal in North America is anti-icing. But it has a long history of keeping European roads safe and passable.

Anti-icing differs significantly from deicing because brine is applied before precipitation to prevent the formation or development of bonded snow and ice on the road surface. It is a proactive approach to snowfighting and is often the first in a series of strategies employed for a winter storm. By applying freezing point depressant materials before a storm it is possible to prevent the bond from forming between the pavement and snow or ice. Research has shown that timely applications of anti-icing materials can cut the cost of maintaining a safe road surface by 90% compared to traditional deicing. Liquid sodium chloride (NaCl) is the most effective choice for anti-icing above 15°F.

Anti-icing has many advantages.

- Anti-icing returns road surfaces to normal faster, resulting in fewer accidents and delays.
- Anti-icing can reduce airborne dust and salt particulates.
- Salt needs moisture to be effective. Applying brine jumpstarts the melting process.
- Brine sticks to the road surface. It will not be as easily blown off the road by wind or traffic, so material is more efficiently used.
- If the storm is delayed, salt residue remains on the road ready to begin work when precipitation begins.
- Crews can begin treatment in advance of a storm. Because anti-icing prevents the bonding of snow and ice to pavement, snowfighters have less work to maintain safe roadways as the storm progresses.
- Increased efficiency results in use of less deicer and manpower, therefore lowering the cost of maintaining safe road conditions. The use of less deicing materials also minimizes environmental concerns.

Products available for use in an anti-icing program are sodium chloride, calcium chloride, magnesium chloride, potassium acetate, and calcium magnesium acetate.

Each product has its own advantages and disadvantages. The most common material in use is sodium chloride (salt) in the form of a brine made from a mixture of rock salt and water. Salt brine is effective to -6°F and is a proven anti-icing agent in use throughout the snowbelt.

Some agencies use calcium or magnesium chloride in a brine solution which is effective down to -6° F, but is more than six times more expensive than salt, and is more difficult to handle. Also, calcium and magnesium chloride residue on road surfaces can attract moisture at lower relative humidity than salt resulting in dangerous, slippery conditions under certain circumstances.

Salt Brine Manufacture

Salt brine is made by mixing rock salt or solar salt with water. The process is simple: the resulting brine should be approximately 23% NaCl.

The proportion of salt to water is critical to the effectiveness of the brine. Too much or too little salt affects the freeze point depressing qualities of the brine. The proper brine mixture is 23.3% salt content by weight. This is the concentration at which salt brine has the lowest freezing point, -6° F. Can we keep adding salt to water until the freezing point goes down much further? No. The solubility of salt in water decreases with decreasing temperature. We eventually reach what is called the eutectic point. This is the point at which a solution achieves a maximum salt concentration. Any colder and salt will begin to leave the solution and raise the freezing point. At the eutectic temperature, ice, saltwater, and solid salt exist in equilibrium. For water, the eutectic temperature is -6° F. The percentage of salt is measured with a salometer, a specialized hydrometer, until a 88.3% measurement on the salometer is obtained. This results in the proper 23.3% salt content.

Commercial brine makers are available at a cost of approximately $5,000. Many agencies have made their own brine makers using water tanks and PVC pipe for substantially lower cost. Brine is usually made at the local maintenance facility sites and stored in large tanks in locations convenient for loading into saddle tanks on the sides of the V-box or anti-icing equipment. It is essential to clean out brine makers after brine is prepared to reduce the potential for corrosion.

Application Equipment

Brine applicators are commercially available for about $1,500. Some agencies have manufactured their own application equipment using large tanks and PVC piping. Some equipment is designed to be

Hydrometer/Salometer Chart for Salt Brine

% Salt	Hydrometer Specific Gravity	Salometer Using 0-100%
0	1.000	0
1	1.007	4
2	1.014	7
3	1.021	11
4	1.028	15
5	1.036	19
6	1.043	22
7	1.051	26
8	1.059	30
9	1.067	33
10	1.074	37
11	1.082	41
12	1.089	44
13	1.097	48
14	1.104	52
15	1.112	56
16	1.119	59
17	1.127	63
18	1.135	67
19	1.143	70
20	1.152	74
21	1.159	78
22	1.168	81
23	1.176	85
24	1.184	89
25	1.193	93
26	1.201	96
27	-	100

loaded onto the bed of spreading trucks, towed behind maintenance equipment or permanently mounted on truck beds. It can be as simple as a gravity fed spraying system with a operator controlled cut-off valve or a more complex (and more controllable) pump driven sprayer system. Fan sprayers are not recommended. Control should be available to vary spreading rates from 25 to 60 gallons per lane mile.

If large, horizontal tanks are used in the design, consider installing baffles inside the tanks to help prevent the liquid from suddenly shifting in the tank, creating a hazardous control situation for the operator.

Application

Accurate weather and road surface information are critical for the efficient use of anti-icing materials. Road surface temperatures, precipitation amounts and form, wind conditions, and road environment (sunlight exposure, surface condition, bridges, etc.) all affect the use and application of anti-icing measures.

Understanding the freeze point depressing qualities of brine is important to its use and application as an anti-icing agent. (See the Phase diagram below.) As you can see from the chart, the minimum freeze point of salt brine is -6°F at a concentration of 23.3%. Road surface temperatures are indicated on the side of the chart, solution concentrations along the bottom. The line represents the freeze point of the solution at a given temperature. The colored portion in the center of the chart shows the melting range of brine solutions. The area to the left shows the results of a solution with too little salt, the road surface will refreeze unless more salt brine or deicing salt is applied. The area to the right shows the results with too much salt, with a resultant non-functional loss of material to the environment. As you can see, additional precipitation and heavy traffic can dilute the brine solution allowing the road to refreeze.

ADDITIONAL PRECIPITATION ALWAYS RESULTS IN A DILUTION OF BRINE AT THE ROAD SURFACE.

Weather information is getting better with everything from air temperature, dew point, optical weather identifiers, to pavement temperature, surface status, and compound information being available. Some agencies utilize remote television cameras to monitor traffic and bridge conditions. This information will help agencies accurately determine the appropriate application of anti-icers.

Do not apply anti-icer under blowing conditions, particularly in areas prone to drifting and anywhere else that might be problematic for salt, such as all areas subject to wind issues.

Don't apply too much or the roadway may become slippery. Always follow application recommendations.

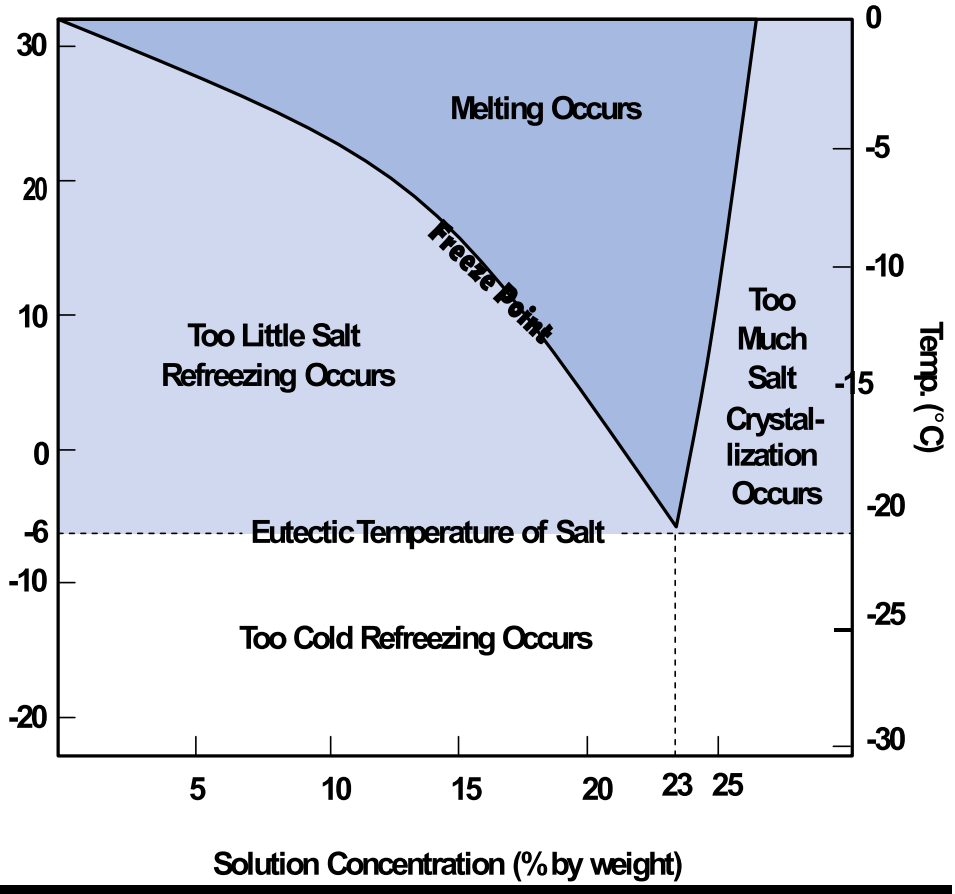
Don't apply CaCl2 or MgCl2 to a warm road (above 28°F pavement temperature). It can become very slippery and cause crashes!

Summary

Anti-icing measures are an important weapon in the snowfighter's arsenal. The appropriate use of anti-icing techniques results in:

- Returning to bare pavement conditions more quickly, saving lives and reducing property damage due to fewer accidents, as well as the reduction of traffic delays and the resulting reduction of losses to local economies;
- Reduction in the quantity of deicer use, resulting in cost savings and less environmental concerns; and
- Reduction in the manpower necessary to maintain safe road conditions, resulting in less overtime costs, less operator fatigue and safer working conditions. ❄

Phase Diagram for Salt





Hiring a NH Certified Green SnowPro as your snow removal contractor will help protect you and your company from slip and fall claims arising from snow and ice conditions.

What can you do?

Look for a certified salt applicator at https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/cert-salt-applicators.xls or ask your current contractor to take the Green SnowPro course and become certified.

How can your organization benefit from the certification?

Reduce Your Liability

Under RSA 508:22, certified applicators **and those who hire them** are granted liability protection from claims arising from snow and ice conditions (slip and fall claims).

Certified Green SnowPros

NH Certified Green SnowPros are leaders in the snow removal industry who are trained in the most up to date technologies and snow management practices to ensure a high level of service and safety to their customers.

Reduce Impacts to Local Waterbodies

Once in our water supplies, there is no practical way to remove salt. Certified Green SnowPros are trained in salt reduction practices to help ensure clean water for future generations.

Why is salt reduction important?

As of 2020, 50 water bodies in New Hampshire are polluted with chloride due to road salt application. In several watersheds analyzed in the southern I-93 corridor, more than 50% of the salt load comes from private roads and parking lots. The other major sources are state and local roads and highways.

Training

For upcoming Green SnowPro Training dates https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification

For more information:

For more information visit: www.des.nh.gov/land/roads/road-salt-reduction

***Contact**: Salt Coordinator*
salt@des.nh.gov
(603)271-5329

MXI Environmental Services LLC
26319 Old Trail Road
Abingdon, VA 24210

Telephone: 276-628-6636
Fax: 276-623-0599

Invoice

Date	Invoice #
10/31/2020	114521

Please note new remittance address below

Bill To	Ship To
TOWN OF SALEM, NH PUBLIC WORKS DEPT. 21 CROSS STREET SALEM, NH 03079	MXI ENVIRONMENTAL SERVICES 26319 OLD TRAIL ROAD ABINGDON, VA 24210

P.O. No.	Terms	Due Date	Rep	Project	Ship Date
54485	Net 30	11/30/2020	MK		10/31/2020

Quantity	Description	Price Each		Total
1	MANIFESTS: 012203052FLE; 012203053FLE HHW EVENT - 10/31/20 - SEE SUMMARY FOR COST BREAKDOWN	39,640.00		39,640.00

11-18-20

Please remit to:
290 Stone Mill Road
Abingdon, VA 24210

Total $39,640.00

We accept Visa and Mastercard. A 5% processing fee will be applied

MXI SUMMARY REPORT

GENERATOR:
TOWN OF SALEM NH
PUBLIC WORKS DEPARTMENT
21 CROSS STREET
SALEM, NH 03079
CLIENT CONTACT:
RICHARD RUSSELL
603-890-2154

DATE:
10/31/2020

MANIFEST #:
012203052FLE
012203055FLE
MXI CONTACT:
MARC KODROWSKI
SITE ADDRESS:
SAME

WASTE DESCRIPTION	SIZE	TREATMENT	# UNITS	PRICE PER	TOTAL
LP AEROSOLS	55 GAL	FUELS BLEND	12	$ 250.00	$ 3,000.00
LP PROPANE	55 GAL	RECYCLING	1	$ 250.00	$ 250.00
LP FIRE EXTINGUISHER	5 GAL	RECYCLING	1	$ 125.00	$ 125.00
BULK FLAMMABLE LIQUIDS	55 GAL	FUELS BLEND	12	$ 225.00	$ 2,700.00
LP PAINT RELATED MATERIAL	55 GAL	FUELS BLEND	60	$ 220.00	$ 13,200.00
LP FLAMMABLE SOLID	5 GAL	TREATMENT	1	$ 125.00	$ 125.00
LP OXIDIZING	55 GAL	TREATMENT	3	$ 275.00	$ 825.00
LP ORGANIC PEROXIDE	5 GAL	TREATMENT	1	$ 125.00	$ 125.00
LP PESTICIDE LIQUID	55 GAL	INCINERATION	22	$ 275.00	$ 6,050.00
LP PESTICIDE SOLID	55 GAL	INCINERATION	8	$ 275.00	$ 2,200.00
LP CORROSIVE ACIDIC	55 GAL	TREATMENT	4	$ 275.00	$ 1,100.00
LP CORROSIVE BASIC	55 GAL	TREATMENT	14	$ 275.00	$ 3,850.00
LP MERCURY	5 GAL	RECYCLING	1	$ 125.00	$ 125.00
BULK ANTIFREEZE	55 GAL	RECYCLING	3	$ 225.00	$ 675.00
BULK NON HAZ LIQUIIDS	55 GAL	RECYCLING	1	$ 225.00	$ 225.00
LP LITHIUM BATTERIES	5 GAL	RECYCLING	1	$ 125.00	$ 125.00
LP NICAD BATTERIES	5 GAL	RECYCLING	1	$ 125.00	$ 125.00
LP NICKEL HYDRIDE	5 GAL	RECYCLING	1	$ 125.00	$ 125.00
CAR BATTERIES	PER	RECYCLING	38	$ 5.00	$ 190.00
SET UP FEE	PER				$ 4,500.00
				TOTAL	**$ 39,640.00**

MXI ENVIRONMENTAL SERVICES, LLC

CUSTOMER RECEIPT:

GENERATOR:
TOWN OF SALEM, NH
PUBLIC WORKS DEPARTMENT
21 CROSS STREET
SALEM, NH 03079
PHONE: 603-890-2154
CONTACT: DAVID WHOLLEY

DATE: 10/31/2020

MANIFEST NUMBER: 012203052FLE

SHIPPING DESCRIPTION:

AEROSOLS 4 x 4/3
FIRE EXTINGUISHERS 1 x 5gl.
FLAMMABLE LIQUID BULK 12 x 55
~~PAINT RELATED MATERIAL~~ on other receipt (KW) 10/31/20
FLAMMABLE SOLIDS 1 x 5
OXIDIZING LIQUID 1 x 55
OXIDIZING SOLID 2 x 55
ORGANIC PEROXIDE 1 x 5
PESTICIDE LIQUID 22 x 55
PESTICIDE SOLID 2 x 3
PROPANE 1 x 55

CORROSIVE ACID LIQUID 3 x 55
CORROSIVE ACID SOLID 1 x 55
CORROSIVE BASIC LIQUID 11 x 55
CORROSIVE BASIC SOLID 3 x 55
MERCURY 1 x 55
~~ASBESTOS~~ (KW) 10/31/20
ANTIFREEZE 3 x 55
NON HAZ LIQ 1 x 55
NICAD 1 x 5
LITHIUM 1 x 5
NICKEL HYDRIDE 1 x 5

SITE ADDRESS:
SAME

MXI SIGNATURE:

CUSTOMER SIGNATURE:

www.mxiinc.com

LOCATIONS:

297 ZIMMERMAN LANE
LANGHORNE, PA 19047
(267)590-0043P
(267)590-0050F

26319 OLD TRAIL ROAD
ABINGDON, VA 24212
(276)628-6636P
(276)628-4435F

VLT

5229

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
NHD510099476	3	800-424-9300	012203052 FLE

GENERATOR

5. Generator's Name and Mailing Address
MXI ENVIRONMENTAL SERVICES LLC
26319 OLD TRAIL RD
ABINGDON VA 24210
Generator's Phone: 276 628-8636

Generator's Site Address (if different than mailing address)
MXI ENVIRONMENTAL SERVICES LLC
21 CROSS ST
SALEM NH 03070

6. Transporter 1 Company Name
MAUMEE EXPRESS INC
U.S. EPA ID Number
MJD988607380

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
MXI ENVIRONMENTAL SERVICES
26319 OLD TRAIL RD
ABINGDON VA 24210
Facility's Phone: 276 628-8636
U.S. EPA ID Number
VAR000503920

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	UN1950, AEROSOLS, FLAMMABLE, 2.1	004	CF	1600	P	NONE D001 X2
X	UN1978, PROPANE, 2.1	001	DF	50	P	NONE D001 X2
X	UN1044, FIRE EXTINGUISHERS, 2.2	001	DF	30	P	NONE D001 X2
X	~~UN1263, PAINT RELATED MATERIAL, 3, PG III~~ SHIPPED ON MANIFEST 012203053 FLE	XXX	XX	XXX	P	NONE D001 X2

14. Special Handling Instructions and Additional Information
ALL MATERIAL IS HHW COLLECTED IN NH. EMERGENCY CONTACT (NHDES) 603-271-3899 M-F 8AM-4PM WEEKENDS NH STATE POLICE 603-223-4301

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
CRAIG ROUSSEAU AGENT FOR MXI		10	31	20

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
TERRENCE NOBLE		10	31	2020
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year
DAREN MADER		11	4	20

VLT

5224

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number NHD510099476	22. Page 2 of 3	23. Manifest Tracking Number 012203052FLE

24. Generator's Name
MXI NVIRONMENTAL SERVICES LLC

25. Transporter _____ Company Name | U.S. EPA ID Number

26. Transporter _____ Company Name | U.S. EPA ID Number

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes
X 5.	UN1993, FLAMMABLE LIQUID, NOS (ISOPROPYL, MINERAL SPIRITS), 3, PG II	012	DM	3900	P	NONE NHX2
X 6.	UN1325, FLAMMABLE SOLIDS, ORGANIC, NOS (FUSEE, MATCHES), 4.1, PG II	001	DF	20	P	NONE NHX2
X 7.	UN3139, OXIDIZING LIQUID, NOS (CHLORINE, SODIUM HYPOCHLORITE), 5.1, PG II	001	DF	150	P	NONE NHX2
X 8.	UN1479, OXIDIZING SOLID, NOS (CHLORINE, SODIUM HYPOCHLORITE), 5.1, PG II	002	DF	400	P	NONE NHX2
X 9.	UN3105, ORGANIC PEROXIDE, TYPE D, LIQUID, NOS (METHYL ETHYL KETONE PEROXIDE <45%) 5.2 PG II	001	DF	15	P	NONE NHX2
X 10.	UN2902, PESTICIDES LIQUID, TOXIC, NOS (DINOSEB, ACEPHATE), 6.1, PG II	022	DF	3300	P	NONE NHX2
X 11.	UN2588, PESTICIDES SOLID, TOXIC, NOS (DINOSEB, ACEPHATE), 6.1, PG II	002	CF	3000	P	NONE NHX2
X 12.	UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, NOS (HYDROCHLORIC, PHOSPHORIC), 8, PG II	003	DF	600	P	NONE NHX2
X 13.	UN3260, CORROSIVE SOLID, ACIDIC, INORGANIC, NOS (BORIC ACID, SODIUM BISULFATE), 8, PG II	001	DF	200	P	NONE NHX2
X 14.	UN3266, CORROSIVE LIQUID, BASIC, INORGANIC, NOS (AMMONIA, SODIUM HYDROXIDE), 8, PG II	011	DF	2750	P	NONE NHX2

32. Special Handling Instructions and Additional Information
ALL MATERIAL IS HHW COLLECTED IN NH. EMERGENCY CONTACT (NHDES) 603-271-3899 M-F 8AM-4PM
WEEKENDS NH STATE POLICE 603-223-4381

GENERATOR

TRANSPORTER

33. Transporter _____ Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter _____ Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

DARIEN MATER 11 4 20

EPA Form 8700-22A (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
NHD510099476 3	3 of 3	012203052FLE

24. Generator's Name: MXI NVIRONMENTAL SERVICES LLC

25. Transporter _____ Company Name — U.S. EPA ID Number

26. Transporter _____ Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes	
X	15 UN3262, CORROSIVE SOLID, BASIC, INORGANIC, NOS (SODIUM CARBONATE, SODIUM HYDROXIDE), 8, PG II	003	DF	600	P	NONE	NH42
X	16 RQ UN3506, MERCURY CONTAINED IN MANUFACTURED ARTICLES, 8, (8.1), PG III	001	DM	250	P	NONE	NH42
X	17 UN3028, BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE, SOLID, 8, PG III (NICKEL CADMIUM BATTERIES)	001	DF	50	P	NONE	NH42
X	18 UN3496, BATTERIES, NICKEL-METAL HYDRIDE, 9	001	DF	30	P	NONE	NH42
X	19 UN3090, LITHIUM BATTERIES, 9, PG II	001	DF	30	P	NONE	NH42
	20 NON DOT, NON RCRA REGULATED MATERIAL (HOUSEHOLD COLLECTED ANTIFREEZE)	003	DM	1200	P	NONE	NH42
	21 NON DOT, NON RCRA REGULATED MATERIAL (WAXES, SOAPS)	001	DM	400	P	NONE	NH42

32. Special Handling Instructions and Additional Information

ALL MATERIAL IS NHW COLLECTED IN NH. EMERGENCY CONTACT (NHDES) 603-271-3899 M-F 8AM-4PM WEEKENDS NH STATE POLICE 603-223-4381

TRANSPORTER

33. Transporter _____ Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter _____ Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

CUSTOMER RECEIPT:

GENERATOR:
TOWN OF SALEM, NH
PUBLIC WORKS DEPARTMENT
21 CROSS STREET
SALEM, NH 03079
PHONE: 603-890-2154
CONTACT: DAVID WHOLLEY

DATE: 10/31/2020

MANIFEST NUMBER: 012203055FLE

SHIPPING DESCRIPTION:
20 x y³ PAINT RELATED 1263
LEAD ACID CAR BATTERIES CUSTOMER KEPT \ BROUGHT TO RECYCLING CENTER
1 x 55 LEAD ACID GEL CELL BATTERIES

SITE ADDRESS:
SAME

MXI SIGNATURE:

CUSTOMER SIGNATURE:
Joe Teole

www.mxiinc.com

LOCATIONS:

297 ZIMMERMAN LANE
LANGHORNE, PA 19047
(267)590-0043P
(267)590-0050F

26319 OLD TRAIL ROAD
ABINGDON, VA 24212
(276)628-6636P
(276)628-4435F

Please print or type.

Form Approved. OMB No. 20

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: NHD510099476
2. Page 1 of 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 012203053 FL

GENERATOR

5. Generator's Name and Mailing Address
MXI ENVIRONMENTAL SERVICES LLC
28319 OLD TRAIL RD
ABINGDON VA 24210
Generator's Phone: 276 628-6636

Generator's Site Address (if different than mailing address)
MXI ENVIRONMENTAL SERVICES LLC
21 CROSS ST
SALEM NH 03070

6. Transporter 1 Company Name: MADMEE EXPRESS INC
U.S. EPA ID Number: NJD988607380

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
MXI ENVIRONMENTAL SERVICES
28319 OLD TRAIL RD
ABINGDON VA 24210
Facility's Phone: 276 628-6636
U.S. EPA ID Number: VAR000503920

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
X	UN1263, PAINT RELATED MATERIAL, 3, PG III	020	CF	20,000	P	NONE	D001
X	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, PG III	001	DF	150	P	NONE	D002
	3.						
	4.						

14. Special Handling Instructions and Additional Information
ALL MATERIAL IS MHW COLLECTED IN NH.

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: CRAIG ROUSSEAU AGENT FOR MXI
Signature:
Month: 10 Day: 31

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: BRIAN TREMBLE
Signature:
Month: 10 Day: 31
Transporter 2 Printed/Typed Name
Signature
Month Day

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day

19 Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name
Signature
Month Day

Stormwater Pollution Control for Industrial Facilities

Important information from: the Town of Salem Municipal Services Department

Keeping pollutants out of the drainage system

Material handling and storage, equipment maintenance and cleaning, and other activities at industrial facilities are often exposed to the weather. Stormwater runoff from rain or snowmelt that comes in contact with these activities can pick up pollutants, and transport them directly, or indirectly through the Town of Salem's storm drains which flow untreated into nearby waterbodies and degrade water quality. Pollutants harm fish and wildlife, make our water unsafe to drink, and can impact recreational use of waters.



You are responsible for pollutants that leave your property



As an industry owner or operator, you are responsible for all pollutants that leave your property. Where possible, minimize or prevent exposure of pollutants to stormwater following these tips:

- **Cleaning:** Maintain an orderly facility. Sweep paved driveways, parking lots, and storage areas regularly.
- **Maintenance:** Perform vehicle and equipment maintenance and repair indoors or off site. Inspect vehicles and equipment for leaks regularly.
- **Washing:** Perform cleaning of equipment and/or vehicles on impervious surfaces with drains piped to the sanitary sewer or a tight tank.
- **Storage:** Store all materials, products, and waste indoors in covered, sealed, labeled containers. Storage area should be dry, cool, well-ventilated, and insulated.
- **Spill Prevention:** Develop spill prevention and response procedures. Check storage areas often for leaks and spills. Equip storage areas with easily accessible spill cleanup kits. Immediately clean-up spills and report as appropriate.
- **Disposal:** Don't dump excess, outdated, or waste materials in drains. Dispose of them according to the manufacturer's instructions and local regulations. Designate waste disposal areas.
- **Infiltration:** Encourage infiltration of stormwater runoff (e.g., from roof drains) into soil to prevent it from flowing across exposed areas.
- **Training:** Conduct annual employee training on stormwater pollution prevention and spill response.

EPA REQUIREMENTS:

Your industrial facility may require a Multi-Sector General Permit (MSGP). The MSGP requires operators of certain industrial facilities to develop a Stormwater Pollution Prevention Plan (SWPPP). To learn more, visit EPA's website at: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities.

Winter Maintenance Best Practices

The Town of Salem is working to reduce the potential for contamination of local waterways by minimizing chloride (salt) exposure. To help track and reduce chloride levels in those waters:

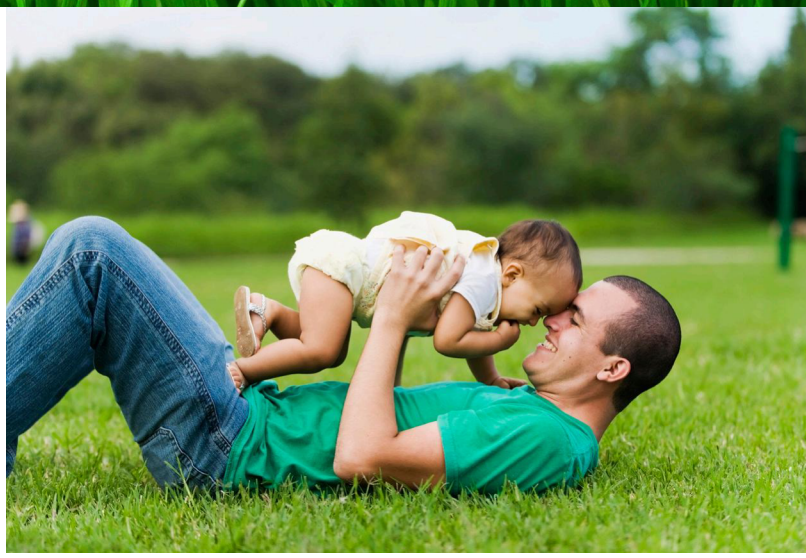
- **Cover salt piles** and place them on an impervious pad.
- **Limit the amount of salt** applied to parking lots and driveways.
- **Hire a New Hampshire Certified Green SnowPro Contractor** for your winter maintenance, or ask your current contractor to become certified. See link in attached Green SnowPro brochure.
- **Report annual salt usage** using the UNH Technology Transfer Center online tool at: http://www.roadsalt.unh.edu/Salt/. If you use a Certified Green SnowPro contractor, it will be included with their annual salt usage reporting.



As part of the USEPA's 2017 National Pollutant Discharge Elimination Systems (NPDES) general Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in New Hampshire, Salem is required to educate industrial facilities on pollution prevention. This fact sheet is intended to fulfill permit requirements.

Green Grass & Clear Water

Water-quality friendly lawn care and fertilizer recommendations for northern New England



According to a recent survey, it's likely that you and your neighbors believe having a lawn that is safe for the environment is very important.[1] However, some lawn care practices can create water quality problems. Plants need nutrients to grow, but excess nutrients (including nitrogen and phosphorous found in fertilizers) that run off our properties into local waterbodies can trigger algal blooms that cloud water and rob it of oxygen.

Many of us enjoy the time we spend working on our lawns and are willing to try new practices as long as our lawns continue to look good.[1] Here are some easy practices for creating and maintaining a truly healthy lawn that is both attractive and safer for the environment.

For additional fact sheets and videos, please visit:

www.extension.unh.edu/tags/home-lawn-care







Simple Recommendations for Every Lawn

1. Choose the Right Grass Seed

Consider limiting lawn area to locations where grass will grow easily and will actually be used for outdoor activities.

Choose grass varieties that require less maintenance. For northern New England, choose seed mixes with higher percentages of turf-type tall fescues, compact-type tall fescues and/or fine fescues. Choose mixes with smaller percentages of Kentucky bluegrass and/or perennial ryegrass. Overseed bare spots.

In shaded areas, select shade-tolerant turf grasses like fine-leaf and tall fescues.

Up to 10% of total seed mix can be white clover to help fix nitrogen in soil naturally. Avoid clover if anyone in the household is allergic to bee stings.

2. Don't Overwater

1" of water per week (from rain or irrigation) is usually enough. Overwatering can cause excess nutrients to move out of the root zone and into waterbodies or groundwater.

3. Test Your Soil

To have your soil tested, please visit this site: **extension.unh.edu/programs/soil-testing-services**. Sometimes adjusting the soil pH or organic matter are the only treatments needed to improve a lawn. If your soil test results are acceptable but your lawn is not, check for other problems like pests, grass variety, or sun/shade conditions.

4. Mow Smart

Mow grass no shorter than 3" high. Cut no more than one-third (⅓) of the blade each time you mow to encourage longer, stronger roots. Leave the clippings after mowing so they can return nutrients to the soil. NEVER dispose of clippings in drainage areas, storm drains, or waterbodies!

Recommendations for Lawns That Need Fertilizer

1. Determine How Much to Apply

Measure the dimensions of the area where you plan to apply. The square footage of the area will determine how much fertilizer to purchase and use.

Only use what you need. Nearly half of homeowners mistakenly use the entire bag whether it is needed or not.[1] Seal and store opened fertilizer bags in an airtight container or share excess with others.

Lawns older than 10 years usually need less nitrogen than newer lawns, especially if the clippings are left, so apply only half of the amount directed on the bag. Only apply more if there's no improvement over time in turf color and density. Staying under four applications per season at this reduced rate helps keep the overall application at the recommended level[2] for water-quality friendly practices.

Lawns less than 10 years old may need the full amount of nitrogen as indicated on the fertilizer instructions. Apply less than four times per year.

2. Know When & Where to Apply

Avoid applying fertilizers mid-summer when turf growth naturally subsides or before a big rain when it can run off into nearby waterways or leach into ground water.

In northern New England, apply no earlier than spring green-up and no later than mid-September to ensure the proper soil temperature for grass to take up the nutrients.

Know your local and state laws related to fertilizer application. For example, do not apply any fertilizers within 25 feet of water bodies in New Hampshire.

3. Choose the Right Fertilizer

Avoid combination products that include both pesticide and fertilizer unless confident you need both. Unnecessary applications of fertilizers and pesticides can lead to soil and water contamination.

Select lawn fertilizers with low or no phosphorus unless your soil test indicates otherwise. The fertilizer formula (e.g., 20-0-15) tells the relative percentages of nitrogen (N), phosphorous (P) and potassium (K), in that order.

3. Choose the Right Fertilizer, cont.

Slow release formulations (>50% water insoluble nitrogen, "WIN") are generally preferable. Only use quick release products when there is a need to grow turf very quickly, for example, to prevent erosion of bare soil during a new seeding. Check the product label to see what type of nitrogen it contains.

Organic fertilizers are typically slow release and contain micronutrients that are beneficial to soil. They are not petroleum-based like most synthetic fertilizers. Overapplying any type of fertilizer or over-irrigating fertilized turf can lead to water quality problems.

For more home lawn care information:

www.extension.unh.edu/tags/home-lawn-care

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Goffstown, NH 03045
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[1]Survey references from:
Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Losses in New England's Urbanizing Watersheds: the Report of Findings from Social Science Research. Eisenhauer, B.W. and B. Gagnon. 2008.
USDA CSREES project # 2006-51130-03656

[2]Recommendations adapted from:
New England Regional Nitrogen and Phosphorus Fertilizer and Associated Management Practice Recommendations for Lawns Based on Water Quality Considerations. 2008. Karl Guillard (ed.). Turfgrass Nutrient Management Bulletin B-0100. College of Agriculture and Natural Resources, University of Connecticut.
USDA CSREES project # 2006-51130-03656.

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Designed by: Rebecca Zeiber
NH Sea Grant Science Writer
Publication #: UNHMP-IS-SG-13-27

Updated April 2019 (A. Brickett)

Salem Cares

Salem cares about clean water and is doing its part to help prevent pollution in local water bodies. This outreach message helps the Town of Salem meet US Environmental Protection Agency (EPA) requirements to share pollution prevention information with its residents.

What You Can Do

- Drop off your yard waste at the Transfer Station, located on Shannon Road, for composting. Call 890-2164 or visit the Transfer Station website for more information. Please be sure there is no trash mixed in with the yard waste you bring in for composting!
- Start backyard composting (away from water bodies) with this free "how-to" brochure. Or use a mulching lawnmower to add organic matter and nutrients to your lawn, and avoid having to dispose of the grass clippings.
- NEVER dispose of leaves or clippings in or near storm drains, drainage channels (where rain or melting snow drains), wetlands or water bodies!

Produced by the Town of Salem

with assistance from
the NH Department of Environmental Services
Watershed Assistance Section

Why Does it Matter?

Leaves and grass clippings can be a valuable resource OR a source of water pollution.

As a valuable resource . . .

Mulched leaves or grass clippings on your lawn add valuable nutrients and organic matter. Grass clippings provide a source of slow-release nutrients reducing the amount of lawn fertilizer needed. A thin layer of leaves will break down and add much needed organic matter to plant beds.



Composting leaves and grass clippings saves money. Compost is natural recycling. Compost can be used as a top dressing on your lawn or garden beds reducing or eliminating the need for fertilizer and mulch.

As a source of water pollution . . .

Decaying yard waste kills aquatic animals in water bodies and wetlands. Leaves and grass clippings decompose in water and wetlands by using the oxygen that other organisms such as dragonfly larvae and fish need to live.

Yard waste on banks and in wetlands smothers natural vegetation. Leaves or grass dumped on the banks of water bodies and wetlands block sunlight smothering the natural plant life that provide food and cover to animals such as turtles and deer.

Yard waste dumped near water bodies contributes to algae growth and odors. Seepage from leaves and grass clippings piled on or near the banks of a water body will slowly make its way into the water. When nutrients are plentiful, algae proliferate and form foul-smelling, green mats on the water surface.

Yard waste dumped in or near wetlands or surface waters is against the law! In an effort to protect water bodies and wetlands, the NH legislature passed a law that prohibits filling streams and wetlands with waste materials, including yard waste. RSA 482-A:3.

Please do your part to keep our water bodies and wetlands clean!

LOCAL REGULATIONS

LICENSING

All dogs 4 months or older must be licensed in NH. You will need to bring in proof of a rabies inoculation and proof of spaying or neutering if the dog is altered. The cost to license a dog is $9.00 for a male or female, $6.50 for a spayed or neutered dog, and $2.00 for the first dog belonging to a senior citizen over 65 years of age. If a puppy is too young to be altered, then the $6.50 fee will apply for the first dog license.

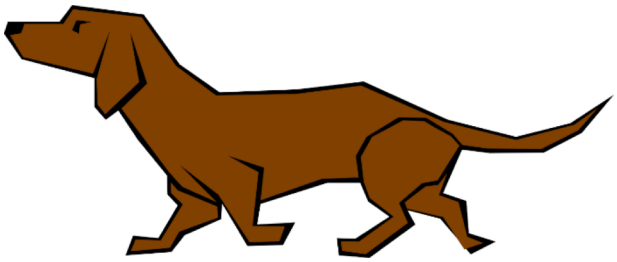


IMPACT OF PET WASTE

PUBLIC HEALTH & ENVIRONMENT

Pet waste contributes to unsafe levels of pathogens in our waterbodies. High fecal pathogen levels indicate a higher risk of potential illness from contact with the water. Pet waste also contains nutrients that can cause excess algae growth.





TOWN OF SALEM RESOURCES

ADDITIONAL INFORMATION

http://www.townofsalemnh.org/animal-control

http://www.townofsalemnh.org/sites/salemnh/files/file/file/state_local_regulations_0.pdf

Brochure design by L. Bizzari, FBE
Additional information from NHDES Scoop the Poop resources
Photo credits: FBE, OpenClipArt

TIPS FOR RESPONSIBLE DOG OWNERSHIP



PROTECT OUR PONDS

Town of SALEM NEW HAMPSHIRE

PET WASTE PROBLEM

WHAT'S THE BIG DEAL?

- Pet waste left on the lawn, street, or beach is carried by rain or snow runoff directly into nearby waterbodies or storm drains (which drain to waterbodies without treatment).
- Untreated animal fecal matter can become a source of harmful pathogens and nutrients in water.
- Others may step in it!



FAST FACTS

- A single gram of dog feces contains 23 million fecal coliform bacteria[1].
- Pet waste carries disease-causing organisms such as Giardia and Salmonella[2]. Infections can cause symptoms such as diarrhea, nausea, and stomach cramps.

[1]van der Wel (1999); [2]Pitt (1998)

WHAT TO DO

QUICK TIPS

BRING IT! Always bring a plastic bag when you walk your dog. Bread bags or newspaper bags work great!

BAG IT! Use the bag as a glove to pick up the pet waste. Scoop up the waste and turn the bag inside out around waste.

DISPOSE IT! Properly dispose of the waste by placing it in a trash can, flushing it unbagged down the toilet, or burying it. To bury waste, place in a hole at least 5" deep and away from any veggie gardens.



ATTENTION!

NEVER PUT PET WASTE INTO A STORM DRAIN

Did you know that storm drains flow directly to nearby streams, rivers, or lakes without any treatment? This means that dog waste and other pollutants left in the yard, on the street, or placed in storm drains, go straight into our waterbodies when rain falls. Properly disposing of pet waste protects our ponds so that we may enjoy swimming, boating, and other activities in clean water.



Water from storm drains empties directly to waterbodies through outfall pipes, such as the one pictured above.

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card *will* be different than the sand calibration card).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.

Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).



Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.

Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

Hydraulic-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration chart *will* be different than the sand calibration chart).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting (~ 2"). This should be kept constant throughout the calibration process. If you find that not enough material is dispensed with this setting, try 2.5" to 3".

Engine Speed: Warm the truck up and run the engine at the typical rate seen during spreading (approximately 2000 rpm).



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each conveyor/auger setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).



Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each conveyor/auger setting that is typically used. Average these three values together and record in the orange column in the calibration chart.

Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and conveyor/auger setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration chart in the truck you just calibrated. Also, leave a copy of the calibration chart in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

Calibration Chart (Hydraulic Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Conveyor or Auger Setting	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1												
2												
3												
4												
5												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Calibration Chart (Pony Motor Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Gate Opening	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1”												
1.5”												
2”												
2.5”												
3”												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable “**C**”. The “**C**” value for each travel speed is shown in red under that given speed. Multiply column **B** by the “**C**” value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pre-wetting

NH Best Management Practices

PRE-WETTING?

Pre wetting is the process of coating a solid de icer with a liquid before it is spread on a roadway.

WHY PRE-WET?

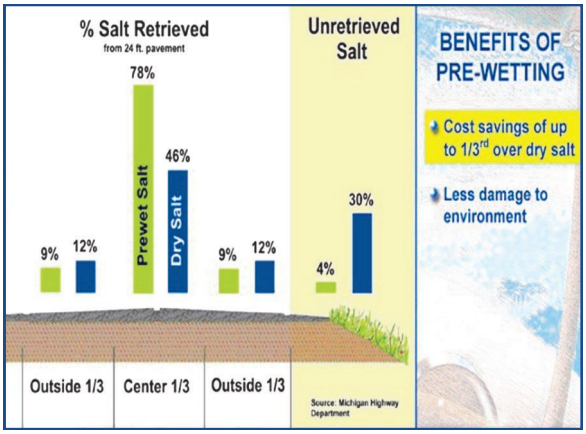
De icing chemicals must form a brine before they can begin melting ice. Pre wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de icer needed to obtain the desired results.

REDUCED RATES

If you are pre wetting, don t forget to reduce your application rates accordingly. Reduc tions in the range of 15 20% are typical.

HOW MUCH LIQUID?

A good rule of thumb is to use 8 10 gallons of pre wetting liquid for every ton of de icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates

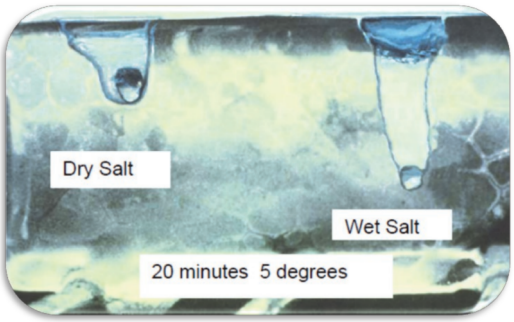


Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.



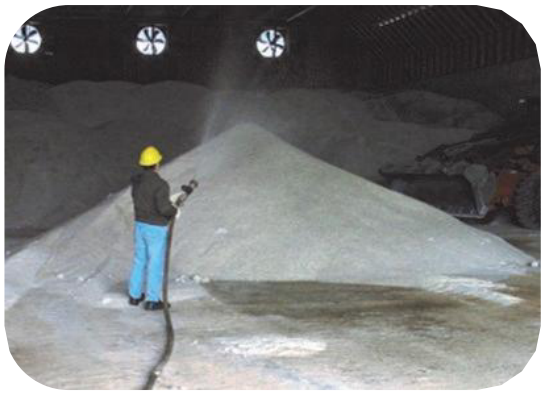
Source: Wisconsin DOT Transportation Bulletin

Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.

Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.





Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

The basic equipment used in brine making is a mixing tank, a holding tank, a pump, and a salometer. It is recommended that brine mixing and storage be indoors to reduce the risk of freezing when temperatures are below 0° F; a circulatory pump may be used to reduce this risk if outdoor storage is the only option. If a mixing facility is not available or desired brine may be purchased from an independent vendor. DOT is currently willing to sell brine to the town of Windham for a pre-wetting trial period.



Figure 35. Salometer

Use the following guidelines for working with brine:

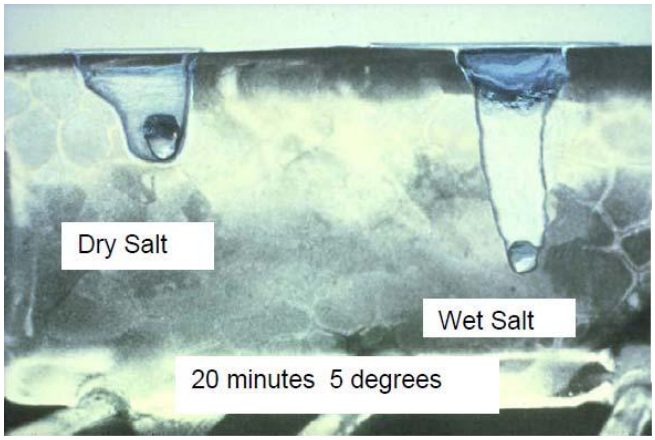
- Salometer reading should be 88.3 for 23% solution
- Specific gravity of 1.179 at 60° F
- Freeze point of -5.8° F for 23% solution
- One gallon of saturated brine contains 2.647 pounds of salt and weighs 10.027 poumds.
- One gallon of water dissolves 2.991 pounds of salt to produce 1.13 gallons of saturated brine.
- One ton of salt will produce 755.5 gallons of saturated brine.
- Chemical additives can be mixed with brine to further lower the freeze point.

For information about the proper storage of brine, see the Brine Storage and Management section. Refer to Appendix G for the New Hampshire Best Management Practices fact sheet on making brine**.**

Pre-Wetting

Pre-wetting is a term referred to a liquid deicer that is applied to a solid-based deicer in order to create a quicker reaction time for the solid deicer to begin melting snow and ice. Salt doesn't work until it is in solution, so it is recommended that all dry salt be pre-wetted regardless of the temperature. By introducing moisture into salt prior to application, the results are a quicker melting action, reduced bounce and scatter of material, and a reduced application rate.

Figure 36. Ice Melting



With a quicker melting action the application rate of pre-wet salt can be decreased by approximately 20 percent over dry salt, which saves money, increases level of service, and reduces chloride in the environment.

Pre-wetting decreases the amount of material that resides outside the target application area due to bounce and scatter. In a Michigan Highway Department study it was found that 20 percent to 30 percent of dry salt applied was immediately removed from the target pavement area. With pre-wet salt already beginning to produce a brine it tends to "stick" to the pavement surface and is worked in by vehicle and pedestrian traffic. Pre-wetting has shown to increase the performance of solid chemicals and their longevity on the roadway surface, thereby reducing the amount of materials required. (O'Keefe and Shi, 2005)

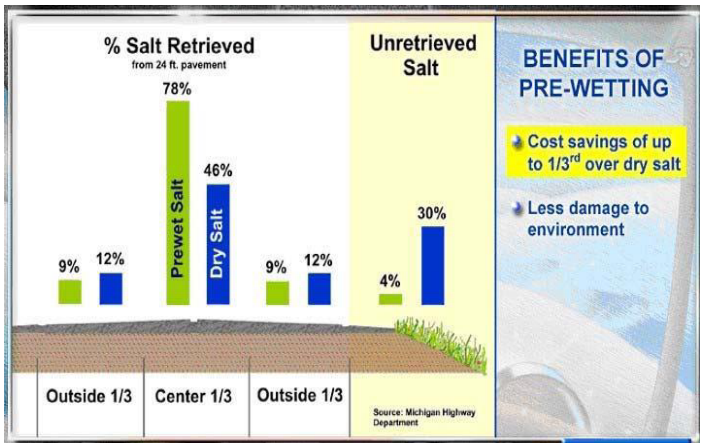


Figure 37. Bounce and Scatter of Salt

Pre-wetting can be accomplished at the stockpile, in the body of a truck, at the spinner, and at the auger.

Wetting stockpiles can be done with a liquid injector that uses special nozzles that inject deep into the pile, but this method is not readily used due to the level of management required. The degree of coating on dry salt is highly dependant on the skill of the operator

and frequent reworking of the pile is needed. Because of leaching risks, all stockpiles should be covered and on an impervious pad.

Another method of pre-wetting at the pile is to move the needed amount of dry salt into an area for mixing. Spray liquid deicer onto the smaller pile at the desired rate, mix, and then load into the truck.

Figure 38. Overhead Pre-Wet Spray System



Spraying truckloads is accomplished by spraying liquid chemical onto a loaded truck, or while material is being loaded to the truck with an overhead spray-bar system. Spraying stockpiles and truck loads is not as practical since granules are not uniformly coated and liquid may drain out of the solid material. Performance on the road may not be consistent throughout the route.

The most efficient method is to pre-wet while salt is being discharged from the chute or at the spinner.

Solutions for pre-wetting can include sodium chloride brine, calcium chloride, magnesium chloride, potassium acetate, calcium magnesium acetate and various agricultural products.

For the UNH T2 best management practices fact sheet on Pre-wetting please refer to Appendix H.

If pre-wetting salt is not an option then pretreated salt may be available for purchase from your local supplier. It is important that the pre-wetted salt be stored in a covered area or within a building to reduce leachate and material waste.

Abrasives

Abrasives (sand and fine mineral aggregates) provide temporary traction on roads, hills, intersections or other problem areas. Abrasives do not melt ice or snow. They are generally used in very cold temperatures when other materials are not as effective. Abrasives, once applied, are quickly dispersed off the road surface by traffic, therefore they are most beneficial in very low traffic areas.

EPA
United States
Environmental Protection
Agency

EPA 841-F-03-003

Protecting Water Quality *from* URBAN RUNOFF

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

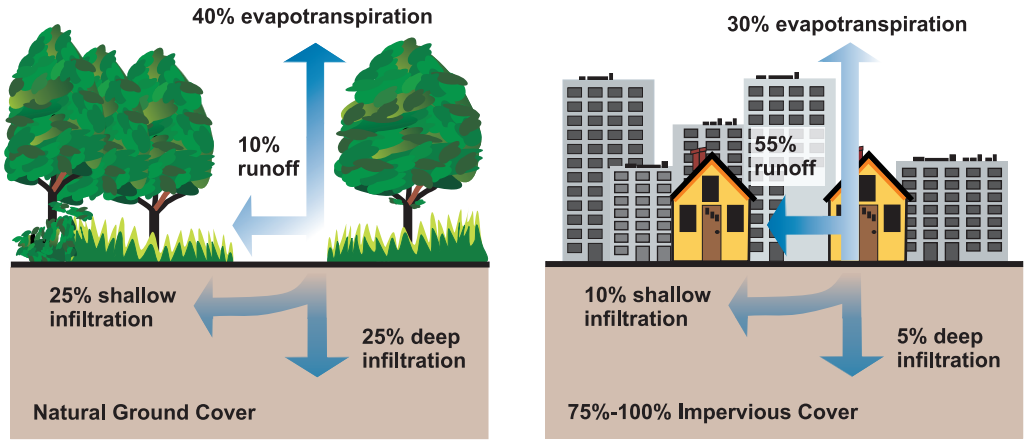
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.



Related Publications

Turn Your Home into a Stormwater Pollution Solution!
www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources
www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center
www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager's Resource Center (SMRC)
www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution
www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

www.epa.gov/nps

February 2003

Published on *Salem NH* (https://www.townofsalemnh.org)

Septic Systems

Application
Regulations
Local Requirements
NH Department of Environmental Services-State Regulations
NH DES Subsurface Systems Bureau
Find a Septic Designer or Installer or Application & Approval Status
Septic System Maintenance
EPA Septic Info for Homeowners

How do I replace my septic system?

The first step is to hire a State of NH Licensed Septic System Designer. He or She will contact the Health Department to schedule a test pit to determine if the system can be replaced in kind or if a new system needs to be designed.

How often should I pump my septic tank?

It is recommend that the tank be pumped every 2 to 3 years.

What guidelines must be followed to install a septic system in the Town of Salem?

The rules and regulations established by the State of New Hampshire, Department of Environmental Services, Subsurface Bureau and the Water Resource Management Bureau form a part of Salem Chapter 253- Sewage Disposal Systems and Wells. A copy of the local regulations may be obtained at Town Hall or through the Web Site. Permits must be obtained from the Health Department. Applicable State Regulations must be obtained through the appropriate State Department.

For Septic System Designs, the homeowner shall:

- Contact a State of NH Licensed Designer through the telephone yellow pages or from the NH DES website. A link for this information is available on this page, see above.
- The designer must pay a permit fee and make an appointment with the Health Department to meet on-site with a backhoe.
- The designer is required to submit 5 copies of the septic design plan, along with the permit application and fee, to the Health Department for review. The State will not review the plans prior to Town approval.
- The Town will review and stamp plans, keep one copy for our files and return 4 copies to the designer to be submitted to the State for approval. The State approval period is generally 2-3 weeks.

For Septic System Installation, the homeowner shall:

- Contact a State of NH Licensed Installer through the telephone yellow pages or from the NH DES website. A link to this information is available on this page, see above.
- Installer comes into Town Hall with the approved plans, pays a permit fee and obtains an installation permit.
- The installer calls the Health Department with a 48-hour notice for the following:

  Bed bottom inspection
  Final inspection prior to backfilling

Source URL: https://www.townofsalemnh.org/health-division/pages/septic-systems

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WMB-24 2020

Snow and Ice Management for the Business Owner

Clean Water and Safe Parking Lots

Snow and Ice Management Liability Protection in New Hampshire

Under RSA 489-C, *Salt Applicator Certification Option* (effective November 1, 2013), any business owner who contracts for snowplowing and deicing with a "certified" salt applicator has liability protection from damages arising from hazards caused solely by snow or ice. The "certified" applicator is a snow and ice management contractor (contractor) who has undertaken specialized training and demonstrated proficiency with the New Hampshire "Green SnowPro Program" in the most efficient application of road salt (sodium chloride) while ensuring the safety of the traveling public. In addition to providing limited liability protection, hiring a Green SnowPro certified contractor will:

- Increase the efficiency of removing snow and ice while ultimately decreasing the amount of salt that is applied to the parking areas and sidewalks that they manage.
- Save the business owner money through reduced salt use and fewer repair costs associated with damages to infrastructure caused by the caustic nature of salt.
- Reduce impacts to the surrounding environment by protecting groundwater and nearby streams, ponds and lakes from chloride contamination from runoff that originates from parking lots, sidewalks and other areas treated with salt.
- Minimize the salt and sand that is often tracked into lobbies and offices at one's facility.
- Protect the landscape plantings (such as trees, shrubs and grass) and soil adjacent to parking areas and sidewalks.

As many business owners have already learned, the level of service (how effectively parking areas and walkways can be managed for customer satisfaction) and customer safety *are actually increased* substantially by more efficient salt use and not compromised as once traditionally thought. In our more urban areas, up to 50 percent of the chloride polluting local waterbodies originates from commercial parking lots. Business owners can minimize their cumulative impact on the environment by engaging certified salt applicators and implementing best management practices for salt reduction. Encourage your current snow and ice management contractor to get certified in the New Hampshire Green SnowPro Program.

Snow and Ice Management Tips

1) As stated above, contract for snow and ice management with a "certified" Green SnowPro professional. Provide your company with important liability protection and maximize the usefulness and safety of your parking areas and walkways for your customers and staff during the winter months by hiring these specially trained individuals.

2) Before the snow season, review the existing building design and layout with your contractor to assist in facilitating "mechanical" snow removal, a preferred snow and ice management approach (mechanical snow removal is the removal of snow with plow equipment or by hand shoveling without the use of any de-icer). Identify where snow will be stored, and review high priority pedestrian and vehicle traffic expectations.

3) Encourage mechanical snow removal as early as possible at the onset of a storm. This helps to prevent snow and ice from adhering to the parking lot pavement initially and normally requires less salt application(s) during the full duration of the storm.

4) Consider not maintaining low use parking and walkway areas in the winter. The national Snow and Ice Management Association (SIMA), representing the snow and ice removal industry, has observed that in large parking lots, customers routinely park in small, confined areas at the entrances of the respective businesses. After the holiday rush (where full parking capacity may be required), consider reducing the size of the parking area normally maintained, thus reducing overall plowing costs and application of salt.

5) Ask important questions to your snow and ice management contractor. For example, does your contractor calibrate his/her salt spreader each year – this alone can improve efficiency and reduce the amount of salt that is spread by five to seven percent. Involvement by property management will improve snow and ice removal activities and ultimately reduce overall cost.

6) Ask your contractor if they are using infrared thermometers to reduce potential salt applications. Studies show that parking lot pavement temperatures are usually warmer than air temperatures, particularly during the day. This means that there are many times when the pavement temperature will be above freezing even when air temperatures are well below freezing. Understanding this, a follow-up application of salt may not be necessary. It's also important to know that an application of salt (sodium chloride) is generally not effective under 15 degrees Fahrenheit. It may be better during these periods to apply an abrasive like sand and wait to reapply salt when the temperature rises again.

7) Direct your contractor to plow snow to the low side of the paved parking area. This will help to concentrate the snow piles away from customer service areas and may help to prevent slippage by customers on ice caused by the daily melting of snow piles.

8) Cover any sand and sand/salt mixtures stored within a parking area for treatment purposes to prevent salt from being washed or blown from the pile (studies have shown where 50 percent of uncovered piles can be carried away by wind or rain).

9) Where possible, direct your contractor to use *drop-type* rather than *broad-cast* spreaders on sidewalks to increase the amount of material retained on the sidewalks to work. This will also help to limit salt damage to vegetated areas adjacent the sidewalks.

10) Encourage your contractor to use *anti-icing* measures before the storm. A concentrated liquid *anti-icing* product (brine) applied before the start of a snow storm has the advantage of preventing snow *and* ice from bonding to the pavement and accelerates the melting process. This practice can reduce slippery conditions more quickly to begin with, ultimately significantly decreasing the amount of sodium chloride that is applied to pavement.

11) Encourage your contractor to use *pre-wetting* measures (where brine is used to wet sodium chloride) which increases the efficiency and speed at which the salt melts the ice. *Pre-wetting* through the use of saddle tanks mounted next to the salt hopper on the truck or by pre-wetting a pile of sodium chloride beforehand should also be considered as a worthy alternative and can provide another means of reducing the total application of salt. Both *anti-icing* and *pre-wetting* measures, when compared to other salt reduction efforts, are generally more effective at reducing the tonnage of salt applied in New Hampshire each year.

The success of any salt reduction program requires effective procedures, the introduction of new salt reducing equipment or measures, and specialized training. Success will require the acceptance of these approaches by the business owner, property manager or supervisor, and the contractor; and most importantly a willingness to work together. For more information, please contact the Salt Reduction Program Coordinator at the NHDES Watershed Assistance Section: (603) 271-5329 or salt@nh.des.gov or visit the NHDES' Road Salt Reduction Initiative Website.

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-22-30 2019

Storage and Management of Deicing Materials

Storage and management of deicing material can be a source of contamination of surface water and groundwater, causing a violation of state water quality standards. These salt-based products dissolve in precipitation and either infiltrate though the ground surface to groundwater, or run off into surface water. Salt that infiltrates the subsurface at significant concentrations can also react with the soils and release metals into groundwater and surface water at concentrations that exceed water quality standards.

The term "deicing material" used here refers to deicing salts, and may include any of the following in either solid or liquid form: sodium chloride (often called rock salt), potassium chloride, calcium chloride, magnesium chloride, and other mixtures that contain salts (chlorides) including mixtures with abrasives, such as sand, cinder, slag, etc.

Need for Proper Management

Due to their high potential for causing groundwater and surface water pollution, salt storage facilities should not be placed in environmentally sensitive areas. The best strategy to prevent pollution from deicing materials and the associated liability is to use and store these materials responsibly. Facilities should develop good housekeeping practices to minimize loss and waste during the delivery, storage, loading and management of deicing materials.

Existing and new facilities that operate without impermeable surfaces and infiltrate brine to the ground or groundwater need to register with the New Hampshire Department of Environmental Services (NHDES) under Env-Wq 402, Groundwater Discharge Permit and Registration Rules. This is a free registration and is a method of tracking potential contaminant sources. If there are sensitive receptors nearby, some sites may be required to monitor drinking water wells and/or the groundwater. The registration form can be found at the Groundwater Discharge Permitting and Registration program page.

Best management practices (BMPs) for locating a new deicing materials storage facility should include the following:

- The facility should be located in an area that is not environmentally sensitive. Avoid areas where there are wells, reservoirs, or within the footprint of stratified-drift aquifers.
- The facility should be located on a flat site away from surface water and wetlands.
- Site drainage should be designed to direct clean stormwater away from the operations and storage areas in order to keep the stockpiles as dry as possible.
- Drainage that is contaminated with salt should be directed to a sewage treatment plant (subject to municipal approval), collected for use in pre-wetting activities or sent for proper disposal.

Structures and Work Areas

Ideally deicing material storage facilities should be completely enclosed, with storage and working areas on impervious surfaces such as asphalt or coated concrete. There should be stormwater drainage controls to prevent runoff water and snow melt from contacting or running through loading and material storage areas. Overhead cover to protect material from exposure to snow and rain should be installed to minimize runoff and inventory loss. A fixed roof is preferred over a tarp, because it is very difficult to keep storage piles completely covered with tarps during winter months and storm events.

Buildings should have concrete foundations and can be designed using dome, barn, or fabric style structures. For more information on constructing salt storage units, calculating how much space is needed for storage, and salting practices, see the Salt Institute's publications at www.saltinstitute.org. *The Salt Storage Handbook* contains tables that indicate how much space is required to cover different height piles, and provides surface areas of exposed salt piles, to help in calculating number and size of tarps for *temporarily* covering salt piles.

The following BMPs should be considered when storing and managing deicing materials.

Storage Structures

- All salt and sand/salt mixtures should be stored on pads of impermeable asphalt or concrete. Storage and loading areas should have an impermeable floor constructed of asphalt, concrete or other suitable material that extends around the buildings and work area exterior. The area should be sloped away to prevent stormwater from entering the loading areas or structure.
- Concrete pads and walls should be treated to prevent concrete deterioration (spalling).
- Structure hardware should be galvanized and concrete block buildings should be waterproofed inside.
- If using a three-sided building, the exposed salt at the open end should be covered.
- Stormwater and snowmelt runoff should be properly controlled. Building floors and storage pads should be sloped to prevent ponding and allow any water to drain away from the storage piles.

On-Site Management: Delivery/Handling/Loading

- All sand and sand/salt mixtures temporarily out in the open should be covered to prevent salt from being washed or blown from the pile.
- If a permanent under-roof work area is not possible, then storage and handling activities should be conducted on impermeable (bituminous) pads. Any deicing materials left outdoors should be completely covered with waterproof tarpaulins.
- All surplus materials must be removed from the site when winter activity is finished.
- Working areas should be bermed and sloped to allow snow melt and stormwater to drain away from the area. In some cases, it may be necessary to channel water to a collection point, such as a sump, holding tank, or lined basin for collection.
- Storage and distribution should only be conducted during the fall/winter season.
- Spreaders should not be overloaded such that material spills off the vehicle. A plan for loading operations to prevent overfilling vehicles and eliminating material spillage during transportation should be developed and implemented.
- Salt spilled at the storage yard and loading areas should be collected and returned to the storage pile.
- Annual inspection and repairs should be carried out prior to the start of each season. Ongoing inspection of storage structures, work areas, and deicing liquid storage tanks should be carried out during the season.
- Solid bagged materials should be stored securely, indoors if possible.

- Spreaders should only be washed at a location where the wash water is properly managed. (See NHDES fact sheet WD-DWGB-22-10 Management of Vehicle Wash Water.)
- Liquid storage tanks should be designed such that a plumbing failure will not result in release of the contents. Backflow prevention may be necessary on some plumbing applications.
- Liquid storage tanks should be protected from impact from vehicles moving about the yard and be located such that spilled material can be contained and retrieved in the event of a tank or piping failure. Secondary containment should be provided around large liquid storage tanks.

Brine Storage and Management

In recent years, brine has been used on roads prior to storms as an effective ice preventative, reducing the amount of deicing materials needed during a storm event. The water that runs off storage and loading areas can be collected into watertight tanks or lined basin(s) and re-used in pre-storm wetting of roads. Any brine storage should be designed with inert materials that are compatible with salt.

Brine stored using holding tanks must be managed so that there are no releases to drains, groundwater or surface waters. If there is a floor drain in a building where brine is stored, it must be connected to a municipal sewer system (with the approval of the local authority), routed to a registered holding tank or permanently sealed. (see fact sheet WD-DWGB-22-8 Holding Tanks for Floor Drains)

Storage ponds or collection basins used for brine storage must be lined and must not receive runoff from areas other than the storage and operations areas. The basin itself must be impermeable to prevent infiltration of the collected water into the ground. The basin may need a roof or cover to reduce the accumulation of snow and rain water. The collection of this runoff water would only be necessary during the winter maintenance months (November through March). During the remaining seven months of the year, the non-brine stormwater can be redirected from the brine storage to a natural discharge point.

The preferred management option for any brine collected is for use as a pre-wetting agent for roads prior to winter storms. The release of this collected water to the ground, groundwater, or a stormwater system during operation or at season's end is not permissible and as a consequence, this type of runoff management may require disposal of the brine by one of the following methods: (1) discharge directly to a publicly owned treatment works (POTW) with local approval; (2) pumping and transporting the salt water to a POTW system by tank truck; (3) evaporation; or (4) treatment to remove salt and on-site discharge under a Nondomestic Wastewater Registration.

References:

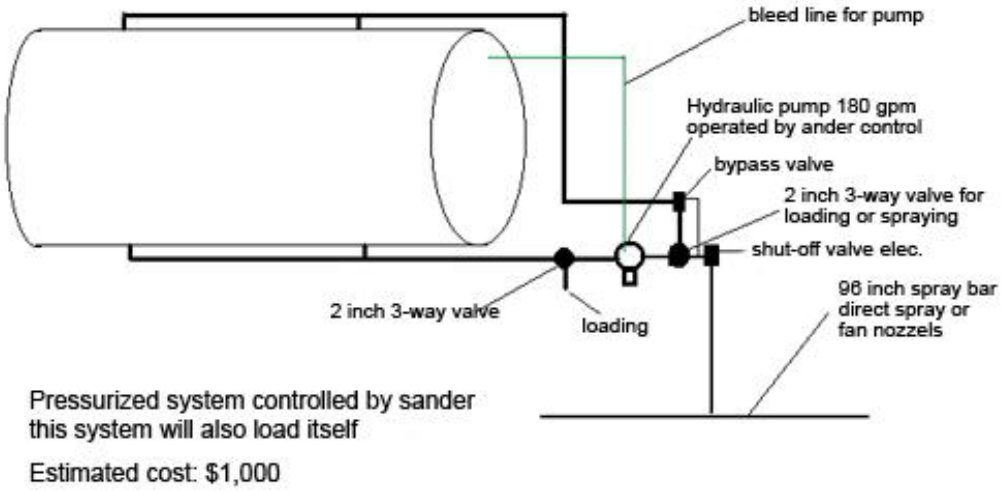
Salt Institute
Michigan Department of Environmental Quality Salt and Brine Storage Guidance
Guide to Salt Storage Requirements for Small Commercial Snow Removal Services
Environnent Canada
Best Management Practices for Salt Use on Private Roads, Parking Lots & Sidewalks
SIMA (Snow & Ice Management Assoc.)

For More Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or by email at dwgbinfo@des.nh.gov

Note: This fact sheet is accurate as of June 2019. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.

Figure 25: Graphic of Home-Made Brine Unit



http://www.iowadot.gov/maintenance/images/equipment/truck_back.jpg

5.1.4 Calibration

During winter operations, changes may occur in mechanical linkages, hydraulic systems and other components. Yearly calibration of equipment allows for better control of application rates for various gate height/openings. Gate height or gate openings should be adjusted to spread the desired chemical application rate for each set of unique conditions. Re-calibration should be done if any changes are made to the equipment or if a different deicing material is used. In addition to manufacturer specifications, see Appendix B for Hydraulic-Run Spreader Calibration and Appendix C for Pony Motor-Run Spreader Calibration. Keep a record of the calibration results with the vehicle and refer to it for the application settings recommended for the various weather conditions.

5.1.5 Storage and Site Management

In addition to managing how salt is applied to parking lots and roadways, it is also important to manage how dry salt, pre-wet salt, salt brine, salt/sand mixtures, and snow piles are stored and handled. This section was adapted from DES Fact Sheet WD-DWGB-22-30.

Chloride storage facilities can contribute to both surface and ground water contamination. The location of a storage facility should not be in an area that is environmentally sensitive. Avoid areas where there are wells, reservoirs, or within the footprint of stratified drift aquifers.

Ideally deicing material storage facilities should be completely enclosed, with storage and working areas on impervious surfaces such as asphalt or

coated concrete. Buildings should have concrete foundations and can be designed using dome, barn, or fabric style structures.

Figure 26. Improper Site Management



There should be storm water drainage controls to prevent runoff water and snow melt from contacting or running through loading and material storage areas. Overhead cover to protect material from exposure to snow and rain should be installed to minimize runoff and inventory loss. A fixed roof is preferred over a tarp, because it is difficult to keep storage piles completely covered with tarps during winter months and storm events.

As a general practice, site drainage should direct clean storm water away from the operations and storage areas in order to keep the stockpiles as dry as possible. In new facilities or facilities that are being retrofitted drainage that is contaminated with salt should be directed to a sewage treatment plant (subject to municipal approval), collected for use in pre-wetting activities or sent for proper disposal.

Salt Storage Structures

- All salt and sand/salt mixtures should be stored on pads of impermeable asphalt or concrete. Storage and loading areas should have an impermeable floor constructed of asphalt, concrete or other suitable material that extends around the buildings and work area exterior. The area should be sloped away from the structure to prevent storm water from entering the loading areas or structure.
- Concrete pads and walls should be treated to prevent concrete deterioration.
- Structure hardware should be galvanized and concrete block buildings should be waterproofed inside.
- If using a three sided building, the exposed salt at the open end should be covered.
- Storm water and snowmelt runoff should be properly controlled. Building floors and storage pads should be sloped to prevent ponding and allow any water to drain away from the storage piles.



Figure 27.
Town of Derry NH Salt Storage

Brine Storage and Management

In recent years brine has been used on roads prior to storms as an effective ice preventative, reducing the amount of deicing materials needed during a storm event. The water that runs off storage and loading areas can be collected into watertight tanks or lined basin(s) and reused. Any brine storage should be designed with inert materials that are compatible with salt.

Brine stored in holding tanks must be managed so that there are no releases to drains, groundwater or surface waters. If there is a floor drain in a building where brine is stored, it must be connected to a municipal sewer, routed to a registered holding tank or permanently sealed. For the NHDES fact sheet on floor drains refer to Appendix D.

Storage ponds or collection basins used for brine storage must be lined and must not receive runoff from areas other than the storage and operations areas. The basin itself must be impermeable to prevent infiltration of the collected water into the ground. The basin may need a roof or cover to reduce the accumulation of snow and rain water. The collection of this runoff water would only be necessary during the winter maintenance months (November through March). During the remaining seven months of the year, the non-brine stormwater can be redirected from the brine storage to a natural discharge point.

The preferred management option for any brine collected is for use as a pre-wetting agent for roads prior to winter storms. The release of this collected water to the ground, groundwater, or a stormwater system during operation or at season's end is not permissible and as a consequence, this type of runoff management may require disposal of the brine by one of the following methods:

1) Discharge directly to a publicly owned treatment works (POTW) with local approval;

2) Pumping and transporting the salt water to a POTW system by tank truck;
3) Evaporation; or
4) Treatment to remove salt and onsite discharge under a Nondomestic Wastewater Registration.

All liquid storage tanks should be protected from impact by vehicles moving about the yard and be located such that spilled material can be contained and retrieved in the event of a tank or piping failure. Secondary containment should be provided around large liquid storage tanks.



Figure 28. Proper Brine Storage

Snow Storage and Disposal

The environmental effects of disposed snow result from high levels of sodium chloride, sand, debris and contaminants from automobile exhaust. It is the debris contained in plowed snow that makes it illegal to dump snow directly in water bodies. RSA 485-A:13,I(a) prohibits discharging wastes to surface waters without a permit. Groundwater is sensitive to snow dumping due to the high levels of sodium chloride in plowed snow. RSA 485-C:12 prohibits the sitting or operation of snow dumps within classified wellhead protection areas.

Figure 29. Snow Storage and Disposal



The following guidelines are designed to select safe places to dump plowed snow. Snow dumps are kept out of water bodies due to the litter and debris content. Litter and debris do not belong on the land surface either; after the snow melts, all litter and debris must be collected and disposed of properly.

- Disposed snow should be stored near flowing surface waters, but at least 25 feet from the high water mark of the surface water.

- A silt fence or equivalent barrier should be securely placed between the snow storage area and the high water mark.
- The snow storage area should be at least 75 feet from any private water supply wells, at least 200 feet from any community water supply wells, and at least 400 feet from any municipal wells. (Note: Snow storage areas are prohibited in wellhead protection areas [class GAA groundwater].)
- All debris in the snow storage area should be cleared from the site prior to snow storage.
- All debris in the snow storage area should be cleared from the site and properly disposed of no later than May 15 of each year the area is used for snow storage.

Onsite Management: Delivery/Handling/Loading

- All sand and sand/salt mixtures temporarily out in the open should be covered to prevent salt from being washed or blown from the pile.
- If a permanent covered work area is not possible, then storage and handling activities should be conducted on impermeable (bituminous) pads. Any deicing materials left outdoors should be completely covered with waterproof tarpaulins.
- All surplus materials must be removed from the site when winter activity is finished.
- Working areas should be bermed and sloped to allow snow melt and stormwater to drain away from the area. In some cases, it may be necessary to channel water to a collection point, such as a sump, holding tank, or lined basin for collection.
- Storage and distribution should only be conducted during the fall/winter season.
- Spreaders should not be overloaded such that material spills off the vehicle. A plan for loading operations to prevent overfilling vehicles and eliminating material spillage during transportation should be developed and implemented.
- Salt spilled at the storage yard and loading areas should be collected and returned to the storage pile.
- Annual inspection and repairs should be carried out prior to the start of each season.
- Ongoing inspection of storage structures, work areas, and deicing liquid storage tanks should be carried out during the season.
- Solid bagged materials should be stored securely, indoors if possible.
- Spreaders should only be washed at a location where the wash water is properly managed. Please refer to Appendix L for The DES fact sheet on the Management of Vehicle Wash Water.

- Liquid storage tanks should be designed such that a plumbing failure will not result in release of the contents. Backflow prevention may be necessary on some plumbing applications.

5.2 Information: Evaluate and Monitor Conditions

Knowing current and expected conditions is essential for planning snow and ice control operations. Weather and road conditions change constantly and must be monitored. The decision to initiate treatment can only be made if accurate information is available. Treatment options chosen should be modified as necessary to address road conditions as they develop.

Monitor and evaluate the following information to assist in making the right treatment decision:

- Start and end times of precipitation
- Type of storm, precipitation type and amount expected, wind, intensity
- Pavement, ambient and dew point temperatures and trends
- Road conditions and surfaces
- Post-storm forecast
- Traffic and accident information

Information can be obtained from local, state, and national weather and road services. Access to information can be obtained by phone, radio, internet radar forecasting services, RWIS data, and by truck mounted or hand-held pavement temperature sensors. Private weather and road condition forecasting services are also available by contract at a cost to the subscriber.

Truck mounted and hand-held infrared pavement temperature sensors are critical tools for operators because they provide real-time data and allow for application rate adjustments to be made accordingly.

Communication among operators and law enforcement officials can assist in making snow and ice management decisions.

What you can do as a Developer

U.S. EPA | STORMWATER OUTREACH AT EPA NEW ENGLAND


Credit: South Burlington Stormwater Utility

STORMWATER *is a leading cause of poor water quality. Rain or melted snow runs down driveways, sidewalks and streets carrying oil, dirt and other pollutants into nearby waterways. Polluted runoff, which can cause erosion and flooding, runs into waterways and degrades plants, fish, shellfish and other wildlife. In water used for recreation, the runoff can lead to illness, and people who eat contaminated fish can also become sick. Untreated stormwater can also contaminate drinking water sources.*

INTRO:

Development has sprawled across New England over the past few decades, consuming farms and forests two times as fast as the population is growing. Past development practices have created more roads, driveways and roofs so that water that used to seep into the ground now runs across pavement, picking up chemicals and pollutants. This stormwater then flows into nearby waterways, both polluting them and scouring their banks. Local zoning often unintentionally encourages sprawl, but this is beginning to change. Some developers are leading the way with better – and often cheaper – ways to develop. Here are some of their practices:

USE INNOVATIVE DEVELOPMENT PRACTICES:

Select your site wisely — Developing in an already-developed area can lower infrastructure costs because sewer, water, utilities and roads may be available.

Choose the areas of your site to develop carefully — You can avoid putting the development where it will have an effect on important natural resources. In addition, you can cluster buildings and leave at least half of the property undeveloped so that it can handle rainwater through natural resources. This will reduce costs and add to open space.

Use Low Impact Development (LID) practices — Roads, parking lots and other non-porous areas are the largest contributors to stormwater runoff. Generally the less porous the area, the worse the condition of nearby waterways. Low Impact Development allows developed land to handle rain more like how it was handled before the site was developed. The goal is to mimic a site's predevelopment hydrology by infiltrating, filtering, storing, evaporating and detaining stormwater runoff.

Address barriers early — Developers interested in LID are often concerned about cost, cold weather, drinking water and public safety. Many of these concerns need not represent barriers:

- ***Costs*** — An EPA study found grading, landscaping, paving and infrastructure costs were lower for LID than conventional development. These low-impact development techniques can also eliminate or reduce the size of stormwater systems, leaving more open space for buildable lots.

- ***Cold weather*** — Most LID stormwater approaches monitored by the University of New Hampshire Stormwater Center worked well year-round. Porous pavement in particular was found to be especially effective in winter.

- ***Drinking water*** — The UNH Stormwater Center found that filtering stormwater through infiltration practices removes pollution, and on occasion, can reduce contaminant levels beyond requirements. Furthermore, infiltration replenishes groundwater for future use. In certain areas, including those where groundwater is a source of drinking water or those identified as sensitive groundwater areas, infiltration without treating the water first may not be appropriate. In some cases, stormwater infiltration may be regulated as well under the Safe Drinking Water Act. Developers should contact state or regional authorities before they use infiltration practices.

- ***Public safety*** — Studies have shown narrower streets can provide ample access, parking and circulation for residents and emergency vehicles. Some studies have shown that narrower streets are associated with less traffic, slower speeds and fewer accidents.

KEY CONTACTS:

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LEARN MORE AT:
www.epa.gov/region1/topics/water/stormwater.html

United States Environmental Protection Agency

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November 2010

APPENDIX G

Regulatory Mechanisms

Town of Salem, NH
Monday, May 1, 2017

Chapter 398. Sewer Use

[HISTORY: Adopted by the Board of Selectmen of the Town of Salem 8-25-1986 (Ch. 265 of the 1995 Code). Amendments noted where applicable.]

GENERAL REFERENCES
Building construction — See Ch. **210**.
Sewage disposal — See Ch. **391**.
Stormwater management — See Ch. **417**.
Utility demand and benefit assessments — See Ch. **455**.
Water — See Ch. **477**.

Article I. General Provisions

§ 398-1. Definitions.

As used in this chapter, the following terms shall have the meanings indicated; "may" is permissive; "shall" is mandatory:

ADMINISTRATOR
The Administrator of the United States Environmental Protection Agency.

BIOCHEMICAL OXYGEN DEMAND (BOD)
The quantity of oxygen utilized in the biochemical oxidation of organic matter in five days at 20° C., expressed in milligrams per liter, using standard laboratory procedures as prescribed in Standard Methods for the Examination of Water and Wastewater.

BUILDING DRAIN
That part of the lowest horizontal piping of a drainage system which receives the discharge from sanitary waste pipes inside the walls of the building and conveys it to the building sewer, beginning five feet (1.5 meters) outside the inner face of the building wall.

BUILDING SEWER
The extension from the building drain to the public sewer or other place of disposal; also called "house connection."

COMBINED SEWER
A sewer system designed to receive both wastewater and stormwater or surface water; such system as it exists in the Town shall be separated.

DIRECTOR
The Director of Engineering for the Town of Salem, New Hampshire, or his designee.

DOMESTIC WASTEWATER or SANITARY SEWAGE

Normal water-carried household and toilet wastes or waste from sanitary conveniences, excluding groundwater, surface water or stormwater.

EASEMENT

An acquired legal right for the specific use of land owned by others.

FEDERAL

The United States Environmental Protection Agency (USEPA).

FLOATABLE OIL

Oil, fat, or grease in a physical state such that it will separate by gravity from wastewater by treatment in an approved pretreatment facility. A wastewater shall be considered free of floatable oil if it is properly pretreated and the wastewater does not interfere with the collection system.

GARBAGE

The animal and vegetable waste resulting from the handling, preparation, cooking, and serving of foods.

GLSD

The Greater Lawrence Sanitary District located in North Andover, Massachusetts, which will receive Salem wastewater for treatment.

INDUSTRIAL WASTES

The wastewater from industrial processes, trade, or business, as distinct from domestic or sanitary wastes.

INTERFERENCE

A discharge by an industrial user which, alone or in conjunction with discharges by other sources, inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and which is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge disposal by the POTW in accordance with Groundwater Protection Rules, Chapter Env-Or 700; Solid Waste Rules, Chapters Env-Sw 100 to 2100; Hazardous Waste Rules, Chapters Env-Hw 100 to 1100; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research and Sanctuaries Act [see 40 CFR 403.3(k)].[1]

NATIONAL CATEGORICAL PRETREATMENT STANDARD or CATEGORICAL PRETREATMENT STANDARD

Any regulations containing pollutant discharge limits promulgated by USEPA in accordance with Section 307(b) and (c) of the Clean Water Act (33 U.S.C. § 1317) which apply to a specific category of industrial users.

NATURAL OUTLET

Any outlet, including storm sewers and combined sewer overflows, into a watercourse, pond, ditch, lake, or other body of surface water or groundwater.

PASS-THROUGH

The discharge of pollutants through the public owned treatment works (POTW) into navigable waters in quantities or concentrations which, alone or in conjunction with discharges from other sources, is a cause of a violation of any requirement of the POTW's National Pollutant Discharge Elimination System (NPDES) permit, including an increase in the magnitude or duration of a violation, or of applicable water quality criteria [see 40 CFR 403.3(p)].

PERSON

Any individual, firm, company, association, society, corporation, partnership, trust or group.

pH

The reciprocal of the logarithm of the hydrogen ion concentration, in grams per liter of solution. Neutral water, for example, has a pH value of 7 and a hydrogen ion concentration of 10-7.

PROPERLY SHREDDED GARBAGE

The wastes from the preparation, cooking, and dispensing of foods that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than 0.5 inch (1.3 centimeters).

PUBLIC SEWER

A sewer controlled by the Town of Salem.

SANITARY SEWER

A sewer that carries liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with minor quantities of groundwater, stormwater and surface water that are not admitted intentionally.

SEWAGE

The spent water of a community. The preferred term is "wastewater" (see below).

SEWER

A pipe or conduit that carries wastewater or drainage water.

SLUG

Any discharge of water or wastewater which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than 15 minutes more than five times the normal concentration or which adversely affects the collection system and/or performance of the wastewater treatment works.

STORM DRAIN (sometimes termed "storm sewer")

A drain or sewer for conveying stormwater, groundwater, surface runoff, subsurface water, or unpolluted water from any source.

SUSPENDED SOLIDS

Total suspended matter that either floats on the surface of or is in suspension in water, wastewater, or other liquids and that is removable by laboratory filtering as prescribed in Standard Methods for the Examination of Water and Wastewater and referred to as "nonfilterable residue."

TOWN

The Board of Selectmen for the Town of Salem, County of Rockingham, State of New Hampshire, and/or any duly authorized deputy, agent, or representative of the Town of Salem, New Hampshire.

UNPOLLUTED WATER

Water of quality equal to or better than the effluent criteria in effect or water that would not cause violation of receiving water quality standards and would not be benefitted by discharge to the sanitary sewers and wastewater treatment facilities provided.

WASTE TREATMENT FACILITY

An arrangement of devices and structures for treating wastewater, industrial wastes, and sludge, sometimes used synonymously with "waste treatment plant," "wastewater treatment plant," "wastewater treatment works" or "water pollution control facility."

WASTEWATER

The spent water of a community. From the standpoint of source, it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with any groundwater, surface water, and stormwater that may be present.

WASTEWATER FACILITIES

The structures, equipment, and processes required to collect, carry away, and treat domestic and industrial wastes and dispose of the effluent.

WATERCOURSE

A natural or artificial channel for the passage of water either continuously or intermittently.

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 398-2. Use of public sewers required.

A. It shall be unlawful for any person to place, deposit, or permit to be deposited in an unsanitary manner on public or private property within the Town of Salem, or in any area under the jurisdiction of said Town, any human or animal excrement, garbage, or other objectionable waste.

B. It shall be unlawful to discharge to any natural outlet within the Town of Salem, or in any area under the jurisdiction of said Town, any wastewater or other polluted water, except where suitable treatment has been provided in accordance with subsequent provisions of this chapter.

C. When the public sewer is available, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of wastewater, except as hereinafter provided, within the sewer service area.

D. The owner(s) of any home, building, or property used for human occupancy, employment, recreation, or other purposes, situated with the Town and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the Town, is hereby required at the owner's expense to install suitable toilet facilities therein and to connect such facilities directly with the proposed public sewer in accordance with the provisions of this chapter within 90 days after the date of official notice to do so, provided that said structure is within 200 feet (61.0 meters) of said public sewer. Official notice shall mean receipt of a certified letter authorizing and requiring connection, signed by the Director of Engineering.

§ 398-3. Private wastewater disposal.

A. Where a public sanitary sewer is not available under the provisions of § **398-2**, the building sewer shall be connected to a private wastewater disposal system complying with the provisions of this section.

B. Before commencement of construction of a private wastewater disposal system, the owner(s) shall first obtain design approval from the New Hampshire Department of Environmental Services and a written permit signed by an authorized representative of the Board of Selectmen. The application for such a permit shall be made on a form furnished by the Town which the applicant shall supplement by any plans, specifications, and other information deemed necessary by the Board of Selectmen. A permit and inspection fee established and approved by the Board of Selectmen shall be paid to the Town at the time the application is filed. Additional payments shall be made to the Town for inspection of private wastewater facilities serving industrial and commercial users. In such cases, the payment shall be based on the actual inspection cost incurred by the Town.[1]

[1]

*Editor's Note: Throughout this chapter, references to the "Water Supply and Pollution Control Commission" were amended to the "Department of Environmental Services" at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

C. A permit for a private wastewater disposal system shall not become effective until the installation is completed to the satisfaction of the authorized representative of the Board of Selectmen. The authorized representative shall be allowed to inspect the work at any stage of construction, and in any event, the applicant for the permit shall notify the Board of Selectmen when the work is ready for final inspection and before any underground portions are covered. The inspection shall be made within 24 hours of the receipt of notice by the Town.

D. The type, capacities, location, and layout of a private wastewater disposal system shall comply with all laws and regulations of the New Hampshire Department of Environmental Services. No permit shall be issued for any new private wastewater disposal system employing subsurface soil absorption facilities where the area of the lot is less than that required by the Town's Subdivision Regulations, the New Hampshire Department of Environmental Services regulations, Chapter **490**, Zoning, of this Code or Town health regulations. No septic tank or cesspool shall be permitted to discharge to any natural outlet.

E. At such time as a public sewer becomes available to a property serviced by a private wastewater disposal system and official notice is received as provided in § **398-2**, a direct connection shall be made to the public sewer, and any abandoned holding tanks, cesspools, septic tanks, or similar private wastewater disposal facilities and connections thereto shall be filled and sealed with suitable material as defined by the Director of Engineering.

F. The owner(s) shall operate and maintain the private wastewater disposal facilities in a sanitary manner at all times, at no expense to the Town. Holding tank contents and the sludge from private disposal systems shall be removed only by licensed operators. Disposition of such contents shall be carried out in accordance with the provisions of this chapter. At no time shall any quantity of industrial waste be discharged to a private domestic wastewater disposal facility.

§ 398-4. Building sewers and connections.

A. No unauthorized person(s) shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Town.

B. Building sewer permits.

(1) There shall be two classes of building sewer permits:

(a) For residential and commercial service producing only sanitary wastewater; and

(b) For service to establishments producing industrial waste.

(2) In either case, the owner(s) or agent of the owner(s) shall make application on a special form furnished by the Town. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Town. A permit and inspection fee for residential or commercial building sewer permits shall be paid to the Town at the time the application is filed. The permit and inspection fee for industrial service shall be based on the actual cost to the Town. The Town may stipulate special conditions and terms upon which the industrial user permit is predicated, and this may include, but shall not be limited to, the following:

(a) Limitation on quantity, rate of discharge and wastewater characteristics.

(b) Installation of flow monitoring and sampling facilities.

(c) Requirements for monitoring programs, including flow measurement, wastewater sampling and analysis, and schedule for reporting and submission of data. The Town will review the data furnished and has the authority to request additional information if required.

(d) Pretreatment requirements, including schedules of compliance and progress notification.

(e) Special fees and service charges.

(f) Wastewater discharge peak rate and volume over a specified time period.

(g) Chemical analyses of wastewaters.

(h) Information on raw materials, processes, and products affecting wastewater volume and quality.

(i) Quantity and disposition of specific liquid, sludge, oil, solvent, or other materials important to sewer use control.

(j) A plot plan of sewers on the user's property showing sewer and pretreatment facility location.

(k) Details of wastewater pretreatment facilities.

(l) Details of systems to prevent and control the losses of materials through spills to the municipal sewer.

(m) Other requirements to comply with federal, state and local regulations.

(3) Discharge permits shall not be transferred or reassigned.

(4) Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the system shall make application to the Town for a modification of his or its permit at least 60 days prior to the proposed change or connection. No person shall operate with such an increase or change without first having applied for and received a modification to his or its permit. Proposed new discharges from residential or commercial sources involving loading exceeding 50 population equivalents or any increase in industrial discharge must be approved by the New Hampshire Department of Environmental Services.

C. All costs and expenses incidental to the installation and connection of the building sewer shall be borne by the owner(s). The owner(s) shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

D. A separate and independent building sewer shall be provided for every building, except upon granting of a special exception in writing by the Town of Salem; where one building stands at the rear of another on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, the front building may be extended to the rear building and the whole considered as one building sewer, but the Town does not and will not assume any obligation or responsibility for damage caused by or resulting from any such single connection aforementioned.

E. Old building sewers may be used in connection with new buildings only when they are found, on examination and testing by the Town, to meet all requirements of this chapter. All costs of such testing and inspection shall be borne by the owner(s).

F. The size, slope, alignment, and materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the Town's Building and Plumbing Codes and the appropriate sections of the Town's standard specifications thereof; the materials and procedures set forth in appropriate specifications of the American Society for Testing and Materials (ASTM) and Water Environment Federation (WEF) Manual of Practice Number 9 shall apply.[1]

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. 1, General Provisions, Art. I).*

G. Whenever possible, any building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow from the sanitary facilities to the public sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sewer.

H. No person(s) shall make connection of roof downspouts, foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected, directly or indirectly, to a public sanitary sewer.

I. The connection of the building sewer into the public sewer shall conform to the requirements of the Town's Building and Plumbing Codes and other applicable rules and regulations of the Town. All such connections shall be made gastight and watertight and verified by Town inspection. Any deviation from the prescribed procedures and materials must be approved by the Town before installation.

J. The applicant for the building sewer permit shall notify the Town when the building sewer is ready for inspection and connection to the public sewer. The connection and testing shall be made under the supervision of the Town or its authorized representative.

K. All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazards. Streets, sidewalks, parkways, and other public property disturbed in the course of work shall be restored in a manner satisfactory to the Town.

L. No sewer or drain shall be laid within the limits of any public street, except by an experienced drain layer or plumber licensed and approved by the Town. The drain layer or plumber shall be held liable for any expense to the Town on account of any imperfect work within the street limits done by him or his employees.

M. The Town may issue licenses to drain layers or plumbers who apply for a permit for making excavation within the limits of the public streets of the Town for the purpose of laying sewers.

(1) Parties so licensed shall execute a bond to the Town in the sum of $1,000 with two or more good and sufficient sureties to be approved by the Town and be subject to the following conditions:

(a) Such parties shall comply to the satisfaction of the Town with the ordinances of the Town and the rules of the Planning Board;

(b) Such parties will cause the excavation to be properly guarded at all times for the protection of the public; and

(c) Such parties will properly make all connections and joints in every sewer and they will indemnify and hold harmless the Town of Salem from any damage or cost for which it may be liable by reason of injuries resulting from neglect, carelessness, or incompetence in construction, repairing or connecting of any sewer, or properly fencing or lighting any excavating or obstruction, or in performing any other work connected therewith.

(2)

Said license(s) shall be good during the calendar year unless sooner revoked for failure to perform in an expeditious, workmanlike manner.[2]

[2] *Editor's Note: Original § 265-4N, which immediately followed this subsection and contained an excerpt from regulations of the New Hampshire Water Supply and Pollution Control Commission, was repealed at time of adoption of Code (see Ch. 1, General Provisions, Art. I).*

Article II. Use of Public Sewers

§ 398-5. General requirements.

A. No person(s) shall discharge or cause to be discharged any unpolluted waters such as stormwater, groundwater, roof runoff, subsurface drainage or cooling water to any sewer.

B. Stormwater and all other unpolluted drainage shall be discharged to storm sewers or to a natural outlet approved by the Town and other regulatory agencies. Unpolluted industrial cooling water or process waters require a National Pollutant Discharge Elimination System (NPDES) Permit, approval of the Town, and approval of other regulatory agencies prior to discharge to a storm sewer or natural outlet.

C. No person(s) shall discharge or cause to be discharged any of the following described waters or wastes to any public sewers:

(1) Any gasoline, benzene, naptha, fuel oil, or other flammable or explosive liquid, solid, or gas.

(2) Any waters containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure, interfere with or pass through any waste treatment process, constitute a hazard to humans or animals, create a public nuisance or create any hazard in the receiving water of the wastewater treatment plant, including but not limited to cyanides, heavy metals, strong acids, basic waste, etc. Other hazardous, toxic, or reactive pollutants, including but not limited to halogenated hydrocarbons, organic solvents, and organochlorine insecticides, are also prohibited from the municipal sewer system.

(3) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers or other interference with the proper operation of the wastewater facilities, such as, but not limited to, ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastic, wood, unground garbage, whole blood, paunch manure, hair and containers, etc., either whole or ground by garbage grinders.

(4) Strong acid pickling waste and concentrated plating solutions, whether neutralized or not.

§ 398-6. Discharge limitations.

The following described substances, materials, waters, or wastes shall be limited in discharge to the municipal sewerage system to concentrations or quantities which will not harm either the sewers, wastewater treatment processes or equipment, will not have an adverse effect on the receiving stream, and will not otherwise endanger life, limb, or public property or constitute a nuisance. The Board of Selectmen may set more restrictive limitations that those established herein to meet the above objectives. In forming an opinion as to acceptability, the Board of Selectmen will give consideration to such factors as the quantity of subject waste in relation to flows and velocities in the sewers, materials of construction of the sewers, the wastewater treatment processes employed, capacity of the wastewater treatment plant, and other pertinent factors. The limitations or restrictions on materials or

characteristics of waste or wastewaters discharged to the sanitary sewer which shall not be violated without approval of the Board of Selectmen include but are not limited to the following:

A. Wastewater sufficiently hot to cause the influent at the wastewater treatment facilities to exceed 104° F. (40° C.).

B. Wastewater containing more than 25 milligrams per liter of petroleum oil, nonbiodegradeable cutting oils, or product of mineral oil origin.

C. Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process.

D. Any garbage that has not been properly shredded (see the definition of "properly shredded garbage" in § **398-1**). Garbage grinders may be connected to sanitary sewers from homes, hotels, institutions, restaurants, hospitals, catering establishments, or similar places where garbage originates from the preparation of food in kitchens for the purpose of consumption on the premises or when served by caterers.

E. Any waters or wastes containing heavy metals, solvents, and similar objectionable or toxic substances to such degree that any such material discharged to the public sewer exceeds the limits established by the Board of Selectmen, the New Hampshire Department of Environmental Services or the United States Environmental Protection Agency for such materials.

F. Any water or wastes containing phenols or other taste- or odor-producing substances, in such concentrations exceeding limits which may be established by the Board of Selectmen as necessary, after treatment of the composite sewage, to meet the requirements of the state, federal, or other public agencies of jurisdiction for such a discharge.

G. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Board of Selectmen in compliance with applicable state or federal regulations.

H. Materials which exert or cause:

   (1) Unusual concentrations of inert suspended solids (such as, but not limited to, fuller's earth, lime slurries, and lime residues) or of dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).

   (2) Excessive discoloration and dyes which cannot be removed by the treatment facility.

   (3) Unusual volume of flow or concentration of wastes constituting slug discharges. Any unusual concentrations, spills, or slugs (see the definition of "slug" in § **398-1**) shall be reported immediately to the Director of Public Works. A written report shall be sent by the user to the Board of Selectmen within five days of the incident describing the reason for the spill and remedial action taken and the steps taken to prevent its recurrence.

I. Waters or wastes containing substances which are not amenable to treatment or reduction by the wastewater treatment processes employed, or are amenable to treatment only to such a degree that the wastewater treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.

J. Any waters or wastes which, by interaction with other water or wastes in the public sewer system, release obnoxious gases, form suspended solids which interfere with the collection system, or create a condition deleterious to structure and treatment processes.

K. Any waters or wastes having a pH in excess of 9.5 or lower than 5.5.

L.

Any waters or wastes having a five-day biochemical oxygen demand greater than 250 milligrams per liter.

M. Any waters or wastes containing more than 300 milligrams per liter suspended solids.

N. Any waters or wastes containing floatable oils, fats or grease.

O. Any waters or wastes containing in excess of the following local limits:

Arsenic	0.10 mg/l
Cadmium	0.69 mg/l
Chromium (total)	2.77 mg/l
Copper	3.38 mg/l
Cyanide	Total 1.20 mg/l
Fluoride	20.00 mg/l
Lead	0.69 mg/l
Mercury	0.01 mg/l
Nickel	3.98 mg/l
Oil and grease	200.00 mg/l
pH	5.5 to 9 units
Sulfates	250.00 mg/l
Sulfides	1.00 mg/l
Silver	0.43 mg/l
Zinc	2.61 mg/l
Total toxic organics(TTO)	5.00 mg/l

§ 398-7. Rejection of discharge.

A. If any waters or wastes are discharged or are proposed to be discharged to the public sewers, which waters or wastes contain the substances or possess the characteristics enumerated in § **398-6** of this article, or which in the judgment of the Town may have a deleterious effect upon the wastewater facilities, processes, equipment, or receiving waters, or which otherwise create a hazard to life or constitute a public nuisance, the Town may:

(1) Reject the wastes;

(2) Require pretreatment to an acceptable condition for discharge to the public sewers;

(3) Require control over the quantities and rates of discharge; and/or

(4) Require payment to cover added cost of handling and treating the wastes.

B. If the Board of Selectmen or federal effluent limitations require pretreatment of waste flows, the design and installation of such facilities shall be subject to the review and approval of the Board of Selectmen and the New Hampshire Department of Environmental Services. Such facilities shall not be connected until said approval is obtained in writing. Plans and specifications for proposed pretreatment facilities shall be the result of the design of a professional engineer registered in New Hampshire. Such approval shall not relieve the owner of the responsibility of discharging treated wastes meeting the requirements of this chapter.

C.

To determine compliance with user discharge permits with respect to prohibited discharges and categorical limitations on wastewater discharges, prohibitions and limitations may be made on the basis of either instantaneous grab samples or composite samples of the wastewater. Sampling of industrial wastewaters for the purpose of compliance determination will be performed at such frequency as the Town designates and may be on either a scheduled or random basis to ensure compliance.

§ 398-8. Interceptors.

A. Grease, oil, and sand interceptors shall be provided when, in the opinion of the Town, they are necessary for the proper handling of liquid wastes containing floatable oil or grease in excessive amounts as specified in § **398-6** of this article or any flammable wastes, sand, or other harmful ingredients, except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the Board of Selectmen and shall be located as to be readily and easily accessible for cleaning and inspection. Grease and oil interceptors shall be constructed of impervious material capable of withstanding abrupt and extreme changes in temperature; they shall be of substantial construction, watertight, and equipped with easily removable covers which, when bolted in place, shall be gastight and watertight.

B. In the maintaining of these interceptors the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates and means of disposal which are subject to review by the Town. Any removal and hauling of the collected materials not performed by the owner's personnel must be performed by currently licensed waste disposal firms.

§ 398-9. Industrial waste.

All industrial waste shall be pretreated in accordance with federal and state regulations and this chapter to the extent required by applicable National Categorical Pretreatment Standards, state pretreatment standards or standards established by the Board of Selectmen, whichever are more stringent. Where pretreatment or flow-equalizing facilities are provided or required for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by and at the expense of the owner (s).

§ 398-10. Quantity of waste.

The Town shall determine the quantity and quality of all industrial wastes which can be properly taken into the sewerage system in addition to the sanitary sewage from the Town, and the Town may regulate the flow of industrial wastes into the sewerage system by separate industrial user agreement(s) approved by the Board of Selectmen.

§ 398-11. Metering of waste.

A. When required by the Town, the owner(s) of any property serviced by a building sewer carrying industrial wastes shall install a suitable structure together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes. Such structures, when required, shall be accessible and safely located and shall be constructed in accordance with plans approved by the Town. The structure shall be installed by

and at the expense of the owner(s) and shall be maintained by the owner(s) so as to be safe and accessible at all times.

B. All industries discharging into a public sewer shall perform such monitoring as the Department of Public Works or duly authorized employees or agents of the Town may reasonably require, including installation, use and maintenance of monitoring equipment, keeping records and reporting the results of such monitoring to the Department of Public Works. Such records shall be made available upon request by the Department of Public Works to other agencies having jurisdiction over discharges to the receiving waters.

§ 398-12. Measurements and testing of waste.

All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this chapter shall be determined in accordance with the latest edition of Standard Methods for Examination of Water and Wastewater, published by the American Public Health Association, or with the EPA-approved methods published in the Code of Federal Regulations, Title 40, Part 136 (40 CFR 136). Sampling methods, locations, times, durations, and frequencies are to be determined on an individual basis subject to approval by the Board of Selectmen.

§ 398-13. Special agreements.

No statement contained in this article shall be constructed as preventing any special agreement or arrangement between the Town and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the Town, provided that such agreements do not contravene any requirements of existing federal or state laws, and/or regulations promulgated thereunder, are compatible with any user charge system in effect, and do not waive applicable National Categorical Pretreatment Standards.

§ 398-14. Reporting.

A. Each industrial user shall be required to submit to the Town a semiannual report on the first of May and November of each year, or such other time as designated by the Town, containing information as to the minimum, average and peak flows of industrial wastewater discharges during the previous year and, at a time or times designated, analyses and wastewater samplings taken in an acceptable manner at approved times during the flow measuring periods.

B. When required by the permit, each industrial permittee shall submit a duly signed report to the Town containing all information required by the Town. This report shall include, if appropriate, schedules for industrial compliance with applicable pretreatment regulations, including but not limited to implementation schedules for installation of pretreatment facilities. If insufficient data has been furnished, additional information may be required.

§ 398-15. Salem waste collection system.

Neither domestic septic tank waste (septage) nor industrial septic tank waste (industrial septage) will be accepted into the Salem waste collection system. Septage and industrial septage may be discharged at the GLSD treatment facility in North Andover, Massachusetts, subject to prior approval by and specific regulations of the GLSD. Holding tank wastes may be accepted into the Salem collection system provided that such wastes do not contain toxic pollutants or materials and provided that such discharge

does not result in violation of this chapter or other agreements entered into by the Town. Fees for dumping holding tank wastes will be established as part of the user charge system. Authorized Town employees, acting on behalf of the Town and its Department of Public Works, shall have authority to limit the disposal of such wastes, if such disposal would interfere with proper operation of collection and disposal facilities. Procedures for the disposal of such wastes shall be in conformance with the operating policy of the Town's Public Works Department, and disposal shall be accomplished under its supervision unless specifically permitted otherwise. Permits for discharge of holding tank wastes shall be under the jurisdiction of the Department of Public Works and subject to prior review and approval by the GLSD. Such review by GLSD shall be made on the basis of this chapter. It shall be illegal to meet requirements of this chapter by diluting wastes in lieu of proper pretreatment.

Article III. Industrial Pretreatment

§ 398-16. Applicability.

All persons discharging industrial process wastes accepted into the Town's wastewater collection system shall comply with applicable requirements of federal and state industrial pretreatment regulations (as amended), in addition to the requirements of this article.

§ 398-17. Industrial discharge agreement (IDA).

A. Industrial discharge agreement required. Effective 120 calendar days after this provision is adopted by the Town, the discharge of any industrial process waste to the Town's wastewater facilities or to a public or private sewer connected to the Town's wastewater facilities is prohibited without a valid Industrial Discharge Agreement (IDA).

B. Industrial discharge agreement application. Within 60 days after the effective date of these industrial pretreatment rules, persons subject to these rules shall submit an application for an IDA containing information required under applicable federal and state industrial pretreatment reporting regulations. Such information, as a minimum, shall include:

   (1) The name and address of the facility, including the name of the operators and owners.

   (2) A list of all environmental permits held by or for the facility.

   (3) A brief description of the nature, average rate of production, and Standard Industrial Classification number of all the operations carried out at such facility.

   (4) An identification of the categorical pretreatment standards applicable to each regulated process.

   (5) An analysis identifying the nature and concentration of pollutants in the discharge.

   (6) Information showing the measured average daily and maximum daily flow, in gallons per day, to the public sewer from each regulated process stream and from other streams.

   (7) A schedule of actions to be taken to comply with discharge limitations.

   (8) Additional information as determined by the Town may also be required.

C. Provisions. The IDA will outline the general and specific conditions under which the industrial process waste is acceptable into the Town's wastewater collection system. Specifically, included in the agreement are the following:

(1) Pretreatment and self-monitoring facility required.

(2) Type and number of samples and sampling frequency required.

(3) Effluent limitation on the industrial process waste.

(4) Reporting requirements.

(a) Industrial users shall submit periodic reports as required indicating the nature and concentration of pollutants in the discharge from the regulated processes governed by pretreatment standards and the average and maximum daily flow for these process units. The reports shall state whether the applicable categorical pretreatment standards and effluent limitations are being met on a consistent basis and, if not, what additional operation and maintenance practices and/or pretreatment is necessary. Additional requirements for such reports may be imposed by the Town.

(b) Signature for reports. Reports submitted under this section shall be signed by an authorized representative. An authorized representative may be:

[1] A principal executive officer of at least a level of vice president, if the industrial user is a corporation;

[2] A general partner or the proprietor, if the industrial user is a partnership or sole proprietorship; or

[3] A duly authorized representative of either of the individuals designated above, if such representative is responsible for the overall operation of the subject facility.

(c) Any industrial user subject to a categorical pretreatment standard, after the compliance date of such pretreatment standard or, in the case of a new source, after commencement of the discharge into the POTW, shall submit to the Town on the first of May and November, unless required more frequently in the pretreatment standard or by the Town, a report indicating the nature and concentration of pollutants in the effluent which are limited by such pretreatment standards. In addition, this report shall include a record of all daily flows which during the reporting period exceeded the average daily flow. At the discretion of the Town and in consideration of such factors as local high or low flow rates, holidays, budget cycle, etc., the Town may agree to alter the months during which the above reports are to be submitted.

(d) The Town may impose mass limitations on industrial users wherever dilution may be a significant factor in meeting applicable pretreatment standards or requirements, or in other cases where the imposition of mass limitations is appropriate. In such cases, the reports required shall indicate the mass of pollutants regulated by pretreatment standards in the effluent of the user. These reports shall contain the results of sampling and analysis of the discharge, including the flow and nature and concentration, or production and mass where required by the Town, of pollutants contained therein which are limited by the applicable pretreatment standard. All analyses shall be performed in accordance with procedures established by the Administrator pursuant to Section 304 (g) of the Clean Water Act and contained in 40 CFR Part 136 and amendments thereto or with any other test procedures approved by the Administrator. Sampling shall be performed in accordance with the techniques approved by the Administrator. Where 40 CFR Part 136 does not include a sampling or analytical technique for the pollutant in question, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants," April 1977, and amendments thereto, or with any other sampling and analytical procedures approved by the Administrator.

(5) Monitoring records.

(a) Industrial users subject to the reporting requirements under this section shall maintain records of information resulting from monitoring activities required to prepare such reports. Such records shall include for each sample:

[1] The date, exact place, method and time of sampling and the names of the person or persons taking the sample.

[2] The dates analyses were performed.

[3] The laboratory performing the analyses.

[4] The analytical techniques and methods used.

[5] The results of such analyses.

(b) Such records shall be maintained for a minimum of three years and shall be made available for inspection and copying by the Town.

(6) Additional conditions.

(a) The agreement will be in effect for one year and will be automatically renewed for one-year periods, unless the applicant is notified otherwise by the Town.

(b) The agreement is nontransferable and may be revoked by the Town for noncompliance or modified so as to conform to discharge limitation requirements that are enacted by federal or state rules and/or regulations.

(c) An industry proposing a new discharge or a change in volume or character of its existing discharge must submit a completed IDA application to the Town at least 60 days prior to the commencement of such discharge. The application submitted must include plans and engineering drawings, stamped by a registered professional engineer, of the proposed pretreatment facilities. Upon approval of the application by the Town, a discharge permit request shall be submitted to the New Hampshire Department of Environmental Services on behalf of the industry. Upon approval of the discharge permit request by the New Hampshire Department of Environmental Services, the industry and the Town will enter into a new or amended IDA in accordance with the procedure outlined in this article.

(d) The GLSD shall review each IDA following New Hampshire Department of Environmental Services approval and prior to final approval by the Town. Acceptance of the agreement by GLSD shall be a requirement of final approval and shall be signified by the signature of the executive director or other designated official. Denial of approval shall be based upon the provisions of this chapter and shall include a clear statement of the basis of denial.

(e) Industrial users will be assessed on annual fee by the Town to defray the administrative costs of IDA program.

§ 398-18. National Categorical Pretreatment Standards.

A. Notification. The Town shall provide timely notification to appropriate industries of applicable categorical pretreatment standards as they are promulgated.

B. Compliance date for categorical standards.

(1) Compliance with categorical pretreatment standards shall be achieved within three years of the date such standards are effective, unless a shorter compliance time is specified in the standards.

(2) If additional pretreatment is required to meet the pretreatment standards, the shortest schedule providing such additional pretreatment shall be adopted.[1]

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. 1, General Provisions, Art. I).*

(3) Also, the following conditions shall apply to this schedule:

(a) The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required to meet the applicable pretreatment standards (e.g., hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.). No increment shall exceed nine months.

(b) Not later than 14 days following each date in the schedule and the final date for compliance, a progress report shall be submitted to the Town, including, as a minimum, whether or not compliance with the increment of progress to be met on such dates was achieved and, if not, the date on which it expects to comply, the reason for the delay, and the steps being taken by the industrial user to return the progress to the schedule established.[2]

[2] *Editor's Note: Added at time of adoption of Code (see Ch. 1, General Provisions, Art. I).*

§ 398-19. Sewer use charges.

A. Each user connected to the sewerage system shall pay a sewer use charge. The sewer use charge shall be as established by the Board of Selectmen from time to time to cover annual operating expenses and a designated portion of sewer construction capital costs for the municipal sewerage system. Sewer surcharges may be levied upon users whose waste characteristics are above normal strength.

B. The Town will periodically sample the wastewater from industries to determine whether the characteristics of the wastewater meet the terms of their discharge permit. In cases where the strength of the industrial wastewater exceeds the strength of domestic wastewater, a surcharge will be assessed the industry by the community. Industrial wastewater for this purpose will be considered to be any wastewater having a BOD or suspended solids in excess of 250 mg/l and 300 mg/l, respectively.

§ 398-20. Conflicts.

When, in a specific case, different provisions of this chapter shall conflict with other ordinances or state or federal laws, the most restrictive requirements shall govern.

§ 398-21. Enforcement.

The Board of Selectmen or its agent shall be responsible for the enforcement of this chapter. The Greater Lawrence Sanitary District, in its capacity as POTW treatment works for the Town of Salem, shall have equal and severable responsibility for the enforcement of this chapter.

§ 398-22. Violations and penalties.

A. Any person, firm, partnership or corporation found to be violating or in violation of any provision of this chapter except § **398-7** shall be served by the Town with written notice stating the nature of the violation and providing a reasonable time limit as determined by the Town for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations. The Town may, after informal notice to the person discharging wastewater to the public sewer, immediately halt or prevent any such discharge reasonably appearing to present an imminent endangerment to the health and welfare of persons or any discharge presenting, or which may present, an endangerment to the environment, or which threatens to interfere with the operation of the public sewer or wastewater treatment facilities. Actions which may be taken by the Town include ex parte temporary judicial injunctive relief, entry on private property to halt such discharge, blockage of a public sewer to halt such discharge, or demand of specific action by the person.

B. Fines for violation of the provisions of this chapter, as adopted by the Board of Selectmen, are on file with the Town Manager and on the Town of Salem website. Fines shall not exceed the maximum penalty established pursuant to RSA 31:39, III.[1]

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 398-23. Liability.

Any person, firm, partnership or corporation violating any of the provisions of this chapter shall become liable to the Town of Salem for any expense, loss, or damage occasioned by the Town by reason of such violation.

§ 398-24. Public notification of significant violations.

The Town, pursuant to 40 CFR 403.8(f)(2)(viii), shall comply with the public participation requirements of 40 CFR Part 25, including provisions for at least annually providing public notification of industrial users which, during the previous 12 months, were significantly violating applicable pretreatment standards or other pretreatment requirements. For the purpose of this section, a significant violation is a violation which remains uncorrected 45 days after notification of noncompliance, which is part of a pattern of noncompliance over a twelve-month period, which involves a failure to accurate report noncompliance, or which resulted in the POTW exercising its emergency authority under 40 CFR 403.8 (f)(1)(vi)(B).

Article IV. Damaging or Tampering with System

[Added at time of adoption of Code (see Ch. 1, General Provisions, Art. I)]

§ 398-25. Malicious, willful or negligent damage.

No person(s) shall maliciously, willfully or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the wastewater facilities. Any person (s) violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

§ 398-26. Consent required to interfere with system.

It shall be a misdemeanor to do or cause to be done the following acts: to uncover the public sewer for any purpose or make connection therewith; to uncover the public sewer for inspection of or connection to branches thereof; or to open any manhole unless and except with the written consent and under the supervision of the Sewer Commission or its duly authorized representative. The powers and authority of the Sewer Commission and its duly authorized agents are set forth in Article **V**.

Article V. Enforcement Agency and Inspectors

[Added at time of adoption of Code (see Ch. 1, General Provisions, Art. I)]

§ 398-27. Right of entry.

The Sewer Commission members and other duly authorized employees of the Town bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling and testing pertinent to discharge to the community system in accordance with the provisions of this chapter. The Sewer Commission is responsible to and derives its authority from the Board of Selectmen.

§ 398-28. Authorization to obtain information concerning industrial processes.

The Sewer Commission or its duly authorized representatives are authorized to obtain information concerning industrial processes which have a direct bearing on the kind and source of discharge to the wastewater collection system.

§ 398-29. Town employees performing work on private property; liability for injuries.

While performing the necessary work on private properties referred to in § **398-27** above, the Sewer Commission or its duly authorized representatives shall observe all safety rules applicable to the premises established by the company, and the company shall be held harmless for injury or death to the Town employees, and the Town shall indemnify the company against loss or damage to its property by Town employees and against liability claims and demands for personal injury or property damage asserted against the company and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the company to maintain safe conditions as required in § **398-11**.

§ 398-30. Work on property on which Town holds easement.

The Sewer Commission and its duly authorized representatives bearing proper credentials and identification shall be permitted to enter all private properties through which the Town holds a duly negotiated easement for the purposes of but not limited to inspection, observation, measurement, sampling, repair and maintenance of any portion of the wastewater facilities lying within said easement. All entry and subsequent work, if any, on said easement shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

CHAPTER 268
SITE PLAN REVIEW REGULATIONS
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[HISTORY: Adopted by the Planning Board 11/7/81. Amendments are noted where applicable. Affordable Housing Regulations were removed on 12/20/2011. Reorganized version of these regulations adopted by Planning Board 7/17/2012. **** = references to previous Site Plan Review Regulations**.]

GENERAL REFERENCES - SALEM TOWN CODE

Board of Adjustment	See Ch. 4
Planning Board	See Ch. 83
Building/construction	See Ch. 147
Design standards	Design Guidelines manual
Excavations	See Ch. 182
Flood control	See Ch. 193
Historical District	See Ch. 205
Housing standards	See Ch. 208
Individual sewage disposal systems	See Ch. 253
Sewers	See Ch. 264
Special sales	See Ch. 249
Subdivision Regulations.	See Ch. 278
Swimming pools	See Ch. 282
Zoning Regulations	See Ch. 309

ARTICLE 1
GENERAL PROVISIONS

Section 268-1:1 Title
These regulations shall be known as the "Site Plan Review Regulations of the Town of Salem, New Hampshire."

Section 268-1:2 Preamble
Commercial and industrial development in the Town of Salem, New Hampshire, is desirable to:

1:2.1 Promote sound economic development, balanced growth, diversification of the economic base and support of the tax base.

1:2.2 Promote the availability of employment opportunities for the residents of the town.

1:2.3 Promote and enhance the general well-being and prosperity of the town.

Section 268-1:3 Authority
Pursuant to the authority vested in the Town of Salem Planning Board, voted on at the March 1973 Town Meeting in accordance with the provisions of Chapter 36, Section 19-a, of the New Hampshire Revised Statutes Annotated, 1955, and re-codified as RSA 674:43 in 1984, the Town of Salem Planning Board adopts the following regulations governing the review of nonresidential site plans and nonagricultural uses, whether or not such development includes a subdivision or re-subdivision of the site.

Section 268-1:4 Purpose
The Salem New Hampshire Planning Board has promulgated site plan review regulations to protect and promote the public health, convenience, safety and general welfare of the residents of the town; to provide for responsible and desirable growth; to provide for adequate provision of traffic circulation, pedestrian movement and adequate ingress and egress from the site off of and onto public roads; to provide for adequate off-street parking; to provide for adequate provision of public services and facilities and outdoor lighting; to avoid site development layout which may result in negative environmental impacts; and to provide for appropriate landscaping and building aesthetics.

Section 268-1:5 Applicability
Site development plan approval from the Planning Board shall be required for:

1:5.1 Nonresidential and nonagricultural uses in all zoning districts.

1:5.2 Mobile home parks.

1:5.3 All new uses of land, expansion of such uses, or any amendment(s) to a prior approved site development plan.

1:5.4 Any use or change of use to a building or site which does not have an approved site development plan, and that change of use for a building or site may have an impact on traffic, off-street parking, drainage and/or a negative impact on the surrounding neighborhood.

1:5.5 Multifamily dwelling units, including condominiums, other than one- or two-family dwellings**.**

Section 268-1:6 Penalties
As provided in RSA 676:17 and 676:19, any person who violates any part of this chapter shall be guilty of a misdemeanor and may be subject to a fine of $100 for each day that the violation continues, provided that the total fine imposed for any single violation shall not exceed $500.

Section 268-1:7 Amendments
In accordance with RSA 675:6, these regulations may be amended by the Planning Board following a public hearing on the proposed change(s). Such change(s) shall not take effect until a copy the change(s), certified by a majority of the Board, is filed with the Town Clerk.
[Added 7/17/2012]

ARTICLE 2
APPLICATION PROCEDURES

Section 268-2:1 Pre-application and Conceptual Plans

2:1.1 Prior to the submission of a formal site development plan, the applicant or his agent must appear in person before the Planning Board Agent to discuss the proposed site development plan. The applicant shall set a time to view the site with the Planning Board Agent.

2:1.2 In accordance with RSA 676:4II, an applicant may submit a conceptual site plan in order to get suggestions from the Planning Board on meeting requirements and regulations of the Town. Conceptual plans shall show existing site conditions and proposed development, including general information on topography, soils, utilities, buildings, and other items necessary for consideration by the Board. Such consultation shall not bind either the applicant or the Board and statements made by the Board members shall not be the basis for disqualifying said members or invalidating any action taken.

2:1.3 The Planning Board shall hold a public hearing, with appropriate notice to abutters and the public, on all conceptual site plans. [Added 8/12/97]

Section 268-2:2 Plan Submission

2:2.1 The applicant must submit to the Planning Board's Agent the following items at the time when the site development plan is submitted, which must be at least 15 days prior to the next Planning Board meeting: [Amended 7/17/12]

2:2.1.1 Site development plan application and checklist (Attachments 268-1 & 268-2).
2:2.1.2 Abutters list and filing and notice fees as adopted by the Board of Selectmen.
2:2.1.3 Six prints of each plan sheet, drawn on multiples of sheets sized 8 1/2 x 11 inches to a maximum 22 x 34 inch sheet, at a scale not less than 1 inch equals 50 feet. [Amended 8/12/97]
2:2.1.4 Vicinity plan at a scale of 1 inch equals 100 feet showing direction, distance and the location of public improvements, including but not limited to sewer, water, drainage, fire hydrants and streets, within 500 feet of the site.
2:2.1.5 Drawings and data as required. (See checklist, Attachment 268-2.)
2:2.1.6 Letter of permission from owner of property, if other than developer. [Added 3/24/87]

2:2.2 An application and material outlined in Section 268-2:2.1 above shall be submitted to the Planning Board, reviewed for completeness, and accepted for consideration by majority vote of the Board only at a public meeting for which notice has been given to abutters and the public in accordance with State Statute. The Board shall begin formal consideration of an application within 30 days of acceptance, although consideration may begin on the same night as the

application is accepted. The computation of all statutory time periods commences from the date of acceptance by the Board. [Amended 8/24/97]

2:2.3 Revisions to Site Development Plans, and additional data as required by the Planning Board for consideration at continued Public Hearings, shall be submitted to the Planning Board's Agent at least 10 days prior to the scheduled date of the continued Public Hearing. [Amended 3/24/87]

2:2.4 All site plans for buildings or structures over 3,000 square feet shall be stamped by a land surveyor or civil engineer registered in the State of New Hampshire. The Planning Board may require a stamped plan for buildings or structures under 3,000 square feet when the proposed plan significantly affects existing conditions or matters of public health and safety. [Added 12/11/84]

ARTICLE 3
NOTICE OF HEARING [Amended 3/24/87]

Section 268-3:1 At the applicant's expense, the Planning Board shall notify by certified mail, at least 10 days before the date fixed for consideration of said site development plan, all abutters to the subject property for which the site development is proposed, in conformance with RSA 676:4.

Section 268-3:2 At the applicant's expense, a legal notice of hearing shall be placed in a newspaper of general circulation in the area not less than 5 days before the date fixed for the Planning Board meeting.

ARTICLE 4
PLANNING BOARD DUTIES AND PROCESS

Section 268-4:1 The Planning Board shall review the plan or any amendment of it in the same manner as is prescribed by state law for the review of subdivision plans. In considering and approving the site development plan, the Planning Board shall take into consideration the public health, safety and general welfare and the comfort and convenience of the public in general and the residents of the immediate neighborhood in particular and shall make any appropriate conditions and safeguards in harmony with the general purpose and intent of this chapter and particularly in regard to achieving:

4:1.1 Maximum safety of traffic access and egress and sufficient parking areas to provide for adequate off-street parking.

4:1.2 A site layout, including the location, power, direction and time for any outdoor lighting of the site, which would have no adverse effect upon any properties in adjoining resident districts by impairing the established character or the potential use of properties in such districts.

4:1.3 The reasonable screening at all seasons of the year, of all playgrounds, parking, service areas, and commercial development from the view of adjacent residential properties and streets. [Amended 3/24/87]

4:1.4 Conformance of the proposed site development plan with such portions of the Master Plan of the town as may be in existence at the time.

4:1.5 In applicable cases, a drainage system and layout which would afford the best solution to any drainage problems.

4:1.6 Installation of public improvements and amenities, at the expense of the applicant, to assist in the establishment of a sound urban environment. Such improvements shall include, but not be limited to, granite curbing, sidewalks and street trees, extension of utilities and, when deemed necessary, improvements to existing roadway and/or drainage in order to adequately serve the proposed site.

4:1.7 Conformance of the buildings and all related signs and structures to the properties of the aesthetic character of the area.

4:1.8 Conformance with the retail development standards in Article 6 and the Town of Salem Design Guidelines. [Added 8/96; revised 7/17/2012]

Section 268-4:2 The Planning Board may, whenever it deems it appropriate, require the applicant to provide an impact statement, traffic analysis, storm water management plan, erosion control plan, or other such documents to assist ~~it~~ in the review of an application. Further the Board may require, in appropriate circumstances, special investigation and/or review of documentation submitted by the applicant by independent consultants selected by the Town with the cost thereof assessed to the applicant. [Amended 3/24/87]

Section 268-4:3 The Planning Board may designate a person or persons to review site development plans. Such person or persons shall determine if the submitted site development plan requires the review of the Planning Board in accordance with Article 6 of this chapter. If it is determined by such designee that the plan adequately meets the requirements of the items listed under Articles 4 and 6 of this chapter, such designee shall be authorized to approve and sign the site development plan, stating thereon that it has fulfilled the requirements of the regulations contained herein.

Section 268-4:4 Approval by the Planning Board may indicate any stipulation or conditions which may be necessary to secure the public health, safety and welfare, including the posting of a suitable performance bond or guaranty to insure that all site development and construction is completed according to the approved plan. [Added 12/11/84]

Section 268-4:5 The Planning Board may grant conditional approvals under the provisions of RSA 676:4(i). [Added 8/18/87]

Section 268-4:6 In accordance with RSA 674:43 IV, projects or activities which meet the following criteria, as determined by the Planning Board, are considered to be exempt projects that do not require site plan review provided that the project complies with all other applicable Town regulations: [Added 8/21/12]

4:6.1 Temporary outdoor activities;
4:6.2 Increase in pavement or impervious surface less than 500 square feet;
4:6.3 Increase in building area less than 500 square feet;
4:6.4 Changes to approved or existing signs that do not increase square footage or decrease existing setbacks;
4:6.5 Changes in landscaping that do not decrease the amount or size of approved plantings or increase lot coverage more than 500 square feet;
4:6.6 Minor changes to architectural appearance that do not result in increased building height or decreased building setbacks;
4:6.7 Conversions of up to 500 square feet from one commercial use to a similar or less intensive use.
4:6.8 Projects of a similar nature and size to those noted above.

Requests for exemptions should be in writing and include plans and photographs to allow the Board to determine conformance with the above criteria. Such requests will be reviewed at regular meetings under the Public Matters section of the agenda. If the Planning Board finds that a project does not comply with other applicable Town regulations, including Sections 268-1:4 (Purpose) and 268-4 (Planning Board Duties and Process), it may decline to grant the exemption and require a formal site plan submittal.

ARTICLE 5
GENERAL REGULATIONS

Section 268-5:1 All work for all site development plans approved by the Planning Board shall commence within 12 months and be completed within 24 months of the date of approval. If more time is needed, the applicant may request an extension of time from the Planning Board for completion of the work under the site development plan; the request may be granted for good reason. Failure to comply with this provision invalidates any site plan approval previously given. [Amended 9/28/04]

Section 268-5:2 A site work permit must be obtained from the Chief Building Official prior to commencing any work on a site for which site development plan approval is required. The Chief Building Official shall notify the Engineering Department and the Planning Department, and receive their signed approval prior to issuing the permit. No excavation, dredging, filling, grading, utility installation, or paving shall begin prior to site plan approval. [Amended 3/24/87]

Section 268-5:3 No building permit may be issued for any building, construction or any site work that is within the purview of the regulations contained herein until:

5:3.1 The site development plan has been approved by the Planning Board.

5:3.2. A site work permit has been granted. [Amended 3/24/87]

Section 268-5:4 The following provisions shall govern the approval of amendments to an approved site development plan:

5:4.1 Minor amendments may be approved by the Town Engineer. The Town Engineer may approve engineering changes related to field conditions, provided that the change(s) do not have a detrimental effect to abutting properties and provided that all changes are consistent with the Planning Board's and Town of Salem's regulations and standards. All minor amendments shall be shown on an as-built plan to be submitted to the Planning Board's Agent.

5:4.2 All major amendments shall be shown on a revised site development plan to be submitted to the Planning Board Agent and to be approved by the Planning Board.

Section 268-5:5 No certificate of occupancy may be issued for a building or structure that is within the purview of the regulations contained herein until:

5:5.1 The Town Engineer and Planning Board's Agent certify that all site improvements ~~as~~ shown on the approved site development plan have been completed, provided, however, that an applicant may request that the Planning Board accept a suitable and sufficient performance bond or letter of credit to assure the completion of certain site improvements that, due to factors beyond the control of the applicant (e.g. weather, unavailability of supplies), have not been completed. The Planning Board shall accept a bond or letter of credit in lieu of completion only for items which do not materially impair the activity to take place on the site, result in risks to public health or safety, or adversely affect abutting properties or the environment in general.

Examples of items which might be bonded in lieu of completion are landscaping and decorative finish work [Amended 3/24/87]; and

5:5.2 An as-built plan prepared by a professional engineer and/or a licensed land surveyor, and a certified wetland scientist (when applicable), showing the actual location of all improvements including, but not limited to, grading, utilities (water, sewer, gas, electric, telephone, cable, etc.), road work, drainage, landscaping, parking spaces, wetland impact, floodplain impact, and wetland/floodplain mitigation areas, shall be filed with the Town. Any discrepancies from the approved site plan shall be identified on the 'as-built' plan, and a statement from the reviewing design professional that the improvements as constructed meet the design intent, and will function as designed, shall be added to the 'as-built' plan. The plan shall be reviewed for completeness by the Town Engineer and Planning Board agent prior to acceptance by the Town. [Added 9/28/04]

Section 268-5:6 The Planning Board may waive any portion of these regulations if it finds, by majority vote, that:

5:6.1 strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of the regulations; or

5:6.2 specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations.

All waivers granted by the Board shall be noted on the plan and the basis for such waivers shall be recorded in the minutes of the Board. [Amended 12/20/11]

Section 268-5:7 In order to confirm that various improvements delineated on approved plans are in fact constructed in accordance with those plans or with applicable codes and standards, the Planning Board shall require the applicant to establish an appropriate escrow acceptable to the Planning Board, which will be used by the Town of Salem to retain appropriate engineering or other consultants to confirm that construction is in conformance with the approved plans or applicable codes and standards. (The Town will establish a uniform fee schedule based on size and complexity of the project.) [Added 9/28/04]

Section 268-5:8 All improvements shall be designed and constructed in accordance with the applicable design and construction standards noted in Article 6 of the Subdivision Regulations, Chapter 278. [Added 9/28/04]

ARTICLE 6
RETAIL DEVELOPMENT STANDARDS

Section 268-6:1 Design Standards
These standards apply to retail projects in all zoning districts in the Town of Salem. [Adopted 9/12/96]

6:1.1 Design Goals

6:1.1.1 Encourage high quality building design which improves the aesthetic character of the community.
6:1.1.2 Blend building design and layout with other site features (landscaping, signage, lighting, etc.) to produce an attractive commercial environment.
6:1.1.3 Allow diversity of building designs and architectural styles.
6:1.1.4 Avoid monotonous and bland buildings typical of strip commercial developments.
6:1.1.5 Minimize conflicts between residential and commercial uses.

6:1.2 General Design Criteria

6:1.2.1 The following factors will be considered in evaluating new building designs:
1. scale, proportion, height and area of building
2. type, shape, and pitch of roof
3. size and spacing of windows, doors and other openings
4. exterior materials and colors
5. styling of front façade
6. architectural details and features
7. building and site signage
8. building and site lighting

6:1.2.2 Avoid long unbroken expanses of walls. Use facade divisions, such as building jogs, pilasters, architectural detailing, and changes in surface materials, colors, textures and roof lines. Uninterrupted facades should not exceed 50% of the building wall, and in no case should exceed 100 feet in length. Ground floor facades that face public streets should have arcades, display windows, entry areas, awnings, or other such features along no less than 60 percent of their length. All facades of a building which are visible from public streets should feature characteristics similar to the front facade.

6:1.2.3 Use architectural features and details, such as porches, awnings, columns, towers, turrets, skylights, and arches, to create interesting buildings.

6:1.2.4 Avoid long unbroken expanses of roofs through the use of dormers, skylights, chimneys, and changes in ridge line.

6:1.2.5 Use brick, clapboard, shingle, glass, stone, stucco or architectural concrete block for wall surfaces.

6:1.2.6 Limit exposure of foundation walls to no more than 3 feet.

6:1.2.7 Make door and window openings proportional to facade length and height.

6:1.2.8 Create a sense of entry into the site, and into major businesses within the site, through landscaping, facade treatment, and signage.

6:1.2.9 Screen ground-level mechanical equipment from public view. Screen areas for outdoor storage, truck parking, trash collection, loading, and other such uses from view of abutting properties and streets. [Amended 20/12/2011]

6:1.2.10 Building trim and accent areas may feature bright colors, including primary colors, but neon tubing shall not be an acceptable feature for building trim or accent areas.

6:1.2.11 Minimize negative impacts to residential abutters through sensitive placement and/or screening of buildings, driveways, parking lots, loading areas, lighting, and mechanical equipment.

6:1.2.12 Lighting devices on buildings and freestanding poles should be located and screened (if necessary) to not spill onto adjoining properties and the street.

6:1.2.13 Harmonize the location, size, material, and lighting of signs with the building design.

Section 268-6:2 Landscaping Standards [Adopted 9/12/96]

6:2.1 All shade trees should be a minimum of 2 inch diameter at breast height at planting. All evergreen trees should be a minimum of 6 feet high at planting.

6:2.2 At planting, evergreen shrubs should be a minimum of 2 feet high and deciduous or flowering shrubs should be 3 feet high (unless species is low growing variety).

6:2.3 All trees should be planted in a permeable area of no less than a 3 foot wide radius from the base of the tree.

6:2.4 Existing trees of significant size or special character should be preserved wherever possible.

6:2.5 Planting islands should be used to define vehicular and pedestrian circulation patterns and to break up large expanses of pavement. In general, islands should be distributed throughout the parking lot. A combination of end cap islands and linear islands running parallel to parking rows are preferred. Islands should include trees and be planted with either grass or evergreen shrubs.

6:2.6 Plantings adjacent to pavement should be protected with curbs or equivalent barriers to protect them from vehicular damage.

6:2.7 Views from public streets of large parking lots should be screened with low (2 ½' to 4') evergreen shrubs, densely twigged deciduous shrubs, evergreen trees, mounds, berms, walls, or a combination thereof, provided that adequate sight distance is maintained.

6:2.8 Screening or buffering of commercial uses from residential properties should consist of evergreen trees and shrubs, opaque fencing, walls, berms, or a combination thereof.

6:2.9 Plantings should be used to identify major entryways to sites, screen service and storage areas and freestanding sign poles, and break up long building walls.

6:2.10 Plant materials should be of specimen quality conforming to the American Standard for Nursery Stock (ANSI Z60.1 - 1980 or later revision) and should be guaranteed for at least one year.

6:2.11 Landscaping should be maintained to present a healthy appearance and dead materials should be replaced.

6:2.12 Recommended plantings are in the Town of Salem Design Guidelines manual.
[Added 10/10/06]

Section 268-6:3 Exterior Lighting Standards [Adopted 10/10/06]

6:3.1 Site plans should include lighting plans showing the location of all lighting fixtures, a computer-generated photometric diagram showing illumination levels from all lighting sources, and specifications and illustrations of all fixtures, including mounting heights.

6:3.2 All exterior lights and illuminated signs should be designed, located, installed, and directed in such a manner as to provide adequate illumination for the safety of vehicles and pedestrian travel and to prevent excessive lighting levels, glare, and light trespass.

6:3.3 Light fixtures should be cut-off or shielded fixtures, and should be located, mounted, aimed and shielded so that direct light is not cast onto adjacent streets or properties, nor skyward.

6:3.4 Light poles abutting or in proximity to residential areas should not exceed 20' in height (defined as the vertical distance from grade elevation to bottom of lamp) and those not abutting residential areas should not exceed 35' in height. The location of light fixtures mounted on buildings should not exceed 20' in height.

6:3.5 The intensity of lighting at adjoining streets, excluding driveways, should not exceed 0.5 foot-candles, and the intensity at adjoining residential properties should not exceed 0.5 foot-candles.

6:3.6 Areas designated as parking lots and exterior display/sales areas should be illuminated so that the average horizontal illumination level at grade is no more than 5.0 foot-candles.

6:3.7 Areas around the pump islands and under the canopies of gasoline stations should be illuminated so that the average illumination level is no more than 30 foot-candles. Light fixtures

mounted on canopies should be recessed, so that the lens cover is either recessed or flush with the bottom surface (ceiling) of the canopy, or is shielded by the fixture or the edge of the canopy. The light should be restrained to no more than 85 degrees from vertical. Lights should not be mounted on the top or fasciae of the canopy and the fasciae of the canopy should not be illuminated.

6:3.8 The Planning Board may require an independent review of lighting plans, the cost of which shall be paid by the applicant.

Section 268-6:4 Sign Standards [Adopted 10/10/06]

6:4.1 Freestanding sign shapes should complement the architectural features on the adjacent building(s).

6:4.2 Monument signs are the preferred type of freestanding sign. Poles or posts, if used, should be screened with plantings or encased in a decorative material.

6:4.3 Use dark colored backgrounds signs. Avoid stark white or extremely bright background colors such as bright red, orange or yellow.

6:4.4 Wall signs should be mounted on vertical surfaces without projecting above the fascia trim.

6:4.5 External illumination of signs is preferred. Lighting fixtures illuminating signs should be carefully located, aimed and shielded so that light is directed only onto the sign façade.

6:4.6 Internally illuminated wall signs, if used, should consist of individually illuminated letters and symbols instead of whole panels that are internally lit.

6:4.7 Signs for retail stores on Main Street shall reflect the historic character of the area.

ARTICLE 7
TRAFFIC MANAGEMENT REGULATIONS [Added 8/12/97]

Section 268-7:1 The applicant for new development or a change in use of an existing site, which is expected to generate 100 new vehicle-trips per hour (entering plus exiting) or more during a peak hour period, shall be required to schedule a Scoping Meeting the Town's traffic engineering consultant and Town staff, the purpose of which is to define the extent and content of a traffic impact assessment to be submitted by the applicant.

Section 268-7:2 The traffic impact assessment should quantify the proposed traffic impacts on all intersections and road links identified in the Scoping Meeting. Mitigation should be proposed which will offset the impacts created by site traffic, where possible.

Section 268-7:3 The anticipated impacts of a proposed development, and the effects of the proposed mitigation, should be evaluated using standard performance indicators which will include but not be limited to: level-of-service, delay, and volume to capacity ratio, as defined in the Highway Capacity Manual. The adequacy of existing and proposed roadways and intersections should be based on but not limited to: left turn lane guidelines, right turn lane guidelines, traffic signal warrants, and stopping sight distances. The design of all proposed improvements shall take into consideration:

7:3.1 The Manual on Uniform Traffic Control Devices (Federal Highway Administration),

7:3.2 A Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials),

7:3.3 New Hampshire Department of Transportation rules and procedures, and

7:3.4 Standard access management techniques.

Section 268-7:4 Regardless of project size or traffic generation, measured sight distances at access/egress locations with public ways for all new developments shall, at a minimum, meet NH Department of Transportation (NHDOT) and American Association of State Highway Transportation Officials (AASHTO) standards for safe stopping sight distance.

Section 268-7:5. Necessary transportation improvements shall be in place prior to project occupancy.

Section 268-7:6 Adjacent commercial uses shall share access points and provide connections between parcels so as to minimize curb cuts, driveways, and vehicular turning maneuvers, where appropriate.

Section 268-7:7 Internal site circulation shall be designed to accommodate the appropriate design vehicle for the project.

Section 268-7:8 New development should minimize adverse traffic impacts on residential neighborhoods.

Section 268-7:9 Roadway access for new development and redevelopment must be consistent with the functional classification of the road. Where appropriate, driveways should gain access to collector and arterial streets via the local street system.

Section 268-7:10 Roadway impact fees for off-site impacts from new development will be assessed in accordance with Section 309-7:11 of the Salem Zoning Ordinance.

ARTICLE 8
MISCELLANEOUS

Section 268-8:1 Adequate screening of rooftop mechanical units**:** mechanical, HVAC, and other equipment mounted on rooftops shall be screened from view from public ways and residential abutters or grouped in a location where visibility is limited. Screening for roof-mounted equipment shall be designed as an integral part of the architecture to complement the building's mass and appearance. [Added 20/12/2011]

Section 268-8:2 Snow storage/disposal and winter salt storage: [Added 8/21/2012]

8:2.1 Snow storage/disposal areas shall be located at least 25 feet away from surface waters (streams, rivers, lakes) or wetlands. Where necessary, fences, landscaping, or other barriers shall be installed to prevent snow from being disposed of in, or near, such surface waters or wetlands.

8:2.2 Snow storage/disposal areas shall not be located on storm drains or in stormwater drainage swales, ditches, or basins.

8:2.3 Snow storage/disposal areas shall be at least 75 feet from any private water supply wells, at least 200 feet from any community water supply wells, and at least 400 feet from any

municipal wells. (Note: Snow storage areas are prohibited in wellhead protection areas [class GAA groundwater].)

8:2.4 If salt or salt/sand mixture storage areas are proposed or used, they shall be designated on site plans. Such areas shall be on an impervious surface and all salt and salt/sand mixture shall be stored under cover. All drainage from outside the storage area shall be diverted such that no drainage from outside the storage area enters the salt storage area. All drainage generated within the storage area shall be retained completely within the storage area.

APPENDIX 268-A
SENIORS HOUSING OVERLAY DISTRICT FEES

Reference: Chapter 309, Section 309-6:1.8.5 (Seniors Housing Overlay District)

Condominiums for Sale (notes 1, 2)

Market Price Range	Affordable Housing Fee (Per Unit)
Over $300,000	$40,000
$250-299,000	$32,500
$200-249,000	$26,000
Under $200,000	0

1. Minimum fees paid up front and reconciled only if sale prices end up in higher range(s).

2. Salem prices and initial estimates based on final price i.e. including typical upgrades.

Apartments for Rent (note 3)

$1,500+/Mth	$20,000	
$1,200-1,499	$15,000	
Under $1,200	$10,000	1 bedroom
	$5,000	2 bedroom

3. If apartments are converted to condominiums then the difference between rental and sale fees are due upon sale of converted unit.

Complexes providing "affordable housing" for 30% or more of the total complex are exempt from paying this fee

ATTACHMENT 268-1
APPLICATION FOR SITE PLAN REVIEW

1. Name, mailing address & telephone/fax number of applicant:

_____

_____

2. Name, mailing address & telephone number of owner of record if other than applicant:
(Written permission from owner is required.)

_____

_____

3. Name, mailing address, telephone/fax number of engineer, architect, and/or agent:

_____

_____

4. Location of Proposed Site Plan: _____

5. Tax Map _____, Lot _____

6. Description of Proposed Site Plan (size and use of buildings): _____

_____

7. Abutters: Attach a separate sheet listing the Town of Salem Tax Map, Lot number, Name, and Mailing Address of all abutters, including those across a street, brook or stream. Names should be those of current owners as recorded in the Tax Records. Mailing labels are required for 10 or more abutters.

8. Attach completed checklist: (Incomplete plans will not be accepted.)

9. Attach six (6) copies of site plan:

10. Payment of all applicable site plan fees:

Per 1000 sf of building	$100/1000 sf up to 9,999 sf;	$_____
	$125/1000 sf 10,000 to 24,999 sf;	_____
	$150/1000 sf 25,000 sf and over	_____
	$200 min. fee	_____
Advertising/post costs	$25	_____
Abutter notification	$5/each	_____
Conceptual Discussions	$200 plus advertising and notification	_____
	TOTAL	$_____

The applicant and/or owner or agent, certifies that this application is correctly completed with all required attachments.

_____ _____
(Applicant/Owner) (Date)

For Planning Board Use Only:	
Completed Application Filed	_____
Fees Paid	_____
Notices Mailed	_____
Meetings with staff	_____
Application Accepted/Rejected	_____
Public Hearing(s)	_____
Date Approved/Disapproved	
Follow-up Letter Sent	_____

ATTACHMENT 268-2
SITE PLAN CHECKLIST (3-22-11)

Format

____title block____ date____ scale ____engineer/surveyor stamp____ abutters names /addresses ____ zoning dist.
____zoning boundary____ lot & street numbers____ North arrow____ owner/applicant____ location plan
____ permission from owner

Topography and Environmental Features

____ high intensity soils/wetlands ____ streams, ponds ____wetland impact ____wetland mitigation
____ min. wetland setbacks (40' pavement/bldg, 75' septic)____ dredge/fill permit ___Cons. Comm. approval
____ local conditional use permit____ prime wetlands ____ 100' prime wetlands setback(no disturb.)
____conservation easements____ floodplain ___floodplain impact ___compensatory storage
____ exist. & proposed elevs.(USGS Benchmark)____ significant environmental features ____ shoreland protection

Drainage & Utilities:

____ water/sewer lines (location & sizes)____ sewer manholes, watergate valves ____ daily water use/sewer flow
____pump stations/force mains____ septic system____4000 sf septic area____ well ____protective radius
____ drainage pipes (types, sizes, slopes)___drainage calcs ___peak flow comparison ____dnstrm/abutter impact
____ invert and rim elevations____ catch basins (every 300')____ easements (20' min. width)____ swales/ditches
____direction of flow ___curbing____ typical details ____outside engineering review ____ max. fill/cut
____est. high water table____ max. side slope 4:1____ gas lines ___existing undgrd utilities____ utility poles
___erosion control plan

Buildings:

____uses____ dimensions____ square footage____ floor elevations____ setbacks____ mezzanines, basements
____ rendering ____ front & side elevation drawings (materials, colors, height)____ height____ doorways
____ retail design standards ____ screen rooftop mechanical units

Traffic:

____ driveways____ driveway profiles____ curb cut widths & radii____ driveway widths
____ loading areas ____ sidewalks ____ circulation ____ pedestrian circulation ____parking configuration
____ sight distance ____traffic study ____outside review____ off-site impacts____ road improvement fee
____ traffic management regs. ____ compliance with ADA parking standards ____ conformance with ITS plan

Other:

____ lot size____ lot coverage calculations ____ parking calculations____ parking spaces (9' x 20')
____ 5' or 10' parking lot buffer ____ handicapped spaces (upright signs)
____ landscaping (size, quantity, species)____ retail landscaping standards ____ screening/buffers
____ 1 tree per 2000 sf. pavement (for 50 car lots)____ 20' front yard (for 100+ lots)
____ trash disposal (fence around dumpster)____ fences
____ signs (size, height, setback, material, color, illumination) ____ retail sign standards
____ height of light posts____ outdoor lighting (location, fixtures, intensity) ____ retail lighting standards
____fire lanes____ fire hydrants____ fire alarm/sprinkler notes ____LP and fuel tanks ____ pollutants
____ hazardous materials ____ noise____ snow storage____ regional impact____ variances/special exceptions
____ waivers _____ shopping cart storage areas _____ outside storage areas/containers ____
____ construction standards and details ____public safety impact fee____ 11" x 17" version of plans
____ pdf version of plans ____Design Guidelines

State/Federal Permits:

____ subdivision - DES____ sewer extension - DES____ water line extension - DES____ septic - DES
____ community well - DES____ dredge/fill - NHWB ____ Army Corps of Engineers____ Site Specific - DES
____ driveway - NH DOT

Town Staff Recommendations:

____ Assessor's Office____ Building Department____ Engineering Department____ Fire Department
____ Planning Department____ Police Department____ Public Works Department

The Planning Board may require other exhibits or data in order to adequately evaluate the proposed development. This checklist is not intended as a substitute for, nor does it contain all the information and requirements in, the Zoning Ordinance and other applicable Town codes, ordinances, and procedures.

ATTACHMENT 268-3
TITLE BLOCK

Site Development Plan For
Name of Applicant
Street Address
Salem, NH

Assessors Map _____ & Lot #_____

Prepared by (Name of Registered Engineer or Surveyor)
(Street and Number)
(Town, State, Zip Code)

Scale Date:

For Professional Seal	Owner's Name Street & Number Town, State, Zip Code	Salem Planning Board Approval
	Zoning Classification	

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SUBDIVISION REGULATIONS
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Board of Adjustment	See Ch. 4
Planning Board	See Ch. 83
Building/construction	See Ch. 147
Design standards	Design Guidelines manual
Excavations	See Ch. 182
Flood control	See Ch. 193
Historical District	See Ch. 205
Housing standards	See Ch. 208
Individual sewage disposal systems	See Ch. 253
Sewers	See Ch. 264
Special sales	See Ch. 249
Subdivision Regulations.	See Ch. 278
Swimming pools	See Ch. 282
Zoning Regulations	See Ch. 309

TYPICAL ROAD CROSS SECTION REFERENCES

The following typical cross-sections and details are available from the Town of Salem Engineering Department:

- Cape Cod Berm
- CC Berm – Bit Sidewalk
- Drain Trench
- Driveway Profile Above Street Grade
- Driveway Profile Below Street Grade
- Gas Trench
- Pavement Repair
- Roadway w-CC Berm – Sidewalk
- Roadway X-Section w-CC Berm
- Sewer Trench
- Water Trench

[HISTORY: Adopted by the Town Planning Board 11/7/81. Amendments are noted where applicable. Affordable Housing Regulations were removed on 12/20/2011. Reorganized version of these regulations adopted by Planning Board 7/17/2012. ****= references to previous Subdivision Regulations**.]

ARTICLE 1
GENERAL PROVISIONS

Section 278-1:1 Title and Authority

1:1.1 These regulations shall be known as the SUBDIVISION REGULATIONS OF THE TOWN OF SALEM, NEW HAMPSHIRE, herein after referred to as "these Regulations".

1:1.2 Pursuant to the authority vested in the Town of Salem Planning Board by the legislative body of the Town of Salem in March 1973, and in accordance with the provisions of RSA 674:35 of the New Hampshire Revised Statutes Annotated (as amended), the Town of Salem Planning Board adopts the following regulations to govern the review, approval or disapproval of all subdivision, consolidation, and/or lot line adjustment of land in the Town of Salem, New Hampshire.

Section 278-1:2 Purpose

These Regulations are designed to accomplish the following purposes:

1:2.1 Uphold the purposes set forth in RSA 674:36.

1:2.2 Assure the Town of a high standard of subdivision layout and construction.

1:2.3 Provide for the timely installation of necessary improvements and for the payment of such improvement costs.

1:2.4 Aid the Town and its' Planning Board in carrying out the objectives of the Town's Master Plan.

1:2.5 Protect the health, safety, convenience, economic, and general welfare of our citizens.

1:2.6 Provide against such scattered or premature subdivision of land as would involve danger or injury to health, safety or prosperity by reason of the lack of water supply, drainage, transportation, schools, fire protection, or other public services; or necessitate the excessive expenditure of public funds for the supply of such services.

Section 278-1:3 Jurisdiction

The provisions of these Regulations shall apply to all land within the boundaries of the Town.

1:3.1 Subdivisions

1:3.1.1 Any person proposing to subdivide land in the Town must apply to the Board for approval of such subdivision.

1:3.1.2 A subdivision application must be made and approved before any offer to sell, rent or lease a proposed subdivision or part thereof, before any construction, land clearing or building development is begun, before any permit for the erection of any building may be granted, and before a subdivision plat may be filed with the County Registry of deeds.

1:3.2 Permits. No building permit may be issued for the construction or altering of any building or structure within the purview of these Regulations until a copy of any approved subdivision plat has been presented by the applicant to the Building Inspector.

Section 278-1:4 Interpretation of Terms

As used in this Chapter, the word "person" includes corporation, incorporated, association and partnership, as well as individual. The word "may" is permissive; the words "shall" and "will" are mandatory; subject, however, to provisions hereof.

Section 278-1:5 Conflicting Provisions
Where any section of these Regulations conflicts with any other local regulation or ordinance, the requirement imposing the greater restriction or higher standard shall apply. In addition, the fact that a requirement under these Regulations is less restrictive than a federal or state regulation or statute does not relieve an applicant from compliance with the terms of such regulation or statute, unless specifically authorized by said regulation or statute.

Section 278-1:6 Severability
The provisions of these Regulations shall be severable, and if any phrase, clause, sentence or provision of these Regulations shall for any reason be held invalid or unconstitutional, the validity of the remainder of these Regulations shall not be affected thereby.

Section 278-1:7 Amendments
In accordance with RSA 675:6, these Regulations may be amended by the Board following a public hearing on the proposed change. Such change shall not take effect until a copy of the change, certified by a majority of the Board, is filed with the Town Clerk.

ARTICLE 2
DEFINITIONS

Abutter: See RSA 673:3

Applicant: Shall mean the owner of record of the land to be subdivided, including any subsequent owner of record making any subdivision of such land or any part thereof, or the duly authorized agent of any such owner.

Block: Shall mean a tract of land bounded by streets, by a combination of streets and public parks, cemeteries, railroad rights of way, shorelines of waterways, boundary lines of municipalities, or other topographic features.

Board: Shall mean the Town of Salem Planning Board.

Certified Soil/Wetland Scientist: Shall mean a person who, by reason of special knowledge, education and experience, is qualified to practice soil science or delineate wetland boundaries and who has been duly certified by the Board of Natural Scientists under RSA 310-A:84.

Completed Application: Shall mean the application form and supporting documents specified in these Regulations that contain all the information the Board needs to review a subdivision proposal and make an informed decision. All fees and administrative expenses, as indicated in these Regulations, must be included. For submission requirements see Sections 5, 7, 8, and the Subdivision Plan Checklist (Attachment 278-2).

Condominium: A building or group of buildings in which units are owned individually, and the structure, common areas, and facilities are owned by all the owners on a proportional, undivided basis. Condominiums shall be considered a subdivision under the requirements of RSA 356-B and shall be reviewed accordingly.

Cul-de-Sac: Shall mean a minor street with only one outlet and having an appropriate terminal for the safe and convenient reversal of traffic movement.

Easement: Shall mean authorization by a property owner for use of all or any designated part of the property by another for a specified purpose. An easement may be declared, either by depiction on the final plan or by separate documents, and shall be recorded in the Registry of Deeds, and unless specifically limited in time shall be considered permanent and shall run with the affected land.

Flood: Shall mean a temporary rise in a stream flow that results in the water overtopping its banks into the adjacent floodway and floodplain.

Floodplain: As defined by the Town Zoning Ordinance.

Floodway: As defined by the Town Zoning Ordinance.

Frontage: As defined by the Town Zoning Ordinance.

High Intensity Soils Survey (HISS): A soils map prepared by a certified soil scientist according to mapping standards described in Publication No. 1 from the Society of Soil Scientists of Northern New England, and available through the Rockingham County Conservation District.

Licensed Land Surveyor: Shall mean a person who engages in the practice of land surveying and is licensed by the State of New Hampshire under RSA 310-A:53.

Lot: Shall mean a parcel of land capable of being occupied by one principal use that is of sufficient size to meet the minimum requirements for use, building coverage and area.

Lot, Double Frontage: Shall mean a lot having street frontage on two opposite sides of the parcel, which frontages are within 30 feet of being parallel to each other.

Lot Line Adjustment: Shall mean the exchange of abutting land among two or more lots which does not increase the number of owners or the number of lots. This is deemed a subdivision by these Regulations.

Master Plan: Shall mean a plan for development of the Town prepared in accordance with the provisions of RSA 674:2.

Performance Guaranty: Shall mean security which may be accepted in lieu of a requirement that certain improvements be made before the Board approves a plat; such security shall be limited to a surety bond, cash, irrevocable letter of credit or other type of guarantee acceptable to Town Counsel and the Board.

Plat: Shall mean the map, drawing or chart on which the plan of subdivision is presented to the Board for approval, and which, if approved, will be submitted to the Rockingham County Register of Deeds for recording.

Professional Engineer: shall mean a person who is technically and legally qualified to practice professional engineering, and who is registered by the State of New Hampshire to engage in the practice of professional engineering in accordance with RSA 31-A:53.

Right of Way: A strip of land occupied or intended to be occupied by a street, crosswalk, railroad, road, electric transmission line, oil or gas pipeline, water main, sanitary or storm sewer main, shade trees, or for another special use.

Street: Shall mean a public way that lawfully exists and is maintained for vehicular travel. The word street shall include the entire right-of-way.

Street, Collector: Shall mean the street connecting residential and other service streets, to through traffic facilities. Although traffic enters from more than one point, the street would not generally be considered a through traffic road.

Street, Major Collector: Average daily traffic exceeds 400 vehicles per day, but less than 800 vehicles per day (401-799 vpd).

Street, Minor Collector: Average daily traffic shall not exceed 400 vehicles per day (0-400 vpd).

Street, Primary: Shall mean a street that is used primarily for through traffic, local and regional. The average daily traffic count shall be in excess of 800 vehicles per day.

Street, Service: Shall mean a street is used exclusively for access to abutting properties such as a cul-de-sac. Temporary dead-end streets which may be extended in the future shall be considered as minor collector streets. The average daily traffic of a service street shall not exceed 100 vehicles per day.

Subdivision: Shall mean the division of the lot, tract, or parcel of land into 2 or more lots, plats, sites, or other divisions of land for the purpose, whether immediate or future, of sale, rent, lease, condominium conveyance or building development. It includes re-subdivision and, when appropriate to the context, relates to the process of subdivision or to the land or territory subdivided. The division of a parcel of land held in common and subsequently divided into parts among the several owners shall be deemed a subdivision under this title.

Subdivision, Major: Any subdivision not classified as a minor subdivision.

Subdivision, Minor: Shall mean a subdivision of land into not more than three lots, with no potential for re-subdivision, that fronts on an existing street and requires no new streets, utilities, or other municipal improvements.

Town: Shall mean the Town of Salem, New Hampshire.

Town Engineer: Shall mean the person employed in such position by the Town to perform inspections and give approvals.

ARTICLE 3
PROCEDURES FOR THE SUBDIVISION OF LAND

Section 278-3:1 Plans not requiring approval

3:1.1 Pursuant to RSA 676:18 any person who wishes to record a plan of land which depicts only existing lines of ownership, existing lines of streets and ways already established, and which contains no new lines for division of existing ownership or new ways, need not obtain Board approval for that plan, but shall have it certified in accordance with RSA 676:18 (III).

3:1.2 For the purposes of the foregoing paragraph, a lot line adjustment shall be considered as a new line of ownership which would require Board approval.

3:1.3 Pursuant to RSA 676:18 (IV) any person who wishes to record a plan which does not require Board approval shall provide the Board or its agent with a copy prior to its recording.

Section 278-3:2 Pre-application Review

3:2.1 Procedure

3:2.1.1 The applicant or his agent must appear before the Board's agent to discuss the proposed subdivision prior to formal submittal of an application for subdivision approval. This discussion shall be deemed the preliminary conceptual consultation provided under RSA 676:4 (II) (a). The consultation shall include:

1. Review of the applicable zoning regulations,
2. The necessary outside permits that may be needed prior to approval,
3. The scope of the necessary application materials, and
4. A site-walk, as required at the discretion of the Board's agent.

3:2.1.2 An applicant may, prior to formal submittal of a request for subdivision approval, submit a request for conceptual design approval for the layout of proposed roads in accordance with state regulations. Such submittal shall contain the necessary soils and topographic information to properly evaluate the proposed road location.

3:2.1.3 The Board shall hold a public hearing with the appropriate notices on all requests for conceptual road approval.

3:2.1.4 Denial of conceptual road approval does not prevent an applicant from proposing a formal application for subdivision with a road design of substantially the same configuration. An approval of a conceptual road design does not prevent the Board from subsequently denying a formal application for subdivision approval even though it conforms to a road layout similar in nature to that which it previously approved.

3:2.2 General Information

General subdivision information shall describe or outline the existing conditions of the site and proposed development as necessary to supplement the drawings required below. This information may include data on land characteristics, soil classifications and available community facilities and utilities and information describing the subdivision proposal, such as the number of residential lots, typical lot width and depth, playgrounds, park area and other public areas, and proposed utilities and street improvements.

3:2.3 Location Map

The location map shall show the relationship of the proposed subdivision to existing community facilities which serve or influence it and include the development name and location, main transportation arteries; public transportation lines; shopping centers; elementary and high schools; parks and playgrounds; principal places of employment; other community features, such as railroads airports, hospitals, churches and other public and semipublic buildings; title; scale; north arrow; and date.

3:2.4 Concept Plan and Coordinating Street Plan

3:2.4.1 The concept plan shall show in sketch form the proposed layout of streets, lots, and other features in relationship to existing conditions. The concept plan shall be a sketch and may be shown directly on a print of topographic survey. The concept plan shall include existing topographic data, an overlay mapping of the relevant soils information, and such other information as the Board may determine as necessary for its consideration of the concept plan.

3:2.4.2 In appropriate circumstances, to facilitate traffic circulation and to allow evaluation of the potential to extend proposed streets for servicing adjoining areas or completing road networks, the applicant shall file plans at an appropriate scale showing the proposed subdivision location, the outline of adjoining parcels, and existing or approved street locations taken from Town Assessment records.

Section 278-3:3 Formal Applications

3:3.1 Application Procedures

3:3.1.1 A formal application for subdivision approval shall contain the preliminary plans and data as required under Sections 3.2 and 4.1. The applicant may, at his option, also submit the final plan materials required under Sections 3.4, 4.2 and Article 5. In addition, an applicant shall submit a completed application form and checklist available from the Planning Department.

3:3.1.2 An application consisting of 6 copies of the plan, and supplementary materials specified in Section 3.3.1.1, shall be submitted to the Board at least 15 days prior to the meeting at which the application is to be considered.

3:3.1.3 An application and material outlined in Section 3.3.1.1 above shall be submitted to the Board, reviewed for completeness, and then accepted for consideration by majority vote at a public hearing. The Board shall begin formal consideration of an application within 30 days of acceptance, although such consideration may begin on the same night as the application is accepted. The computation of all statutory time periods commences from the date of acceptance by the Board.

3:3.1.4 All plans submitted for the conceptual road design approval or for consideration for subdivision approval shall be considered by the Board at a public hearing. Notice of said hearings shall be sent to all abutters, as defined by state law, at least ten days in advance of the hearing, and to the public by posting the agenda. The cost of all notices shall be assessed to and paid by the applicant. In accordance with RSA 676:I,(d), every engineer, architect, land surveyor, or soil scientist whose professional seal appears on any plat submitted to the board shall be notified in the same manner as legal abutters.

3:3.2 Consideration Procedures

3:3.2.1 Upon the filing of an application for subdivision approval, the Board shall hold one or more public hearings on said proposal. Any revisions or changes to the proposed subdivision as a result of negotiations with the applicant or changes deemed advisable shall be filed at least 10 days prior to any subsequent public hearing.

3:3.2.2 At the conclusion of a public hearing, the Board may take one of the below actions. All actions of the Board shall be noted in its files, and written notice shall be forwarded to the applicant in accordance with RSA 676:3.

1. Disapprove the application with a statement of the reasons thereof, or
2. Continue consideration to a subsequent meeting because of the need for additional information or desired revisions of the submittal, or
3. Continue for final hearing if the applicant has not previously filed the plan and data required under Sections 3.4, 4.2 and Article 5, or
4. Approve the submission, including approval with conditions permitted under RSA 676:4(I).

3:3.2.3 An applicant shall file 6 copies of the final plan and data required in Sections 3.4, 4.2 and Article 5 no later than 45 days after an application has been continued for final approvals provided further that all final plans must be submitted at least 10 days in advance of a public hearing to be eligible for final approval. The final plan shall conform substantially to the preliminary plan as submitted and subsequently revised and/or approved.

3:3.2.4 Unless a time extension has been requested from the Board of Selectmen or the applicant has waived such requirements in accordance with RSA 676:4(I)(f), the Board shall act within 90 days of accepting the application.

3:3.2.5 It is the responsibility of the applicant to actively pursue state and federal permits and Board approval. Failure of the applicant to inform the Board or its agent in writing of a plan's status for 120 consecutive days shall be interpreted as the withdrawal of the application.

3:3.2.6 The Board may require an applicant to pay reasonable fees to cover its administrative expenses and costs of special investigative studies, review of documents, or other matters which may be required by a particular application. In addition, the Board may require the submission of such impact statements or analysis documentation as may be deemed necessary for appropriate consideration of a subdivision request.

3:3.2.7 The Regulations in effect at the time an application is accepted will be the governing Regulations for all phases of consideration of said application provided the final plat information is filed within 180 days.
3:3.2.8 For minor subdivisions, the Board may waive the filing of a preliminary plan and/or waive submission of certain information required for a preliminary plan. Submission documents for minor subdivisions shall include those items required for final plans under Section 4.2.

Section 278-3:4 Recording Procedures
All approved final plats shall be filed by the Town with the Rockingham County Registry of Deeds. All recording fees shall be paid by the applicant. [Added 5/25/93]

ARTICLE 4
PLAN REQUIREMENTS

Section 278-4:1 Preliminary Plan
All of the following required information must appear on the plan before the Board can give full consideration to a preliminary plan. Presenting all of this information at the time the plan goes to the Board will enable the Board to act quickly and be beneficial to all.

4:1.1 The proposed subdivision name, name and address of the owner of record, subdivider and designer, date, and North point and scale. All appropriate stamps and signatures of competent surveyor(s), engineer(s), soil/wetland scientist(s), and architect(s). When the subdivider is not the owner of the property, plan submission shall also include a letter of permission from the owner.

4:1.2 The names of owners of record of abutting properties and abutting subdivision names, streets, easements, building lines, alleys, parks and public open spaces and similar facts regarding abutting property.

4:1.3 The location of property lines and their approximate dimensions, existing easements, buildings, watercourses, ponds or standing water, rock ledges and other essential features.

4:1.4 Existing water mains, sewers, culverts, drains, with pipe sizes, pipe types, grades and elevations. Proposed connections to existing utilities or proposed alternative means of providing water supply and disposal of sewage and surface drainage. A copy of the design calculations used in sizing the various utility piping and structures must be submitted to the Town Engineer.

4:1.5 The location of existing soil types as determined by an on-site, high intensity soil survey. Exempted from this Regulations are all lot line adjustments and those subdivisions of less than three lots or where proposed lot size is equal to or greater than 5 acres, except where wetlands are expected to affect the lot size.

4:1.6 The location, names and widths of existing and proposed streets and highways, with their grades and profiles and the elevations of sufficient points on the property to indicate the general topography of the property; also, profiles of proposed drainage courses showing elevations at 25-foot intervals. Include a topographical plan showing 2-foot contour intervals on land generally sloping 2% or less, or a 5-foot contour plan on land of generally greater slopes.

4:1.7 Where the topography is such as to make difficult the inclusion of any facilities mentioned above within the public area so laid out, the preliminary layout shall show the boundaries of proposed permanent easements over or under private property.

4:1.8 The location of all parcels of land proposed to be dedicated to public use, the conditions of such dedication, and a copy of such private deed restrictions as are intended to cover all or part of the tract.

4:1.9 Show the designs of any bridges or culverts which may be required, with elevations, grades and size.

4:1.10 Where the preliminary layout submitted covers only a part of the subdivider's entire holding, a sketch of the prospective future street system of the un-submitted part shall be furnished, and the street system of the submitted part will be considered in the light of adjustments and connections with the street system of the part not submitted.

4:1.11 House numbers for each lot shall be indicated as assigned by the Town Assessor.

4:1.12 The location of percolation tests made by a surveyor or engineer, as required by the Board. In addition, the plan will depict any areas reserved for on-site disposal systems, which shall include only areas where an on-site disposal system could be located under applicable provisions of these Regulations and the zoning ordinance.

4:1.13 The minimum basement floor elevation for each lot.

4:1.14 Proposed roadway cross-sections shall be provided at a minimum of 50-foot intervals with supplemental sections where needed.

4:1.15 The applicant shall prepare a plan for minimizing soil erosion and sedimentation during construction and operation of the proposed development, unless deemed unnecessary by the Board.

Section 278-4:2 Specifications and Content of Final Plat

4:2.1 The final plat shall be drawn in ink on Mylar at a scale of 50-feet to an inch or larger. Where necessary, the plat may be on several sheets accompanied by an index sheet showing the entire subdivision. For large subdivisions, the final plat may be submitted for approval progressively in contiguous sections satisfactory to the Board. Also, required shall be a 1-inch equals 100-foot scale drawing of the subdivision plat for use by the Town Engineer and Assessor. Plat sizes shall conform to the requirements of the Rockingham Registry of Deeds. [Amended 7/23/87]

4:2.2 The final plat shall show the following:
4:2.2.1 The tract boundary lines, right-of-way lines of streets and easements and other rights of way and property lines of residential lots and other sites, with accurate dimensions, bearings or deflection angles, and radii, arcs, and central angles of all curves.
4:2.2.2 The name and right-of-way width of each street or other right-of-way.
4:2.2.3 The location, dimensions and purpose of any easements.
4:2.2.4 A lot number to identify each lot or site which shall be assigned by the Town Assessor.
4:2.2.5 The purpose of which sites, other than residential lots, are dedicated or reserved.
4:2.2.6 The minimum building setback line on all lots and other sites.
4:2.2.7 The location and description of monuments. Monuments shall be shown on the final plan in accordance with the following:

1. Iron rods or pipes a minimum of ½-inch in diameter and 30-inches long shall be set. These pipes shall be placed at all lot corners and at all angle points.
2. Street lines shall be bounded by granite monuments constructed at least 4 inches square and a minimum of 3- feet long. These street monuments shall be set in the ground at the point of curvature, point of tangency and angle points of the recorded street layout on both sides of the roadway.

3. All required monumentation shall be shown "as set" or "to be set" on the final plan with the exception of those along a roadway. If monumentation is shown as "to be set", it shall be bonded to insure installation.

4:2.2.8 The names of record owners of adjoining land.

4:2.2.9 References to recorded subdivision plats of adjoining platted land by record name, date and number.

4:2.2.10 Certification by a land surveyor as to the precision of the field survey with an error of closure not greater than one part in 10,000 parts. [Amended 7/23/87]

4:2.2.11 Certification of title showing that the applicant is the landowner.

4:2.2.12 A statement by the owner dedicating streets, rights-of-way and any sites for public use.

4:2.2.13 The title, scale, North arrow, date, and the appropriate stamps and signatures of the surveyor and/or engineer. [Amended 7/23/87]

4:2.2.14 The existing and proposed center-line profile of existing and proposed streets drawn at a scale of 1-inch equals 50-feet horizontal and 1-inch equals 10-feet vertical.

4:2.2.15 The actual locations and invert elevations of all storm water and sanitary sewage systems and water supply and hydrant systems. Locations may be shown on the plan and elevations on the profile, if so desired.

4:2.2.16 The house numbers on each lot, as assigned by the Town Assessor.

4:2.2.17 Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law.

4:2.2.18 Any other plans, studies and/or exhibits which the Board may reasonably request as necessary in order to make an informed decision on the applicant's proposal.

4:2.2.19 An estimate of costs for improvements to proposed or existing streets, drainage and sewerage structures, and any related improvements to the site. The estimate is to be reviewed and recommended by the Town Engineer to the Board prior to the Board's signing of the plan(s). [Amended 5/23/93]

Section 278-4:3 Submission of Digital Plans

Applicant shall submit a copy of the recordable and as-built plans in digital format which shall be compatible with the Town's software. [Adopted 9/28/04]

ARTICLE 5
PERFORMANCE GUARANTEE

Section 278-5:1 General Procedures

5:1.1 As a condition of approval, the Board shall require the posting of a performance guarantee in an amount sufficient to defray the costs of construction of streets, public improvements, drainage structures, the extension of water and sewer drains and other improvements of a public utility nature. The amount of the security shall be based on an estimate of costs provided by the sub-divider and reviewed by an agent of the Board.

5:1.2 The security shall be approved as to form and sureties by the Board and Town Counsel.

5:1.3 If appropriate, the amount of the security shall include fees to cover the cost of periodic inspections.

5:1.4 Where electric lines or other utilities are to be installed by a corporation, municipal department, or public utility, a letter of intent shall be required stating that the work will be done in reasonable time and without expense to the town.

5:1.5 Each approved plat shall be granted a time period not to exceed 4-years from said approval, unless extended by mutual consent of the applicant and the Board, for the completion of streets and public improvements and their acceptance by the Board of Selectmen. This time limit shall be expressed in the performance guarantee. The performance guarantee shall remain valid and available until drawn upon by the Town or released in accordance with the standards indicated in Section 5.3 below. Extension of this time period must be acted upon by the Board at a properly noticed public meeting. [Revised 10/10/06]

5:1.6 All deeds covering land to be used for public purposes, easements and rights-of-way over property to remain in private ownership, and rights of drainage across private property shall be submitted in a form satisfactory to Town Counsel.

5:1.7 The applicant is responsible for, and shall be required to maintain, all improvements until the acceptance of said improvements by the Town. [Added 10/10/06]

Section 278-5:2 Improvements to be completed or guaranteed
One of the following alternatives is required by the Board prior to recording of the final subdivision plan:

5:2.1 All improvements required by the Board have been installed in accordance with the requirements of these Regulations and with the action of the Board giving conditional approval of the preliminary plat.

5:2.2 A suitable bond agreement approved by Town Counsel, enforceable by the Board, has been signed. The agreement shall be in an amount sufficient to guarantee the construction of all improvements required on the final plan.

Section 278-5:3 Performance guarantee release

5:3.1 The performance guarantee will be released in phases as portions of the required improvements are completed and approved by the Board or its designee. The applicant may request reductions in performance surety prior to final acceptance. However, a minimum 10% of the approved plan amount of all the improvements shall remain in place until acceptance of the streets by the Town. [Revised 10/10/06]

5:3.2 All security shall be held by the Town Treasurer in accordance with RSA 673:16. The Treasurer shall not draw upon or release any security until he/she is in receipt of a statement from the Board or its designee stating the purpose and amount to be drawn or released. The Selectmen shall enforce such securities by all appropriate legal and equitable remedies.

5:3.3 Upon completion of improvements and acceptance of the streets, an escrow will be established with the Town by the developer to cover the maintenance of the streets for a period of *2* years. The amount of the maintenance escrow required shall be equal to 2% of the approved plan amount of all the improvements or $10,000, whichever is greater. Maintenance of streets shall be defined as work required to correct construction defects that become apparent to the Town within the *2*-year period. [Added 10/10/06]

ARTICLE 6
DESIGN AND CONSTRUCTION STANDARDS

Section 278-6:1 Streets

6:1.1 The arrangement, character, extent, width, grade, and location of all streets shall conform to the Master Plan whenever possible and shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and in their appropriate relation to the proposed uses of the land to be served by such streets.

6:1.2 Where such is not shown in the Master Plan, the arrangement of streets in a subdivision shall either:
6:1.2.1 Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or
6:1.2.2 Conform to a plan for the neighborhood approved or adopted by the Board to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impracticable.

6:1.3 Service streets shall be so laid out that their use by through traffic will be discouraged.

6:1.4 Where a subdivision abuts or contains an existing or primary street, the Board may require marginal-access streets, reverse frontage with screen planting contained in a non-access reservation along the rear property line, deep lots with rear service alleys or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic.

6:1.5 Where a subdivision borders on or contains a railroad right-of-way or limited-access highway right-of-way, the Board may require a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of intervening land, as for park purposes in residential districts, or for commercial or industrial purposes in appropriate districts. Such distances shall also be determined with due regard for the requirements of approach grades and future grade separations.

6:1.6 Reserve strips controlling access to streets shall be prohibited except where their control is definitely placed in the town under conditions approved by the Board.

6:1.7 Street jogs with center-line offsets of less than 125-feet shall be prohibited.

6:1.8 A tangent at least 100-feet long shall be introduced between reverse curves on primary and collector streets.

6:1.9 Property lines at street intersections shall be rounded with a radius of 20-feet, or of a greater radius where the Board may deem it necessary. The Board may permit comparable cutoffs or chords in place of rounded corners.

6:1.10 Street and sidewalk widths shall not be less than as shown in the following table:

MINIMUM REQUIREMENTS FOR ROAD WIDTHS AND SIDEWALKS

Street Type	Average Daily Traffic[1]	Right-of-Way (Feet)	Paved Roadway (Feet)	Sidewalk Requirement[2] (feet/sides)
Apartment & multi-family areas	**No Minimum**	**50**	**30**	**5/Both**
Primary Street	**800-up**	**60**	**30**	**5/Both**
Major Collector	**401-799**	**50**	**30**	**5/Both**
Minor Collector-1	**201-400**	**50**	**24**	**5/Both**
Minor Collector-2	**1-200**	**50**	**24**	**5/One**
Service Streets-1	**0-50**	**50**	**24**	**None**
Service Streets-2	**51-100**	**50**	**24**	**5/One**

NOTES:
[1]*Average daily traffic shall be computed on the basis of each single-family residence generating ~~ten (~~10) vehicular trips per day.*
[2]*See Section 278-6:6, sidewalks.*

6:1.11 Road Design Cross-sections. [Added 5/25/93]
6:1.11.1 Road design cross-sections shall show, and the roadway shall be constructed to achieve, a minimum of 3-feet separation after construction between seasonal high ground water and the finish street grade at centerline.
6:1.11.2 Street design data shall include, but not be limited to, location and depths of various soil strata and seasonal high water table.
6:1.11.3 The use of under drains to achieve the required separation is permitted.

6:1.12 Dead-end streets, designed to be so permanently, shall be provided at the closed end with a turnaround having an outside roadway diameter of at least 118-feet and a street property line diameter of at least 150-feet with the placement of a circular landscaped island with a minimum radius of 35-feet at the center of the turnaround. Maintenance of these landscaped islands shall not be the responsibility of the Town. [Amended 9/28/04]

6:1.13 No street names shall be used which will duplicate or be confused with the names of existing streets. Street names shall be subject to the approval of the Board and the Town Fire Department.

6:1.14 Street grades, [wherever feasible], shall not exceed the following with due allowance for reasonable vertical curves:
6:1.14.1 Primary Street: 5% grade.
6:1.14.2 Collector Street: 8% grade.
6:1.14.3 Service Street: 8% grade.
6:1.14.4 Street grades shall conform as closely as possible to the original topography of the site.

6:1.15 No street grade shall be less than 1%. [Amended 9/28/04]

6:1.16 At intersections with major streets, the grade of the intersection shall not be more than 2% for a distance of 100-feet from the intersection. A street shall intersect another as nearly to a 90-degree angle as possible.

6:1.17 The developer shall provide for the installation of street lighting, at his expense, with 400-feet maximum spacing between lights. Arrangements shall be made with the power company by the developer. Upon acceptance of streets or power charges by the Board of Selectmen, via the normal petition process, the energy charge will be transferred to the Town. The lights should be similar in quality and characteristics to those used by the Town in like circumstances.

6:1.18 When a street is required by the Board solely for the purpose of providing access to property not located within the subdivision, the subdivider shall install the utilities and build the street to include base gravel, within and to the edge of the subdivision. Any developer of property located outside of the subdivision but served by such street shall be responsible for installing processed gravel, bituminous concrete paving and loam and seeding on the sides of such street at the time of development.

6:1.19 All elevations (existing and proposed) shall refer to USGS benchmarks by field surveys performed by a qualified surveyor or engineer. The USGS benchmark tied into shall be referenced on the plan set. Benchmark data for the subdivision shall be shown on each sheet of the plans. Benchmark data shall include the location, elevation (USGS datum), and description of each benchmark. [Added 7/23/87, amended 10/10/06]

6:1.20 Wherever, in the opinion of the Board, traffic generated by a development will adversely impact existing public streets or intersections, the applicant shall be responsible for the improvements to be made to such streets and intersections in an effort to mitigate such impacts.

6:1.21 Curbing shall be required in areas where the Town Engineer finds that it is required for control of drainage, protection of pedestrians and the pavement edge, and delineation of the traveled way. All granite curb shall conform to NHDOT "Standard Specifications for Road and Bridge Construction" (current edition), Section 609. For all subdivisions, the minimum curb requirement shall be bituminous cape cod berm, subject to the following exceptions:
[Amended 9/28/04 and 2/27/07]

6:1.21.1 Minimum curb requirement for commercial or industrial subdivisions shall be sloped granite curbing.

6:1.21.2 No curbing will be required in residential subdivisions if the entire subdivision road can be provided with a longitudinal slope of 4% or less. If portions of the road are provided with slopes greater than 4%, then the entire roadway shall be provided with curb or berm as stipulated herein.

6:1.21.3 Vertical granite curb shall be provided if a sidewalk is proposed without a grass strip separating the sidewalk from the traveled way.

6:1.21.4 If a subdivision road is proposed off an existing road that has existing curbing, or is anticipated to have curbing constructed by the Town in the future, the proposed subdivision road shall have the same type of curbing material as the existing road.

6:1.21.5 If a subdivision road is provided with granite curbing, all catch basins located at road low points shall be provided with open throat stones. Transition stones shall be utilized between sections of sloped and vertical granite curb.

6:1.21.6 In such cases where other Town regulations, ordinances, or overlay districts specify more stringent curbing than required herein, then the more stringent requirement shall govern.

6:1.22 Street signs of an approved design shall be erected by the developer and maintained prior to release of the Performance Bond.

6:1.23 No street shall be accepted by the Town until a deed for the dedicated right-of-way has been submitted.

6:1.24 All streets shall be designed to provide adequate sight distance in accordance with the recommendations of the American Association of State Highway and Transportation Officials (AASHTO) as set forth in A Policy of Geometric Design of Highways and Streets - 1984, as amended, a copy of which is available in the Planning Department. In no case shall less than 200-feet of sight distance be allowed.

6:1.25 All construction debris shall be disposed of in a proper manner which complies with all federal and State regulations. [Added 10/10/06]

Section 278-6:2 Easements

6:2.1 Easements across lots or centered on rear or side lot lines shall be provided for utilities where necessary, shall be at least 20-feet wide, and shall have satisfactory access to public ways.

6:2.2 Where a subdivision is traversed by a watercourse, drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially to the lines of such watercourses. [Amended 9/28/04]

Section 278-6:3 Blocks

6:3.1 The lengths, widths and shapes of blocks shall be determined with due regard to:
6:3.1.1 The provisions of adequate building sites suitable to the special needs of the type of use contemplated.
6:3.1.2 The zoning requirements as to the lot sizes and dimensions.
6:3.1.3 The need for convenient access, circulation, control and safety of street traffic.

6:3.2 Block length or cul-de-sac lengths shall not exceed 1200-feet, and shall not be less than 300-feet. Length shall be measured from the nearest collector street to the midpoint of the turn-around. However, in the event that a parcel cannot be developed to its highest and best use within the limitation of all other applicable ordinances and regulations, the applicant may request a waiver to the aforementioned length limitations. [Amended 8/18/87]

Section 278-6:4 Lots.

6:4.1 The lot size, width, depth, shape, and orientation and the minimum building setback lines shall be appropriate for the location of the subdivision and the type of development and use contemplated. Lots shall provide satisfactory sites for buildings and be properly related to topography. Lots should generally be square or rectangular in shape. Lots shall not contain irregular shapes or elongations solely to provide necessary square footage. [Amended 10/10/06]

6:4.2 Each lot shall contain a building envelope meeting all setback requirements which includes, at a minimum, a contiguous area of useable land (non-wetland, no more than 25% of envelope with slopes greater than 25%) equal to15,000 square feet in the Rural District and 7,500 square feet in other districts. The building envelope shall be configured such that a rectangle with minimum dimensions of 75 x100 feet, or a circle with a diameter of 100-feet can be contained within it. [Amended 10/10/06]

6:4.3 Lot dimensions shall conform to the requirements of the Zoning Ordinance as a minimum. However, the size of lots which will have individual sewage disposal systems will be determined from an analysis of the type of soil and the slope of the land as indicated by a High Intensity Soil Survey prepared by a certified soil scientist following the guidelines established in the publication "High Intensity Soil Maps for New Hampshire - Standards and Origins", SSSNNE Special publication #1, and in accordance with the general criteria below and the minimum lot size table (Attachment 278-3).

6:4.3.1 Where private individual sewage disposal systems are proposed, the subdivider shall perform soil tests to be submitted as part of the survey phase and also to be included with subsequent submissions of the preliminary layout and final plat. The subdivider shall arrange to perform such tests under the supervision of the New Hampshire Water Supply and Pollution Control Division, a certified soil scientist, and the Town Engineer, and at locations recommended by its agent, provided that the percolation test for each proposed lot is to be included.

6:4.3.2 Non-wetland soils used to fulfill the minimum lot size requirements shall be sufficient in size and configuration to accommodate all required utilities such as sewage disposal and water supply, including primary and ancillary leach field locations. In no case shall less than 22,500 square feet of contiguous non-wetland soils be allowed on lots serviced by on-site septic systems.[Amended 4/12/94]

6:4.4 Corner lots for residential use shall have sufficient width to permit appropriate building setback from and orientation to both streets.

6:4.5 The subdivision of land shall be such as to provide, by means of a public street, each lot with satisfactory access to a public street.

6:4.6 Double frontage and reverse frontage lots should be avoided except where essential to provide separation of residential development from traffic arteries or to overcome specific disadvantages of topography and orientation. A planting screen easement which will attain a minimum height of 5-feet, and across which there shall be no right of access, shall be provided along the line of lots abutting such a traffic artery or other disadvantageous use.

6:4.7 Side lots lines shall be substantially at right angles or radial to street lines (within 5 degrees) for at least 150-feet back from the front property line.

Section 278-6:5 Driveways

6:5.1 State laws governing driveways and other accesses to the highway are hereby made a requirement under this chapter.

6:5.2 Driveways shall not interfere with the free flowing drainage in the gutter line. Driveways shall be graded in accordance with the Town Engineer's typical driveway sections dated 4/12/94, as revised.

6:5.3 No driveway shall intersect the street at less than a 60 degree angle or have a grade in excess of 10%. Driveways must have unobstructed sight distance in each direction of at least 200-feet. The Board may require greater sight distances and driveway locations to be shown on the plan where hazardous conditions exist.

6:5.4 A permit for the construction of all driveways within the dedicated right of way shall be obtained from the Town Engineer. [Amended 4/12/94]

6:5.5 Each lot shall have a safe, independent, and direct access from a public street through its own frontage. The Board may require a driveway to be shared by two or more lots where warranted by traffic or adverse topographic conditions. All shared driveways shall be improved to facilitate two-way traffic flow and shall be established by easement. The easement shall address maintenance responsibilities.

Section 278-6:6 Sidewalks

6:6.1 Pedestrian walkways shall be required where deemed essential to provide circulation within a subdivision or access to schools, playgrounds, shopping centers, transportation and other community facilities.

6:6.2 Sidewalks shall be required as a function of street type and average daily traffic flow. The table in Section 6.1.10 shall be considered the minimum requirement for all new subdivisions, although the developing party may elect to exceed the required minimum with the approval of the Board. Sidewalks shall be constructed along the property line on a 6-inch gravel base with a minimum width of 5-feet and paved with a 2-inch single course of plant-mixed bituminous concrete. The provisions of this subsection shall not apply unless a proposed subdivision street is within 1,000-feet of an existing sidewalk or a recommended sidewalk in the current Town Sidewalk Master Plan.

6:6.3 Where no sidewalks are required, the developer may elect to install a sidewalk on either side of the street or deposit an amount of money equal to the cost of constructing such a sidewalk in the Sidewalk Trust Fund.

6:6.4 The sidewalk shall be constructed for the length of the roadway.

Section 278-6:7 Public Sites and Open Spaces

6:7.1 Where a proposed park, playground, school or other public use shown in the Master Plan is located in whole or in part in a subdivision, the Board may require the dedication or reservation of such area within the subdivision in those cases in which the Board deems such requirements to be reasonable.

6:7.2 Where deemed essential by the Board, upon consideration of the particular type and size of the subdivision, and especially in developments not anticipated in the Master Plan, the Board may require the dedication or reservation of such other areas or sites of a character, extent and location suitable to the needs created by such development for open space, schools, parks and other public facilities.

6:7.3 The subdivision shall, whenever possible, preserve in their natural condition important natural features. The Board may request an advisory opinion from other boards, committees, or other agencies as it may deem necessary in the determination of the value of the natural features and the boundaries of such natural systems. Such areas may include unique trees, water courses, or important wetland areas. Natural features that provide buffers between lots, or sections of a subdivision, shall wherever possible be preserved to enhance privacy and aesthetic value. [Added 8/18/87]

6:7.4 The Board may require a vegetative buffer to provide screening where non-residential developments abut a residential zone.

6:7.5 New subdivisions in the Rural District shall maintain a wooded buffer strip, when existing, of no less than 50-feet in width along all existing public roads. The buffer may be broken only for new driveways and roads. The Board may allow a combination of berms and new plantings to create the same affect as a wooded buffer strip.

6:7.6 When a proposed subdivision road traverses open fields or yards, plans shall include the planting of street trees at least 2-inches in diameter at breast height, and no more than 50-feet apart.

Section 278-6:8 Floodplain Development Regulations.
All subdivision proposals and proposals for other developments governed by these Regulations having lands identified as Special Flood Hazard Areas in the "Flood Insurance Study for Rockingham County, NH" dated May 17, 2005, together with the associated Flood Insurance Rate Maps and Flood Boundary and Floodway maps dated May 17, 2005 or as amended, shall meet the following requirements: [Amended 12/20/11]

6:8.1 Subdivision proposals and proposals for other developments shall be located and designed to assure that all public utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage and adequate drainage is provided to reduce exposure to flood hazards.

6:8.2 Base flood elevation (the level of the 100-year flood) data shall be provided for proposals greater than 50 lots or 5 acres, whichever is lesser, for that portion within the Special Flood Hazard Area.

6:8.3 In riverine situations, prior to the alteration or relocation of a watercourse, the applicant for such authorization shall notify New Hampshire Civil Defense Agency, Wetlands Bureau, and submit copies of such notification to the Board and the Federal Emergency Management Agency. Further, the applicant shall be required to submit copies of said notification to those adjacent communities as determined by the Board. Within the altered or relocated portion of the watercourse, the applicant shall submit to the Board certification provided by a registered professional engineer assuring that the flood carrying capacity of the watercourse has been maintained.

6:8.4 Where new water and sewer systems (including on-site systems) are proposed in a special flood hazard area~~s~~, the applicant shall provide the Board with information that the sanitary systems are designed to minimize or eliminate infiltration of flood waters into the systems, and discharges from the systems into flood waters and on-site water disposal systems are located to avoid impairment to them or contamination from them during flooding. Replacement water and sewer systems will require identical information to be reviewed and approved by the Planning Department. [Amended 12/20/11]

6:8.5 The Board shall review the proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. [Added 12/20/11]

Section 278-6:9 Erosion Control.

6:9.1 All construction and/or development activities shall incorporate design standards for erosion and sedimentation control which at a minimum reflect the recommendations of the publication Stormwater Management and Erosion and Sediment Control Handbook for Urban and Development Areas in New Hampshire prepared for the NH Department of Environmental Services by the Rockingham Country Conservation District in cooperation with the USDA Soil Conservation Service, August 1992 as amended, a copy of which is available for review in the Planning Department.

6:9.2 Whenever practical, natural vegetation shall be retained, protected or supplemented. The stripping of vegetation shall be done in a manner that minimizes soil erosion.

6:9.3 Appropriate erosion and sediment control measures shall be installed prior to soil disturbance.

6:9.4 The area of disturbance shall be kept to a minimum. Disturbed areas remaining idle for more than 30 days shall be stabilized.

6:9.5 Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.

6:9.6 Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or carried without erosion through the project area. Integrity of downstream drainage systems shall be maintained.

6:9.7 Priority should be given to preserving natural drainage systems including perennial and intermittent streams, wetlands, swales, and drainage ditches for conveyance of runoff leaving the project area.

6:9.8 All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 days unless conditions dictate otherwise.

Section 278-6:10 Details of Construction

6:10.1 All roadway construction shall be done in accordance with the New Hampshire Department of Transportation specifications**,** the standard cross section and any other standards as set by the Town Engineer. These are minimum specifications for residential subdivisions. Additional improvements may be required in large residential subdivisions or in commercial and industrial areas.

6:10.2 All stumps, soft clay, muck and peat shall be removed from the entire limits of the roadbed. Embankments shall be constructed in accordance with the specifications of the Town Engineer. No slope, cut, or fill will be greater than 4-horizontal to 1-vertical, unless allowed by the Town Engineer. The Town Engineer may approve slopes greater than 4-horizontal to 1-vertical in critical areas where wetlands would be impacted or excessive earthwork would be required. Slope stability and safety warrants shall be addressed to the Town Engineer's satisfaction. [Amended 2005 Town Meeting]

6:10.3 A base of 12-inches of bank-run gravel and 4-inches of Class A crushed gravel shall be constructed for a width of 1-foot greater than the paving width indicated in Section 6:1.10. The required width shall be paved with a 2½-inch base course and a 1½-inch finish course of machine-laid bituminous concrete, the gradation of which shall be approved by the Town Engineer. Planting strips shall be loamed and seeded for the entire balance of the area not used for street or sidewalk paving.

Section 278-6:11 Utilities

6:11.1 All utilities shall be placed underground, including electric and telephone. No underground utilities shall be constructed until the subgrade is completed and compacted. They shall, however, be completed before the gravel is placed.

6:11.2 Sewers shall be designed and constructed in accordance with the Salem Sewer Ordinance and specifications for sewer construction. A house service, tightly stoppered, will be provided for each lot and extended minimum of 3-feet into the lot. Sewer pipe shall be eight-inch minimum SDR 35 PVC sewer pipe meeting ASTM specification D3034 or 789 in the street and six-inch house laterals, located in accordance with the standard cross section. The design shall be approved by the Town Engineer and State Water Supply and Pollution Control Division. Construction shall be done in accordance with the standards set forth in the Town's Construction Specifications.

6:11.3 Water mains shall be constructed in accordance with Salem Water Department specifications. Water pipe shall be 8-inch class 52 cement-lined ductile iron as a minimum, located in accordance with the standard cross section. The Board may approve 6-inch class 52 cement lined ductile iron for dead end mains of 400-feet or less, provided no possibility of extension exists and pressure is great enough to provide acceptable fire flow. Hydrants shall be as specified in Salem Water Department specifications and located in accordance with Salem Fire Department recommendations. Each lot shall be provided with a water service connection from the main to a shut-off located at the edge of the right of way. Construction shall be done in accordance with the standards set forth in the Town's Construction Specifications. In subdivisions not served by municipal water service, the provision of on-site water shall conform to New Hampshire Water Supply and Pollution Control Division Criteria and be subject to approval by the Board. Community water systems must meet all state requirements plus all town standards. Community water systems are to be operated by experienced, accredited water companies with properly licensed personnel.

6:11.4 Gas mains shall be constructed in accordance with specifications set forth by the Town.

6:11.5 Drainage

6:11.5.1 An adequate surface storm water drainage system for the entire subdivision area shall be provided. Storm drainage shall be carried to existing water courses or connect to an existing storm drain. If a storm drain creates any additional flow, it may be required that the sub-divider shall obtain an easement from the adjacent property owners and shall hold the town harmless from any claims for damage resulting there from. All drainage within easements shall be through pipes and/or swales the entire length of said easements. Swales shall be properly protected (through rip-rap, seeding or sodding) to minimize erosion. The Board may approve the use of un-piped brooks within the drainage system. Access manholes shall be required at least every 300-feet and at changes in alignment.

6:11.5.2 The minimum requirement for a storm drainage capacity will be based on the Soil Cover Complex Method (e.g., SCS Runoff Curve Number Method) for 24-hour duration storm frequencies as follows:

1. residential street drainage: 10-year;
2. commercial/industrial streets and sites: 25-year;
3. road culverts: 50-year.

Detention basins, retention areas, and similar storage type structures shall use the storm frequencies and other minimum design criteria specified for those practices in the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire. The post-development peak rate of runoff must be equal to or less than the pre-development peak rate of runoff for the 2-year and 10-year storm. The use of existing downstream wetland(s) to fulfill the reduction of post-development to pre-development flow rate requirement shall be prohibited. Proposed detention or retention structures must be constructed within the boundaries of the proposed project. The pre- and post-development peak discharge from a 2-year storm event shall be used to analyze the stability of the receiving streams located within the project area and immediately downstream. For those streams located within the project area if it is found that the increased discharge or longer flow duration creates an unstable stream situation corrective measures shall be taken to remedy the problem. At no time shall a project create an unstable stream situation. Remedies may include detention to reduce post-development flows to pre-development conditions or stabilizing the receiving stream.
[Amended 2/27/07]

6:11.5.3 No surface flow will be allowed across streets. The maximum distance between drainage structures (catch basins, drop inlets, manholes, etc.) shall be 300-feet. Where curbing is proposed, the spacing between catch basins shall be based on inlet grate capacities, but shall not exceed 300-feet. If the storm drainage system to which the catch basin flows leads into an above ground or underground detention or retention basin, the effects of tail-water on the storm drain outfall shall be examined for the 50-year storm event to insure that the hydraulic grade line is at least 2 feet below the rim of all structures. The width of gutter flow shall not exceed one-half the proposed roadway travel lane width for at least 10-year storm event. Overland flow onto curbed

streets shall be kept to a minimum. Diversions, swales, surface inlets or other structures shall be employed to collect overland flow and direct it into the storm drain system or culverts. [Amended 2/27/07]

Section 278-6:12 Sequence of Operations; Inspections
Each of the following operations shall be completed and approved in writing by the Town Engineer, or his agent, before the next step, as listed below, is begun:

6:12.1 After clearing, stumping, muck removal and all work prior to subgrade construction.

6:12.2 After the subgrade has been constructed.

6:12.3 After the utilities and drainage have been constructed. (Note: Nothing will be covered until it has been inspected by the Town Engineer.)

6:12.4 After the application of the gravel, just prior to paving and loaming.

6:12.5 Final inspection.

Section 278-6:13 Inspection Process

6:13.1 Inspections Sections 6.12.1 and 6.12.2 shall be visual inspections by the Town Engineer.

6:13.2 For inspections Section 6.12.3, the sub divider or contractor shall have prepared by a competent surveyor or engineer an as-built plan showing the location, invert and top grades of all drainage structures, all sewer structures, all water mains and center-line street grades on 100-foot stations to the nearest one-tenth foot. These may be inked in red on a drainage and utilities plan and submitted to the Town Engineer for approval. All curb boxes and sewer house connections shall be located along with the depths of the services.

6:13.3 For inspections Section 6.12.4, the sub divider or contractor shall have prepared by a competent surveyor or engineer a plan showing the center-line and ditch grades at 50-foot intervals to the nearest one-hundredth foot. This information may be inked in red on a drainage and utilities plan and submitted to the Town Engineer for approval.

6:13.4 The final inspection, Section 6.12.5, shall be a visual inspection by the Town Engineer after all work is completed. The catch basin and drains shall be cleaned and all sand, silt and debris removed, all valve boxes adjusted to final street grade, the grass in the planting strip shall be well established and all portions of the work shall be to exact grade and line.

6:13.5 In order to confirm that various improvements delineated on approved plans are in fact constructed in accordance with those plans and/or with applicable codes and standards, the Board shall require the applicant to establish an appropriate escrow acceptable to the Board, which will be used by the Town to retain appropriate engineering or other consultants to confirm that construction is in conformance with the approved plans and/or applicable codes and standards. (The Town will establish a uniform fee schedule based on size and complexity of project.) [Added 9/28/04]

Section 278-6:14 Occupancy Permits [Added 12/11/84, revised 8/12/97]

No occupancy permit shall be granted for any structure located adjacent to an existing or proposed right-of-way until:

6:14.1 All utilities including streetlights and drainage structures are complete for the entire length of the lot frontage upon which the structure is located; and

6:14.2 All roadway construction has progressed to at least the point of the 2½-inch base course of bituminous concrete.

ARTICLE 7
WAIVERS AND MODIFICATIONS

Section 278-7:1 Waivers [Amended 12/20/11]
The Board may waive any portion of these Regulations if it finds, by majority vote, that:

7:1.1 Strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of these Regulations; or

7:1.2 Specific circumstances relative to the subdivision, or conditions of the land in such subdivision, indicate that the waiver will properly carry out the spirit and intent of these Regulations.

Section 278-7:2 Conditions [Amended 12/20/11]
In waiving or modifying these Regulations, the Board shall require such conditions as will, in its judgment, secure substantially the objectives of the standards or requirements so waived or modified. These conditions by the Board shall take the form of written findings based upon evidence presented to it in each specific case. Such waivers or modifications will be entertained and acted upon by the Board only at a properly noticed public hearing. All waivers granted by the Board shall be noted on the recordable plan and the basis for such waivers shall be recorded in the minutes of the Board.

ARTICLE 8
FEES

Section 278-8:1 Applications
A completed application shall be accompanied by fees to cover the costs of filing, public notification and abutter notification. The schedule of these costs is available in the Planning office.

Section 278-8:2 Notices
All costs of notices, whether mailed, posted, or published, shall be paid in advance by the Applicant. Failure to pay costs shall constitute valid grounds for the Board to terminate further consideration of the application and to disapprove the plat without a public hearing.

Section 278-8:3 Studies/Reviews
Pursuant to RSA 676:4,I(g) it shall be the responsibility of the Applicant, if the Board deems it necessary, to pay reasonable fees for special investigative studies, environmental assessments, legal review of documents, administrative expenses, and other matters which may be required to make an informed decision on a particular application.

ARTICLE 9
ADMINISTRATION, ENFORCEMENT AND PENALTIES

Section 278-9:1 Administration
These Regulations shall be administered by the Board, with the assistance of the Town's Building Inspector, Engineer, Board Agent and other such persons as the Board shall designate.

9:1.1 Compliance. Agents designated by the Board of Selectmen, Town Building Inspector, or Town Engineer shall be charged with the responsibility of inspecting improvements and the development of subdivisions for compliance with these Regulations.

9:1.2 Appeals. Any person aggrieved by any decision of the Board concerning a plat or subdivision may appeal said decision to the Board of Adjustment if denial was a matter of conflicts or interpretation of zoning, or to the Superior Court for all other reasons, in accordance with RSA 677:15.

Section 278-9:2 Enforcement
The enforcement of these Regulations is vested with the Selectmen. The Selectmen, in enforcing these Regulations, shall act upon complaints from the public or information from the Board, the Town's Building Inspector, Engineer, Board Agent or others; and shall, whenever practicable, take such action as is necessary to enforce compliance with these Regulations.

Section 278-9:3 Penalties
Any violation of these Regulations shall be subject to the penalties as provided for in RSA 676:16 and 676:17, as amended. Each day that the violation continues shall constitute a new violation. [Amended 5/23/93]

CHAPTER 278
ATTACHMENT 278-1
APPLICATION FOR SUBDIVISION OF LAND [Revised 8-23-2005]

File #_____

1. Name, mailing address & telephone/fax number of applicant:

_____

_____

2. Name, mailing address & telephone number of owner of record if other than applicant (Written permission from owner is required):

_____

_____

3. Name, mailing address, telephone/fax number of surveyor, and/or agent:

_____

_____

4. Location of Proposed Subdivision: _____

5. Tax Map _____, Lot _____

6. Name of Proposed Subdivision: _____

7. Number of lots and/or dwellings for which approval is sought: _____ lots; _____ dwellings

8. Type(s) of dwellings proposed in the subdivision (check one or more): _____ Single Family; _____ Duplex; _____ Multi-family

9. Abutters: Attach a separate sheet listing the Town of Salem Tax Map, Lot number, Name, and Mailing Address of all abutters, including those across a street, brook or stream. Names should be those of current owners as recorded in the Tax Records. Mailing labels are required for 10 or more abutters.

10. Attach completed checklist: (Incomplete plans will not be accepted.)

11. Attach six (6) copies of subdivision plan

12. Payment of all applicable subdivision fees:

Per lot	$100/lot for 1-2 lots	$_____
	$125/lot for 3-6 lots	_____
	$150/lot for 7+ lots	_____
	$200 minimum fee	_____
Lot line adjustment for 2 lots or less	$100	_____
Advertising/post costs	$25	_____
Abutter notification	$5/each	_____
Conceptual discussion	$200 plus advertising and notification	_____
Administrative and technical review costs		_____
	TOTAL	$_____

The applicant and/or owner or agent, certifies that this application is correctly completed with all required attachments.

_____ _____

(Applicant/Owner) (Date)

For Planning Board Use Only:	
Completed Application Filed	_____
Fees Paid	_____
Notices Mailed	_____
Meetings with staff	_____
Application Accepted/Rejected	_____
Public Hearing(s)	_____
Date Approved/Disapproved	_____
Follow-up Letter Sent	_____

CHAPTER 278
ATTACHMENT 278-2
SUBDIVISION PLAN CHECKLIST [Revised 5-24-12]

Format

____title block ____date ____scale ____engineer/surveyor/other stamps/signatures ____abutters names /addresses
____zoning dist ____zoning boundary ____lot & street numbers ____North arrow ____owner/applicant
____location plan ____permission from owner ____certif. of title

Topography and Environmental Features

____high intensity soils/wetlands ____streams, ponds, ledge ____wetland impact ____wetland mitigation
____min. wetland setbacks (40' pavement/bldg, 75' septic) ____dredge/fill permit ____Cons. Comm. approval
____local conditional use permit ____prime wetlands ____100' prime wetlands setback(no disturb.)
____conservation easements ____floodplain ____floodplain impact ____compensatory storage
____existing/ proposed elevs. ____USGS benchmark (location, elevation, description, on each sheet)
____ significant environmental features ____shoreland protection

Drainage & Utilities:

____existing/proposed water/sewer lines (location, types, sizes, profiles) ____sewer manholes, watergate valves
____daily water use/sewer flow ____design calcs ____hydrants ____pump stations/force mains ____utility easements
____septic systems ____4000 sf septic areas ____perc tests ____wells ____protective radius
____existing/proposed drainage pipes (types, sizes, slopes) ____plan/profile ____drainage easements ____drain calcs
____peak flow comparison (post runoff=pre runoff) ____downstream/abutter impact ____erosion control plan
____invert/rim elev ____catch basins (every 300') ____easements (20' min. width) ____swales/ditches
____direction of flow ____curbing ____typical details ____outside engineering review ____max. fill/cut
____est. high water table ____gas lines ____utility poles ____sidewalk ____future street system ____streetlights (400')
____composite tax map ____continuation of streets ____existing/proposed roadways ____street trees
____street names ____road profile ____cross sections ____ROW width ____street grade
____3' separation ____underdrains ____curbing ____intersection grade (2% for 100')/angle (90 deg)
____cul-de-sac length (300'min, 1200'max) ____cul-de-sac dimensions (150'ROW,118 'pave) ____cul-de-sac island
____av. daily traffic ____traffic study ____street signs ____sight distance (200'min) ____underground utilities

Lots

____lot sizes ____lot size calcs ____lot shapes/config ____square/rectangular. lots ____frontages ____satisfactory access
____lot line bearings/distances-F ____monuments ____lot closure calcs-F ____min. base. floor elevations
____rounded prop. lines at st.int. ____building setbacks ____building envelope sizes ____22,500 sf contig upland
____side lot lines perp. or radial to street ____driveway locations/grades (10% max)
____sight distance (200'min) ____intersection angle (60 deg.max) ____access easements

Other

____wooded buffer (Rural Dist) ____public land ____deed restrictions ____note on construction debris disposal
____veg. buffer for screening ____regional impact ____variances ____waivers
____6 copies of plans ____11" x 17" version of plans ____scrolling pdf version of plans

State/Federal Permits:

____subdivision – NHDES ____sewer extension – DES ____water line extension – DES ____septic - DES
____community well – DES ____dredge/fill - NHWB ____Army Corps of Engineers ____Alt. Terrain - DES
____driveway - NH DOT ___notify NHDES if within 500' of lake, stream, river

Town Staff Recommendations:

____Assessor's Office ____Building Division ____Engineering Department ____Fire Department
____Planning Division ____Police Department ____Public Works Department

The Planning Board may require other exhibits or data in order to adequately evaluate the proposed development.
This checklist is not intended as a substitute for, nor does it contain all the information and requirements in the Subdivision Regulations and other applicable Town codes, ordinances, and procedures.

CHAPTER 278
ATTACHMENT 278-3
MINIMUM LOT SIZE SOILS CONVERSION TABLE

[Amended 2/27/96]

WSPCD GROUP #	PREVIOUS MAP SYMBOL	HISS MAP #	SLOPE	SINGLE FAMILY MINIMUM LOT SIZE
1	12; 26	111; 112; 121; 122; 161; 211; 212	B (0-8%) C (8-15%) D (15-25%) E (25-35%)	35,500 SF. 42,000 SF. 51,500 SF. 68,000 SF.
2/3	42; 43	221; 222; 231; 261; 275;[6] 311; 312; 321; 322; 331; 361; 375; 411; 412	B C D E	44,500 SF. 56,000 SF. 68,000 SF. 86,000 SF.
3/4	4; 14; 313; 29; 129; 44; 46; 47; 66; 67; 446; 447; 532	213; 223; 233; 241; 243;[7] 251; 253; 263; 313; 31X; 323; 325; 32X; 3433; 33X; 34X; 35X; 341; 343; 351; 353; 363; 346X; 421; 422; 423; 42X; 431; 433; 43X; 441; 443; 44X; 451; 453; 45X; 461; 463; 46X; 475	B C D E	58,000 SF. 66,000 SF. 86,000 SF. 100,000 SF.
4	40; 41	11X; 12X; 16X; 21X;[8] 22X; 23X; 24X; 25X; 26X **4[7,8]	B C D E	44,500 SF. 56,000 SF. 68,000 SF. 86,000 SF. N/A
5	5; 6; 15; 95; 195; 197; 214; 295;	511; 512	B C D	44,500 SF. 56,000 SF. 68,000 SF. N/A
6	395, 495, 533; 546; 547; 549; 646; 647	5**	B C D	68,000 SF. 76,000 SF. 86,000 SF.
		6**		N/A

*- INSERT ANY NUMBER

NOTES:

1. Where more than one soil type is found on a lot, a soil carrying capacity of those soils occurring on the lot shall be used to determine the minimum lot size. Soil carrying capacity shall be computed by dividing the area of each soil type on a lot by the minimum required area for that soil type. Each lot shall have a soil carrying capacity of one or greater.

2. Areas designated with slopes greater than 25% may be utilized to fulfill the minimum lot size provided that a contiguous area of 20,000 sf. with less than 15% slope sufficient to accommodate all housing and required utilities is provided.

3. For duplex use, the minimum lot size shall be computed based on the total number of bedrooms as follows: 4 bedrooms, 1.3 times the lot size required for a single family dwelling; 5 bedrooms, 1.5 times; 6 bedrooms, 1.7 times.

4. Type B hydric soils (poorly drained) may be utilized to fulfill up to 25% of the minimum lot size provided that a 25,000 sf. contiguous non-wetland area sufficient to accommodate all housing and utilities is provided. For the purpose of this provision, the minimum lot size shall be determined by dividing the total lot area by the calculated soil carrying capacity. Type A hydric soils (very poorly drained) may not be utilized to fulfill minimum lot size.

5. In developments where municipal water is provided, required minimum lot sizes for each soil type shall be reduced by 20% of the minimum requirements. The soil-carrying capacity shall then be computed with the reduced minimum lot size requirements.

6. Map #'s 311, 312, 321, 322, 331, 361, 375, and 411, currently in WSPCD Group 3, are moved to Group 2.

7. Map #'s 314, 324, 334, 344, 354, 364, currently in WSPCD Group 2, are deleted.

8. Map #'s 114, 124, 164, 214, 224, 234, 244, 254, 264, currently in WSPCD Group 4, are deleted.

9. Where subdivisions are proposed under the Open Space Preservation Ordinance, the Planning Board may allow the total number of lots or homes to be determined by computing a soil carrying capacity for the site. Type B hydric soils (poorly drained) will be given credit up to 25% of the total number of lots. (Refer to examples in the Report of the Ad Hoc Committee for Soil-Based Lot Size. Volume II. April 1994.)

CHAPTER 278
ATTACHMENT 278-#4
TITLE BLOCK

Subdivision Plan For
Name of Applicant
Street Address
Salem, NH

Assessors Map _____ & Lot #_____

Prepared by (Name of Registered Engineer or Surveyor)
(Street and Number)
(Town, State, Zip Code)

Scale Date:

For Professional Seal	Owner's Name Street & Number Town, State, Zip Code	Salem Planning Board Approval
	Zoning Classification	

Town of Salem, NH
Wednesday, July 17, 2019

Chapter 417. Stormwater Management

[HISTORY: Adopted by the Town of Salem as indicated in article histories. Amendments noted where applicable.]

GENERAL REFERENCES
Sewer use — See Ch. **398**.

Utility demand and benefit assessments — See Ch. **455**.

Water — See Ch. **477**.

Article I. Connection to Storm Sewer System

[Adopted by the Board of Selectmen 1-29-1979 (Ch. 261, Art. I, of the 1995 Code)]

§ 417-1. Procedure for requests to connect.

Any request to connect sump drains or basement drains to the municipal storm drain system will be directed to the Town Engineer and the Public Works Director, who, after on-site inspection and meeting with the applicant, will submit a written recommendation to the Board of Selectmen setting forth the nature of the application, the reason for it, potential alternative solutions and their recommendation.

§ 417-2. Purpose.

Since drainage will undoubtedly be a matter of continuing concern, both to the Town and to local residents, this procedure will provide for the orderly disposition of requests as they occur, weighing the merits of each on an individual basis rather than trying to address the matter with an all-encompassing policy which, because of the individual nature of the problems presented, will necessitate constant exceptions and bending of the rules.

Town of Salem, New Hampshire
Engineering Division
Municipal Offices, 33 Geremonty Drive, Salem, New Hampshire 03079
tel: (603) 890-2030 fax: (603) 898-1223

Subdivision Construction Inspections Process:

Prior to any work or inspections a Subdivision Construction Permit must be obtained. To obtain this permit a preconstruction meeting with the owner/developer, design engineer and Town of Salem must occur. (Bonding may be required to obtain this permit)

A Street Opening Permit in most cases will be required in order to tie the proposed roadway into the existing roadway.

Each step of the inspection process must be inspected by a representative of the Town of Salem Engineering Department before the next step can begin. Each length of pipe and each utility structure must be inspected before it can be backfilled.

A minimum of forty eight hours (48 Hrs.) Advance notice is required to schedule an inspection.

Subdivision Construction Inspections:

1. **Erosion Control** - this inspection may involve the Planning Department
2. **ROW Layout** - approximate layout for clearing and grubbing purposes
3. **ROW Clearing& Grubbing**
4. **Detention Pond and Treatment Swales** - construction, stabilization and vegetation established.
5. **Utilities Construction** - all utilities to be constructed to proper location, line and grade. see inspection check-off sheets for individual Utilities Inspections Process. Certificates of Compliance for all materials must be submitted indicating the materials meet the required specifications.
6. **Subgrade**- brought to proper elevation, shaped and compacted.
7. **As-Built** - by competent surveyor or engineer of utilities and subgrade showing locations and inverts (nearest one-hundredth (foot 0.01) of all drainage including any Detention Ponds and Treatment Swales, sewer, water structures, edge of traveled way and center-line street grades (Fifty foot stations nearest one-tenth foot 0.01); must include curb boxes and sewer house connections with the depths of the services, must include verification of volume, slopes, outlet and overflow structures on detention ponds and profiles and sections of treatment swales, may be red line of appropriate sheets of the approved plan set such as utilities plan and profile. Any discrepancies from the approved plan need to be identified and corrected prior to placing gravels. For minor discrepancies revised calculations and a certification from the design engineer that the utilities as installed meet the design intent will be entertained, but must be approved prior to placing gravels. Certificates of Compliance for all materials must be submitted indicating the materials meet the required specifications.
8. **Bankrun Gravel** - brought to proper elevation, shaped and compacted. Certificates of Compliance must be submitted.
9. **Crushed Gravel** - brought to proper elevation, shaped and compacted. Certificates of Compliance must be submitted.
10. **Street Sign, Street Lights, Traffic Signs, Headwalls**. Street lights must be installed and operating prior to any Certificates of Occupancy being issued.
11. **As-Built** - by competent surveyor or engineer of centerline street, edge of traveled way, edge of shoulder, ditch line, ROW line, frames and covers, and gate boxes (if utility covers have been raised) (fifty foot stations nearest one-hundredth (foot 0.01). Must include street sign, traffic sign and traffic signal locations. Any discrepancies from the approved plan need to be identified and corrected prior to placing pavements. Verification of gravel volumes at each fifty foot station required.

12. **Pavement Binder Course** - Certificates of Compliance, Tonnage slips must be submitted.
13. **Curbing, raising frames, covers and gate boxes** (if not previously done)
14. **Pavement Finish Course** - Certificates of Compliance, Tonnage slips must be submitted.
15. **Loam and Seed, Bounds** - Certificates of Compliance must be submitted.
16. **Cleaning of catch basins, manholes, piping, culverts, gate boxes and grassed areas established.**
17. **As-Built** - by competent surveyor or engineer on mylar compilation of all as built grades
18. **Letter requesting Planning Board to forward the acceptance of street and street lights to the BOS.**
19. **Letter requesting acceptance of street and street lights by the BOS.**
20. **Attendance to BOS meeting to request acceptance of street and street lights by the BOS.**

APPENDIX H

Standard Operating Procedures





Weston & Sampson℠

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

OPERATIONS & MAINTENANCE PLAN

MS4 GENERAL PERMIT COMPLIANCE

JUNE 2020

TOWN OF
Salem
NEW HAMPSHIRE

O&M

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1.0 INTRODUCTION

1.1 Background

The Federal Water Pollution Control Act (WPCA), initially enacted in 1948, utilized 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. The United States Environmental Protection Agency (USEPA) National Urban Runoff Program (NURP) identified stormwater discharges as a significant source of water pollution.

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

The NPDES Phase II rule, which was promulgated in December 1999, addressed small municipal separate storm sewer systems (MS4s) serving a population of less than 100,000 people in urbanized areas. The final rule requires all MS4s located within urbanized areas to automatically comply with the Phase II Stormwater regulations. The USEPA designated the Town of Salem as a Phase II community that must comply with the NPDES regulations.

In the State of New Hampshire, the USEPA has retained primacy as the Phase II permitting authority. The permit was jointly issued by the USEPA and the New Hampshire Department of Environmental Services (NHDES) on May 1, 2003. The 2003 MS4 Permit expired on May 1, 2008, but was administratively continued for covered permittees until a new MS4 Permit was issued on January 18, 2017, and became effective on July 1, 2018.

The NPDES Phase II regulations require that the operator of a small MS4 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. These objectives are accomplished through the implementation of Best Management Practices (BMPs) for each of six minimum control measures. The six minimum control measures are as follows:

- Public Education and Outreach
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

1.2 Requirement for Standard Operating Procedures

As part of the minimum control measure for Pollution Prevention/Good Housekeeping for Municipal Operations, the draft permit requires MS4 communities to implement an Operations and Maintenance (O&M) program for permittee-owned activities to prevent or reduce pollutant runoff and protect water quality. The O&M Program is required to include the following elements:

1) Written O&M procedures for the following activities:
    a. Parks and open space
    b. Buildings and facilities where pollutants are exposed to runoff
    c. Vehicles and equipment
2) An inventory of all permittee-owned facilities.
3) A written program detailing the activities and procedures the permittee will implement so that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4, to include:
    a. Optimization of routine inspections, cleaning and maintenance of catch basins.
    b. Implementation of procedures for sweeping and/or cleaning streets, and permittee-owned parking lots.
    c. Proper storage and disposal of catch basin cleanings and street sweepings.
    d. Implementation of procedures for winter road maintenance.
    e. Implementation of inspection and maintenance frequencies and procedures for storm drain systems and stormwater treatment structures.
4) Written records for all maintenance activities, inspections and training.

To address these requirements, Standard Operating Procedures (SOPs) associated with these municipal activities and facilities were taken from the report entitled “Guidelines and Standard Operating Procedures for Illicit Discharge Detection and Elimination, and Pollution Prevention/Good Housekeeping.” This report was developed for use by Stormwater Phase II communities in New Hampshire and is available on the NHDES website. In addition to NHDES, members of the Seacoast Coalition also contributed to the development of the report. Where appropriate, SOPs were supplemented with fact sheets developed by NHDES to provide additional information. The Town can either implement the SOPs as written or modify the SOPs to reflect current Town practices if they are consistent with the requirements of the MS4 Permit. These O&M Procedures should be reviewed annually and updated as needed to ensure compliance with the 2017 MS4 Permit.

2.0 PARKS AND OPEN SPACE

2.1 Overview

Maintenance of parks and open space typically consists of mowing; the application of fertilizers, pesticides, and herbicides, as needed; irrigation; and solid waste management. Stormwater pollutants that can be generated from these activities include nutrients, pesticides, organics, sediment, trash and bacteria.

The Town of Salem has the following parks and Town land:

- Michele Memorial Park
- Morse Field
- Palmer Field
- DiBenedetto Field
- Hedgehog Park
- Town cemeteries
- Town-owned open space

2.2 Responsible Personnel

The following personnel are responsible for the implementation of these procedures at the parks and town-owned open space listed above.

Town Staff Member	Title
Roy E. Sorenson	Municipal Services Director
David Wholley	Director of Public Works

2.3 Lawn Maintenance Procedures and Landscaping Activities

The Salem Department of Public Works maintains all parks and mows their own lawns, apart from property used by various leagues within Town. Leagues are responsible for mowing lawns and maintaining Town property, and may hire others to perform the work. All lawns are cut and mulched except for the Town Common, which is bagged and hauled to the Shannon Road Transfer Station.

The Town utilizes organic fertilizers and does not employ the use of pesticides or herbicides. Use of fertilizer is minimized and applied in accordance with manufacturer's instructions. Fertilizer is stored inside the Equipment Storage Building located at the DPW Facility. Native and drought resistant landscaping materials are not currently utilized, although existing flower beds in many areas of the town are in the process of being converted to river stone.

Appendix A provides Standard Operating Procedures that the Town should follow for lawn maintenance and landscaping activities, including:

- B.4 Landscape Design and Management
- B.5 Storage and Disposal of Fertilizer and Pesticides
- B.6 Fertilizing and Turf Health Application
- B.7 Weed and Pest Control Application
- B.8 Mowing and Irrigation
- B.15 Alternative Products Use/Storage/Disposal

The following applicable fact sheets from the NHDES are also included in Appendix A for reference:

- SP-2: Proper Lawn Care in the Protected Shoreland – the Comprehensive Shoreland Protection Act
- SP-3: Integrated Pest Management: An Alternative to Pesticides

Other Standard Operating Procedures that are applicable to lawn maintenance and landscaping activities, but are discussed and referenced exclusively in other sections, include:

- SOPs for erosion and sediment control, which are included under Section 6.0, Construction Activities and Other Land Disturbance Activities.

2.4 Waste Management Procedures

The Town employs the use of a private subcontractor to empty trash receptacles at parks on a weekly basis. Trash receptacles are stored away during winter months. Signs regarding the proper disposal of pet waste are also posted at all parks.

Appendix B provides Standard Operating Procedures that the Town should follow for waste management, including:

- B.20 Garbage Storage

3.0 MUNICIPAL BUILDINGS AND FACILITIES

3.1 Overview

Municipal buildings and facilities that are owned and operated by the Town of Salem include: Town Hall, the Courthouse, the Police Station, Fire Stations (3), the DPW Facility, the Recreation Center, recreation related restrooms (2), the Library, the Transfer Station, the Senior Citizens Center, the Kennel, the Water Treatment Plant, various water tanks (3), various pump stations (15), and a number of other small miscellaneous buildings. There are also a few historical buildings in Town, including the Old Town Hall/Museum, Old Fire Stations (2), the Old Library, and an Old School House. Schools in Salem are not owned or operated by the Town's Board of Selectmen, but instead are owned and operated by the school district and are therefore not discussed herein. An inventory of all municipal facilities within the Town of Salem, which includes the property address and the year that the property was built, is included in Appendix C.

3.2 Use, Storage & Disposal of Petroleum Products & Other Stormwater Pollutants

The Town has certain restrictions in place regarding the use, storage and disposal of petroleum products to prevent the potential for polluted stormwater. Underwriters Laboratories approved, properly labeled, red metal safety cans are used for handling and use of flammable liquids such as gasoline, and in no quantities greater than five gallons. For quantities of one gallon or less, only the original container or Underwriter Laboratories approved, properly labeled, metal safety container is used. In any building, except one provided for their storage, no more than 25 gallons of flammable or combustible liquids can be stored outside of an approved storage cabinet. No more than 60 gallons of flammable or 120 gallons of combustible liquids can be stored in any one storage cabinet. Not more than three such cabinets may be in a single storage area. Quantities more than this must be in an inside storage room designed for storage of flammable combustible liquids. At the DPW, all hazardous materials are stored within non-flammable cabinets.

At the fueling station located at the DPW Facility, there is a 15,000 gallon underground compartmentalized tank, which stores both gasoline and diesel fuel. Spilling of fuel is avoided by remaining at the pump until the process is completed. Tanks are also not filled to allow the fuel room to expand. The fueling station is also covered.

For equipment used on site at the Transfer Station, fuel is stored in a large tank placed inside a concrete structure (which acts as secondary containment) that is open on one side, but has a roof. Drums, tanks and containers are regularly inspected for evidence of leaks or signs of corrosion. Both the Court House and Library have underground storage tanks for fuel storage. All transfers to and from tanks are observed by qualified personnel trained in spill response procedures.

Petroleum products are disposed of at the Salem DPW where household hazardous waste is collected. Crude oil is disposed of at the Shannon Road Landfill/Transfer Station and is stored in a tank placed inside a concrete structure with a roof, which provides secondary containment.

Appendix D provides Standard Operating Procedures that the Town should follow for the use, storage, and disposal of petroleum products utilized at municipal facilities, including:

- B.16 Petroleum and Chemical Disposal
- B.17 Petroleum and Chemical Handling
- B.18 Petroleum and Chemical Storage – Bulk
- B.19 Petroleum and Chemical Storage – Small Quantity

The following applicable fact sheets from the NHDES are also included in Appendix D for reference:

- WMD-HW-4: Waste Antifreeze: Management Requirements for Handlers and Transporters
- WMD-HW-5: Federal and State Regulations: Hazardous Materials and Waste
- WMD-HW-6: Contaminated Cloth Wipers for Laundering
- WMD-HW-30: Management of Fuel and Water Mixtures
- WMD-REM-3: Monthly Inspection Guidelines for Aboveground Petroleum Storage Tanks
- WMD-REM-5: Registration of Aboveground Petroleum Storage Tanks (ASTs)
- WMD-SW-29: Best Management Practices for 55-Gallon Drums

3.3 Employee Training

The Town has developed an employee training program, which provides information regarding stormwater pollution prevention and good housekeeping practices for municipal operations. Management practices included as part of the training program consist of: (1) minimizing and preventing exposure of vehicles and equipment to stormwater, (2) good housekeeping operations, (3) preventative maintenance, (4) spill prevention and response, (5) erosion and sediment control, (6) stormwater runoff management, (7) management of salt and piles containing salt and (8) maintenance of control measures. Training on the proper use, storage and disposal of petroleum products is also included. This training is conducted once annually.

The Town has Stormwater Pollution Prevention Plans (SWPPPs) in place for both the Transfer Station and the DPW Facility. Employees at each of these facilities complete training annually on the management practices identified in the SWPPP. The Fire Department also conducts hazardous materials training for various departments.

3.4 Spill Prevention and Response

In Salem, the Fire Department takes the lead in handling spills of hazardous materials at all municipal facilities. The Fire Department has a spill prevention and response plan that they

follow, but there are no written procedures in place. Under the Town's Hazardous Communication Policy, the Fire Department has the responsibility to respond to all significant hazardous material spills within the Town of Salem and contain or control the hazard. The Fire Department has an emergency response plan where they employ best management practices to control spills as close to the source as possible with a dike of absorbent materials and prevent spills from entering nearby waterways. Covers or dikes are utilized to protect stormwater structures and prevent spills from entering nearby receiving waters. For spills that impact water bodies, booms and pads are utilized to contain and clean up the spill. For spills that are greater than a few hundred gallons, a Regional Hazardous Materials Management Team is called in to assist the Fire Department. The Fire Department also teaches hazardous materials management training for DPW Staff. In the case of a spill, the Fire Department can be reached at one of two phone numbers:

- Non-emergency: 603-893-3789
- Emergency: 911

The DPW Facility has written spill prevention and response procedures, which are outlined in the DPW Safety Manual. Staff is aware of spill prevention and response procedures. At the DPW Facility, spill response equipment is kept within the Main Building at all potential spill areas and includes speedi-dri absorbent, booms, etc. All personnel are instructed in its location and use. All transfers to and from fuel oil and chemical tanks on site are observed by qualified personnel trained in spill response procedures. Hydraulic equipment is kept in good repair to prevent leaks. Equipment and vehicles are regularly inspected to avoid situations that may result in leaks, spills, and other releases of pollutants that could be conveyed with stormwater to receiving waters. The fueling area at the DPW Facility is also regularly inspected for signs of spills or leaks, which includes inspection of hoses and fittings. Above ground storage tanks are regularly inspected for signs of deterioration or leaks. This includes the two bulk liquid calcium tanks on site. Any spills are cleaned up immediately or are properly marked by barricades. Grease and oil spills are treated with an absorbent compound.

Appendix E provides Standard Operating Procedures that the Town should follow for spill prevention and response, including:

- B.12 Spill Cleanup
- B.15 Alternative Products Use/Storage/Disposal
- B.22 Floor Drains

The following applicable fact sheets from the NHDES are also included in Appendix E for reference:

- WD-DWGB-22-8: Holding Tanks for Floor Drains
- WD-DWGB-22-9: Protecting Groundwater from Floor Drains and Other Typical Discharges

- WMD-REM-13: Reporting Oil Spills, Hazardous Waste Spills and Groundwater Contamination

3.5 Management Procedures for Dumpsters & Other Waste Management Equipment

The Town employs the use of a private subcontractor to empty outside trash receptacles at municipal buildings and facilities on a weekly basis. Trash receptacles are closed when not in use.

Appendix B provides Standard Operating Procedures that the Town should follow for waste management, including:

- B.20 Garbage Storage

3.6 Other Applicable Good Housekeeping/Pollution Prevention Practices

Appendix F provides Standard Operating Procedures related to facility housekeeping, including:

- B.14 Spare Parts Storage
- B.21 General Facility Housekeeping

There are a few other Standard Operating Procedures that are applicable to municipal buildings and facilities, but are discussed and referenced exclusively in other sections. These include the following:

- SOPs for lawn maintenance and landscaping activities, which are included under Section 2.0, Parks and Open Space.
- SOPs for vehicle and equipment storage, washing, and fueling, which are discussed in Section 4.0, Municipal Vehicles and Equipment.
- SOPs for street sweeping, snow disposal, and the storage and application of deicing materials, which are discussed exclusively under Section 5.0, Infrastructure Operations and Maintenance.

4.0 MUNICIPAL VEHICLES AND EQUIPMENT

4.1 Overview

The Salem DPW is responsible for operating and maintaining most of the town's vehicles and equipment, except those under the responsibility of the Police and Fire Departments. The Police and Fire Departments maintain their own vehicles. Since schools in Salem are owned and operated by the school board, vehicles and equipment associated with the schools are not discussed herein. An inventory of all vehicles operated and maintained by the DPW is included in Appendix C.

4.2 Municipal Vehicle Storage, Maintenance and Repair

Vehicle maintenance facilities have the potential for spills that could contaminate stormwater. Potential stormwater pollutants associated with municipal vehicle storage, maintenance and repair activities include oil and grease, petroleum products, metals, organics and chlorides.

At municipal buildings and facilities, procedures are followed regarding the proper storage of municipal vehicles. Vehicles with fluid leaks are stored indoors or containment is provided until the necessary repairs can be made. Outdoor vehicle maintenance is avoided whenever possible.

At the DPW Facility, vehicle maintenance is performed within the DPW garage where all changing of fluids and other vehicle maintenance is completed. Additional practices that are currently employed at this facility include reducing the amount of solvents/chemicals used through reuse and/or recycling, using alternative products whenever possible, using spigots/ funnels to minimize drips/leaks, utilizing drip pans when changing fluids, and having absorbing compounds available for employee use in the event of a spill. In addition, vehicle maintenance areas are swept regularly to collect dirt, waste and debris.

Appendix G provides Standard Operating Procedures that the Town should follow for vehicle storage, maintenance and repair, including:

- B.9 Vehicle and Equipment Storage
- B.13 Parts Cleaning
- B.14 Spare Parts Storage
- B.15 Alternative Products Use/Storage/Disposal
- B.23 Painting

4.3 Municipal Vehicle and Equipment Fueling

The only municipal vehicle fueling station in Salem is a covered fueling station located at the DPW Facility. Potential stormwater pollutants associated with municipal vehicle and equipment fueling include oil and grease, petroleum products, trash, metals and organics. At the DPW

Facility, gas and diesel fuel are stored underground. The fueling area is inspected regularly for signs of spills or leaks. Hoses and fittings are also inspected regularly. Emergency spill response procedures are in place and spill kits are maintained on site per Section 2.4.

Additional operational Best Management Practices that the Town should follow include:

- Ensuring that fuel tanks and dispensers have the necessary permits with the appropriate state agencies.
- Training of employees on proper fueling techniques.
- Posting of proper fueling and clean-up instructions at all fueling areas.
- Providing periodic inspection of the automatic shutoff on the fuel nozzle to ensure proper function.

Appendix H provides Standard Operating Procedures that the Town should follow, including:

- B.11 Vehicle and Equipment Fueling

The following applicable fact sheets from the NHDES are also included in Appendix H for reference:

- WD-DWGB-22-6 Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment

4.4 Municipal Vehicle Washing

Potential stormwater pollutants associated with municipal vehicle washing include sediment, nutrients, chlorides, trash, metals, oil & grease, petroleum products and organics.

Designated municipal vehicle washdown areas are located at the DPW Facility and at the three fire stations located in town. Occasional washing of vehicles is also conducted at the police station. At the DPW Facility, vehicle washing takes place outdoors over a leaching basin designed and constructed for this purpose. Only biodegradable soap and water are utilized for vehicle washing. Washwater does not discharge to any waterways, wetlands, or the municipal storm drain system. The Town is also exploring other options for a new vehicle washing facility.

The Town has three fire stations. Station #1 is on Main Street (Central Fire), Station #2 is in North Salem on North Main Street, and Station #3 is in South Salem on Lawrence Road. Vehicles are washed in the bays at all three stations. At Fire Station #1, vehicle washwater discharges to an unknown location. At Fire Station #2, washwater discharges to a cistern, which is pumped out on an as needed basis. Washwater at Fire Station #3 discharges to an oil/water separator, which then discharges to the sanitary sewer.

For the most part, police vehicles are washed at the local car wash where the Town has an account. Police cars are occasionally washed at the station, and annually when the fleet is detailed. When this occurs, police cars are washed in the sally port, which has a non-functioning drain, or they are washed outside.

Appendix I provides Standard Operating Procedures that the Town should follow, including:

- B.10 Vehicle and Equipment Washing

The following applicable fact sheet from the NHDES is also included in Appendix I for reference:

- WD-DWGB-22-10: Wastewater Discharges from Vehicle Washing

4.5 Other Applicable Good Housekeeping/Pollution Prevention Practices

Appendix F provides Standard Operating Procedures related to facility housekeeping, including:

- B.21 General Facility Housekeeping

There are a few other Standard Operating Procedures that are applicable to Municipal Vehicles and Equipment, but are discussed and referenced exclusively in other sections. These include the following:

- SOPs for the use, storage and disposal of petroleum products; SOPs for spill prevention and response; and SOPs for waste management, which are included under Section 3.0, Municipal Buildings and Facilities.

- SOPs for street sweeping, which are discussed exclusively under Section 5.0, Infrastructure Operations and Maintenance.

4.6 Employee Training

Training on proper vehicle and equipment storage, maintenance, and washing is included in the annual stormwater pollution prevention and good housekeeping training mentioned in Section 3.3. A record of the date, attendees, and content of this training is kept and reported in the Town's MS4 Annual Report.

5.0 INFRASTRUCTURE OPERATIONS AND MAINTENANCE

5.1 Drainage System Overview

Salem has developed a comprehensive map of the Town's drainage system in GIS, which includes town-wide mapping of outfalls, culverts, drain manholes, catch basins, drainage pipes, swales, etc. The system consists of approximately 108 miles of drain pipe, 580 drain manholes 5,000 catch basins, and 750 outfalls. There are formal collection facilities within the more "urban" areas of town. There are also several subdivisions throughout town with their own collection and conveyance systems. Little to no formal collection system facilities exist on the more rural roadways in town. Salem has several outfalls that discharge directly to surface waters, while other portions of the town are served by leaching catch basins that collect stormwater and infiltrate it directly into the ground. Several structural BMPs have been installed throughout town. These include detention basins, grassed swales, infiltration/leaching basins, oil/water separators and stormceptors.

5.2 Catch Basin Cleaning

The Town cleans catch basins through an outside contractor. Frequency of catch basin cleaning is approximately once every three years. Catch basins at the DPW site are cleaned once per season.

To meet the requirements of the new MS4 Permit, the Town will need to optimize catch basin inspection, cleaning and maintenance such that the following conditions are met:

- No sump shall be more than 50 percent full for any catch basins serving catchments draining to impaired waters where the pollutant of concern is sedimentation/siltation, total nitrogen or total phosphorus. Water bodies in Salem where phosphorus is listed as the impairment or as contributing to the impairment are Captain Pond, Captain's Beach, Camp Otter Swim Area Beach, and Camp Y Wood Beach. A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.

- Inspection and maintenance of catch basins located near construction activities (roadway construction, residential, commercial, or industrial development or redevelopment) are prioritized. Catch basins in such areas must be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loading.

- For other catch basins, a schedule must be established such that the frequency of routine cleaning ensures that no catch basin at any time will be more than 50 percent full.

- If a catch basin sump is more than 50 percent full during two consecutive routine inspections/cleaning events, the Town must document the finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contributing sources.

- The Town shall maintain documentation, including metrics and other information, used to reach the determination that the established plan for cleaning and maintenance is optimal and meets the requirements of the MS4 Permit, including a log of catch basins cleaned and inspected.

- The Town must track and report the following information to EPA annually:

    - Total number of catch basins town-wide
    - Number of catch basins inspected
    - Number of catch basins cleaned
    - Volume or mass of material removed from each catch basin draining to impaired waters
    - Total volume or mass of material removed from all catch basins

All catch basin cleaning spoils are currently disposed of at the Shannon Road Transfer Station, where they are tested. Outfalls from this facility were previously monitored under the Multi-Sector General Permit for this facility, which is no longer required.

Appendix J provides Standard Operating Procedures that the Town should follow, including:

- B.1 Catch Basin Cleaning

The following applicable fact sheet from the NHDES is also included in Appendix J for reference:

- WMD-SW-32: Management of Street Wastes

Other Standard Operating Procedures that are applicable to catch basin cleaning, but are discussed and referenced exclusively in other sections, include:

- SOPs for erosion and sediment control, which are included under Section 6.0, Construction Activities and Other Land Disturbance Activities.

5.3 Street Sweeping

The Town of Salem maintains approximately 210 miles of roadway. Streets are currently swept once per year. Municipal parking lots are also swept once per year and areas surrounding municipal facilities are kept clean to reduce the runoff of pollutants. The DPW site is swept once per week to remove potential pollutants from exposed areas. The site is also swept following deicing operations.

The Town will optimize their existing procedures for sweeping and/or cleaning streets and municipally owned parking lots such that the following conditions are met:

- All streets, except for high-speed limited access highways, will be swept and/or cleaned a minimum of once per year in the spring following winter activities such as sanding.

- More frequent sweeping of targeted areas will be implemented as needed based on inspection, pollutant load, catch basin sediment accumulation, land use, impaired waters or other indicators as determined by the Town. As previously mentioned, the Town has water bodies where phosphorus is listed as the impairment or contributes to the impairment and street sweeping within catchments draining to these impaired waters will be increased to twice per year in the spring and fall.

- For uncurbed, limited access highways, the Town will either meet the minimum frequencies above, or develop and implement a targeted sweeping plan.

- The Town shall report to EPA annually the number of miles of roadway swept and the volume or mass of material removed.

All street sweepings are disposed of at the Shannon Road Transfer Station where they are tested. Outfalls from this facility were previously monitored under a Multi-Sector General Permit, which is no longer required.

Appendix J provides Standard Operating Procedures that the Town should follow including:

- B.24 Street Sweeping

The following applicable fact sheet from the NHDES is also included in Appendix J for reference:

- WMD-SW-32: Management of Street Wastes

5.4 Storm Drain System Inspection and Maintenance

The Town currently contracts out any television inspection of their storm drains. The Town cleans storm drains as needed to address problems. Storm drains at the DPW Facility are also inspected annually and cleaned on an as needed basis.

The Town has a culvert cleaning and maintenance program, but it has not been kept up to date due to funding issues. The Town is working to implement inspection and maintenance frequencies and procedures for the storm drain system as requested by the permit.

The Town will optimize their existing procedures for maintaining municipally owned stormwater BMPs such that all municipally owned stormwater BMPs are inspected on an annual basis at a

minimum. The table in Appendix K provides recommended maintenance procedures for a number of common long-term BMPs. This table was taken from the report entitled "Guidelines and Standard Operating Procedures for Illicit Discharge Detection and Elimination, and Pollution Prevention/Good Housekeeping."

Appendix K also provides Standard Operating Procedures that the Town should follow, including:

- B.2 Storm Drain System Repair and Maintenance

Other Standard Operating Procedures that are applicable to storm drain system repair and maintenance, but are discussed and referenced exclusively in other sections, include:

- SOPs for erosion and sediment control, which are included under Section 6.0, Construction Activities and Other Land Disturbance Activities.

5.5 Winter Road Maintenance

In 2007, the Town met with NHDES and EPA to discuss operations at the DPW Facility, which were contributing to or causing in-stream exceedances of water quality standards at Policy Brook. Stormwater discharges from the DPW Facility site were found to contain elevated levels of chloride that were contributing to chloride impairments at Policy Brook. As a result, the Town implemented several corrective measures and Best Management Practices to minimize chloride contact with both stormwater and groundwater. These Best Management Practices included:

- Cleaning and removing as much salt as possible from vehicles and equipment in the salt shed before washing;
- Using minimal water during cleaning and washing operations;
- Washing vehicles and equipment thoroughly so washwater is infiltrated in the designated washdown area and does not run off the site;
- Utilizing the sweeper on the trackless machine to clean up the salt/sand loading area and the area around the salt/sand pile to minimize the potential for salt to enter Policy Brook; and
- Keeping materials under cover as much as possible.

The Town's long-term goals included construction of a permanent structure to store and cover sand/salt materials, as well as construction of a vehicle washdown area to prevent washwater from running off site. Over the past several years, the Town has been trying to secure state approval and funding of their "Scope and Plan" for Salt Mitigation, which includes construction of the new sand/salt storage shed. To date, the Town has been unable to obtain outside funding for this project, but still hopes to complete this work with Town resources in the future.

The Town continues to focus on optimizing their winter operations at the DPW Facility and throughout Town through implementation of Best Management Practices focused on salt reduction and improved salt storage. The Town calibrates their salt spreaders on a regular

basis. Also, seven of the 15 salt trucks owned by the Town are currently equipped with ground control spreaders. Road salt at the DPW Facility is stored within an enclosed salt shed. There are storage bunkers located adjacent to the shed, where sand and sand/salt mix are stored. The Town tries to keep these storage bunkers covered. Mixing of salt and sand does occur outside on the pavement in front of these bunkers, but the Town sweeps this area regularly to prevent sand/salt from reaching the drainage system. The new MS4 Permit requires all piles containing salt to be enclosed or covered within two years of the permit effective date.

In addition to Policy Brook, Policy-Porcupine Brook and an unnamed tributary to Harris Brook are also impaired for chloride. Policy-Porcupine Brook has an approved TMDL, while Policy Brook and the unnamed tributary to Harris Brook do not yet have approved TMDLs. For catchments tributary to these water bodies, the Town is required to develop a Salt Reduction Plan under the new MS4 Permit. As part of the plan, the Town is required to complete the following for all municipally owned surfaces within the catchment areas:

- Track the amount of salt applied to all municipally owned and maintained surfaces, and report to EPA the amounts used using the UNH Technology Transfer Online Tool.
- Develop a comprehensive list of other planned activities for salt reduction on municipally owned and maintained surfaces. Suggested activities include:
    - Operational changes such as pre-wetting, pre-treating the salt stockpile, increasing plowing prior to de-icing, monitoring of road surface temperature, etc.
    - Implementation of new or modified equipment providing pre-wetting capability, better calibration rates, or other capability for minimizing salt use
    - Training for municipal staff and/or contractors engaged in winter maintenance activities
    - Adoption of guidelines for application rates for roads and parking lots
    - Regular calibration of spreading equipment
    - Designation of no-salt and/or low-salt zones
    - Public education regarding impacts of salt use, methods to reduce salt use on private property, modifications to driving behavior in winter weather, etc.
    - Measures to prevent exposure of salt stockpiles (if any) to precipitation and runoff
- Provide an estimate of total tonnage of salt reduction from each activity.
- Provide a schedule for plan implementation with full implementation by the end of the permit term.

The Division of Public Works published its 2018-2019 Winter Emergency Operation Plan in December 2018, which is a comprehensive Standard Operating Procedure for winter road maintenance. This document will be updated annually to account for changes in equipment and personnel. The 2018-2019 Winter Emergency Operation Plan and the following Standard Operating Procedures are provided in Appendix L:

- B.15 Alternative Products Use/Storage/Disposal
- B.25 Snow Disposal

- B.26 Deicing Material Storage
- B.27 Deicing Material Application

The following applicable fact sheets from the NHDES are also included in Appendix L for reference:

- WMB-3: Snow Disposal Guidelines
- WD-WMB-4: Road Salt and Water Quality
- WD-DWGB-22-30: Storage and Management of Deicing Materials

5.6 Employee Training and Reporting

Employees are trained on these procedures during the annual stormwater pollution prevention and good housekeeping training mentioned in Section 3.3. A record of the date, attendees, and content of this training is documented in the Town's MS4 Annual Report to EPA.

6.0 CONSTRUCTION ACTIVITIES AND OTHER LAND DISTURBANCES

6.1 Erosion and Sediment Control

There are certain good housekeeping practices that should be followed during construction and other land disturbance activities to prevent erosion and control sediment. Municipal activities where erosion may occur and sediment may be generated include infrastructure repair/replacement, cleaning of catch basins and drainage ditches, and dewatering operations. Disturbed areas should be minimized. Structural and non-structural controls shall be implemented to contain runoff from exposed areas, minimize erosion/sedimentation, and to protect catch basin inlets. Disturbed areas shall be stabilized as soon as possible.

Appendix M provides Standard Operating Procedures that the Town should follow:

- B.3 Erosion and Sediment Control

6.2 Other Applicable Good Housekeeping/Pollution Prevention Practices

There are a few other Standard Operating Procedures that are applicable to construction and land disturbance activities, but are discussed and referenced exclusively in other sections. These include the following:

- SOPs for lawn maintenance and landscaping activities, which are included under Section 2.0, Parks and Open Space.

- SOPs for catch basin cleaning and storm drain system inspection and maintenance, which are discussed under Section 5.0, Infrastructure Operations and Maintenance.

Appendix A

Standard Operating Procedures – Lawn Maintenance and Landscaping Activities

B.4 Landscape Design and Management
B.5 Storage and Disposal of Fertilizer and Pesticides
B.6 Fertilizing and Turf Health Application
B.7 Weed and Pest Control Application
B.8 Mowing and Irrigation
B.15 Alternative Products Use/Storage/Disposal

NHDES Environmental Fact Sheet SP-2 –
"Proper Lawn Care in the Protected Shoreland – the Comprehensive Shoreland Protection Act"

NHDES Environmental Fact Sheet SP-3 –
"Integrated Pest Management: An Alternative to Pesticides"

Standard Operating Procedure for:	
B.4 Landscape Design and Management	
Purpose of SOP:	To protect storm water by designing and managing landscaping in ways that minimize polluted runoff.

Always:

- Design landscaping by taking into account soil types, light, drainage, desired maintenance level and budget.
- Design for ease of maintenance.

Whenever Possible:

- Minimize erosion prone steep slopes by using techniques such as terracing.
- Use native plants that are pest resistant. Plant the right plant in the right area.
- Manage water runoff by rerouting gutters away from storm drains and maintaining groundcovers between developed areas and waterways (ditches, swales, shorelines).
- Reduce or eliminate mown lawn in unused areas.
- Convert excess lawn to meadow or forest.
- Establish set back distances from pavement, storm drains, and waterbodies. Allow these areas to serve as buffers with disease-resistant plants and minimal mowing.

Never:

- Never develop a landscape design without assessing its impact on water quality.
- Never cause unintended consequences such as
  - Planting large variety trees beneath overhead wires.
  - Blocking site distance at intersections
  - Planting trees with a high water demand (weeping willow) near sanitary sewer pipes and storm sewer pipes.

Related Guidance:	
	– USEPA National Menu of BMPs – CWP Urban Forestry Manual

Standard Operating Procedure for:	
B.5 Storage and Disposal of Fertilizer and Pesticides	
Purpose of SOP:	To protect storm water by properly storing and disposing of fertilizers and pesticides (herbicides and fungicides). Because storm drain water is not part of a wastewater treatment system, discharge of these chemicals flows untreated into ponds, lakes, rivers, streams, estuaries, and bays.

Always:

- Store fertilizers and pesticides in high, dry locations, according to manufacturer's specifications and applicable regulations.
- Clearly label secondary containers.
- Properly dispose of fertilizers and pesticides according to manufacturer's specifications and applicable regulations.
- Regularly inspect fertilizer and pesticide storage areas for leaks or spills.
- Clean up spills and leaks of pesticides and fertilizers to prevent the chemicals from reaching the storm drain system. (SOPs B.12 and B.16)

The EPA defines a pesticide as any substance intended for preventing, destroying, repelling, or mitigating any pest. Pest can include insects, animals, unwanted plants, fungi, bacteria, etc. The term applies to insecticides, herbicides, fungicides, etc.

Whenever Possible:

- Store pesticides in enclosed areas or in covered impervious containment, preferably in a locked cabinet.
- Order fertilizers and pesticides for delivery as close to time of use as possible to reduce amount stored at facility.
- Order only the amount needed to minimize excess or obsolete materials requiring storage and disposal.
- Use ALL herbicides or pesticides appropriately to minimize the amount of chemicals requiring disposal.
- Do an annual review of storage area and dispose of old, unusable or "obsolete" fertilizer or pesticides in accordance with applicable regulations (just before your local Household Hazardous Waste Day).

Never:

- Never dispose of fertilizers or pesticides in storm drains.
- Never leave unlabeled or unstable chemicals in uncontrolled locations.

Related Guidance:
- USEPA National Menu of BMPs

Standard Operating Procedure for:	
B.6 Fertilizing and Turf Health Application	
Purpose of SOP:	To protect storm water by properly storing, applying, and disposing of fertilizers and by maintaining turf health to reduce diseases.

Always:

- Store, use, and dispose of all fertilizers and contaminated wastes according to manufacturer's specifications and applicable regulations.
- Choose seed based on soil types, intended use of area, latest variety research, and/or assessment of past site performance.
- Check 5-day weather forecast to avoid fertilizing before heavy rain or during a drought.

Whenever Possible:

- Apply fertilizers based on a soil testing program, soil type, turf function, and assessment by qualified personnel (conservation commission or municipal arborist, etc.).
- Avoid fertilizing during a drought or when the soil is dry.
- Apply fertilizers during periods of maximum plant uptake (usually fall and spring).
- Avoid combined products such as weed and feed, which do not necessarily target specific problems at the appropriate time.
- Calibrate application equipment to ensure proper application.
- If phosphorus fertilizer is used when re-seeding, mix phosphorus into root-zone.
- Use alternative or environmentally friendly products (See SOP B.15.).
- Use natural compost and organic fertilizers instead of synthetic fertilizers.
- Aerate grassed areas to improve drainage and bring more oxygen to the soil.

Never:

- Never fertilize before a forecasted heavy rainfall.
- Never apply phosphorus fertilizer on bare soil.
- Never deposit fertilizer in the water, into storm drains, or onto impervious surfaces (streets and sidewalks).
- Never apply fertilizer to frozen ground.
- Never clean up spilled fertilizer by rinsing it with water.

Related Guidance:	
	- USEPA National Menu of BMPs

Standard Operating Procedure for:	
B.7 Weed and Pest Control Application	
Purpose of SOP:	To protect storm water by properly applying pesticides (herbicides and insecticides).

Always:

- Ensure that pesticides are only applied by personnel certified by NH Department of Agriculture to do so.
- Apply pesticides according to manufacturer's specifications, the New Hampshire Department of Agriculture Division of Pesticide Control, and any local requirements.
- Clean up any spilled chemicals (See SOPs B.12 and B.16.).
- Use pesticides only when necessary.
- Rinse equipment only when necessary and use rinse water to dilute next mix as long as application rates are not exceeded.
- Conform to Comprehensive Shoreland Protection Act setback distances from pavement, storm drains, and waterbodies; allow these areas to serve as buffers with disease-resistant plants and minimal mowing.

Whenever Possible:

- Use alternative methods to control weeds and pests such as Integrated Pest Management strategies, biorational insecticides (natural soaps and oils) or biological controls. (See SOP B.15.)
- Mix/load pesticides in an area where spills can be contained.
- Pull weeds by hand or mechanically.
- Spot treat affected areas only instead of entire location.
- Apply pest control at the life stage when the pest is most vulnerable.
- Choose the least toxic pesticides that still achieve results.
- Tolerate low levels of weeds.
- Allow grass to grow 2.5 to 3 inches high, reduce thatch build up and aerate soils.
- Reduce seed release of weeds by timing cutting at seed set.

Never:

- Never mix or prepare pesticides near storm drains.
- Never apply controlled pesticides unless certified to do so.
- Never apply pesticides before a heavy rainfall.
- Never discharge rinse water or excess chemicals to storm drain, sewer, or ground surface.

Related Guidance:
– USEPA National Menu of BMPs – NHDES Environmental Fact Sheet: • CO-15 Integrated Pest Management: Controlling Pests Safely • SP-6 Minimum Shoreland Protection Standards

Standard Operating Procedure for:	
B.8 Mowing and Irrigation	
Purpose of SOP:	To protect storm water by using proper mowing and watering techniques. Proper mowing and irrigation techniques will reduce organic matter and other pollutants from entering the storm drain system and waterbodies.

Always:

- Mow only as low as needed for the area's intended use.
- Vary mowing pattern to minimize ruts and promote even growth.
- Base irrigation amounts on monitoring for moisture content.
- Water at appropriate times (when no rain is forecasted and in cooler times of day).
- Manage leaves, clippings, and compost so that runoff does not enter storm drain system or waterbodies.
- Conform to Shoreland Zoning restrictions on mowing in buffers of waterbodies.

Whenever Possible:

- Allow areas to go to meadow or field and mow once or twice per year rather than every week.
- Keep mower blades sharpened to avoid damaging grass leaf tissue.
- Mow when the grass is dry to prevent spread of turf diseases.
- Sweep lawn clippings and debris instead of using water.
- Mulch grass clippings using a mulching mower.
- Fill gas tanks in a controlled location.

Never:

- Never irrigate based on timers/schedules instead of monitoring for moisture content.
- Never dump gas, wastes or contaminated water down storm drains.
- Never refuel or change the mower oil near storm drains.
- Never leave mower running in one location (to prevent burning and over-cutting of vegetation).

Related Guidance:	
	- USEPA National Menu of BMPs

Standard Operating Procedure for:	
B.15 Alternative Products Use/Storage/Disposal	
Purpose of SOP:	To protect storm water by using alternative products that are more environmentally friendly.

Always:

- Ask product suppliers, peers, or regulatory agents if there is a more environmentally friendly alternative, when ordering any product.

Whenever Possible:

- Use alternative products when deemed appropriate:
  - Instead of solvent-based parts cleaners use citrus–based cleaners or steam/pressure wash to an oil/water separator/holding tank.
  - Instead of herbicides use bark mulch.
  - Instead of fertilizer use compost or manure.
  - Instead of pesticides plant marigolds, onion, or garlic as deterrents; release or attract beneficial insects.
  - Instead of synthetic adsorbents, use corncob or cellulose products for petroleum spills that can be burned for energy recovery.
- Train employees on the benefits of using alternative products.
- Minimize waste by purchasing recyclable products that have minimal packaging.
- Use less harmful deicers such as calcium magnesium acetate, potassium acetate, or organic deicers such as Magic Salt™.
- Use a "pre-mix" of 4 to 1 sodium chloride and calcium chloride, which is the most cost-effective alternative to straight salt.
- Substitute synthetic fertilizers with natural compost and organic fertilizers to improve soil pH, texture and fertility, and cause less leaching to groundwater.
  - Use no-phosphorus lawn fertilizer (phosphorus is rarely lacking in New Hampshire soils).
  - Use natural or certified organic fertilizers with low phosphorus levels (8-2-4, 6-2-4, 9-1-1, 6-1-1).
- Use slow-release nitrogen fertilizers.
- Reduce or eliminate mown lawn in areas that are not actively used.
- Consider converting unused turf to meadow or forest.

Related Guidance:	
	– USEPA National Menu of BMPs – NHPPP Pitstop Manual

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

SP-2 1997

Proper Lawn Care In the Protected Shoreland the Comprehensive Shoreland Protection Act

Helping the Environment Starts in Your Own Backyard

How you care for your lawn can have a dramatic impact on the ecosystem in and around your waterbody, not to mention the demands upon your time and resources.

The following describes both the restrictions on fertilizer use imposed by the New Hampshire Comprehensive Shoreland Protection Act (CSPA), and many tips on how to maintain a healthy and yet low impact (and low maintenance) lawn.

Fertilizers and The Comprehensive Shoreland Protection Act

Fertilizers can contaminate surface and groundwater. The phosphorus and nitrogen in fertilizers are nutrients that not only promote grass growth but also promote excessive growth of algae in surface waters. This reduces clarity of the water and ultimately threatens survival of fish and other aquatic life (see **WD-BB-3 *Lake Eutrophication***). Since phosphorus is the nutrient which can most adversely effect New Hampshire's waterbodies and coastal areas, proper use and application of fertilizer is extremely important.

The Act prohibits the use of all fertilizers except limestone within 25 feet of the reference line of public waters . Twenty-five feet beyond the reference line, low phosphate, slow release nitrogen fertilizer or limestone may be used (see fact sheet **WD-SP-4** for *Shorelands Under the Jurisdiction of the Comprehensive Shoreland Protection Act*).

Common Lawn Care Mistakes

Water: Grass does need water, but improper watering can cause problems for a lawn such as diseases and shallow root structure. A shallow root structure may not be able to hold on to the soil during runoff and is liable to cause an ongoing erosion problem. A healthy lawn requires one good soaking of up to an inch of water per week.

Fertilizer: Quick release fertilizers and pesticides can produce a green lawn in a short time. They may also, however, disturb the natural chemical and biological balance of the lawn. The Act only allows for the use of slow release, low phosphate fertilizer within the protected shoreland.

Mowing: One of the most neglected components of an otherwise healthy lawn is the lawn mower. If the tips of the grass have a jagged or uneven tip after mowing, the lawn mower blade is dull and must be sharpened.

Thatch: Grass clippings do not contribute to thatch accumulation. Thatch is a layer of undecomposed stems and roots that accumulates near the soil surface. According to a study by the University of Michigan, the rate at which thatch accumulates is determined by the type and vigor of the grass in the lawn. A thatch-prone bluegrass sod given abundant water and fertilizer, forms thatch more rapidly than other grasses given less care. Cutting back on fertilizer and watering less frequently may reduce thatch.

Proper Lawn Care in Protected Shoreland

1. Aerate the soil. Soil can naturally contain clay or be packed down. In these circumstances it is difficult for water and air to penetrate the soil. The best method of aerating utilizes a machine that removes small cylindrical cores of soil from the lawn allowing it to receive proper amounts of water and nutrients.

2. Test the pH of your soil. Plants are happiest and grow the best with a soil pH between 5 and 7. You can have your soil tested by UNH soils lab for a small fee. They will explain how to properly balance your soil pH.

3. Leave the grass clippings on the lawn. This is the best and most efficient way to fertilize your lawn. It will cut your mowing time by an average of 38 percent and reduces the amount of solid waste in landfills. It also naturally adds nutrients like nitrogen and potassium.

4. A single application of slow release, low phosphate fertilizer at the beginning of fall is adequate in most cases. Fertilizer may be applied no closer than 25 feet from the reference line.

5. Maintain your grass at 2 inches or more of height. The longer the grass, the deeper the roots. Deeper roots enable the grass to tap into a large volume of nutrients and moisture. Also the longer grass will shade and discourage weeds and helps a lawn survive heat and drought. Never cut more than one third of the height of the grass.

6. Keep a healthy well distributed stand of trees to keep grass from the full heat of the sun for too long. Seed mixes are available that are tolerant of lower light conditions. A shaded lawn requires less watering because grass is shielded from the sun's heat and will resist drying during the summer.

Alternative: Use ground cover as an alternative to grass. Ground cover can be hardier than grass, usually has a longer root system, and often stays green without the use of fertilizers.

ENVIRONMENTAL
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SP-3 1997

Integrated Pest Management: An Alternative to Pesticides

How safe are Pesticides?

For years, pest control has meant the use of chemicals. Used properly, pesticides can be a safe and effective means of pest control. Misuse of chemical pesticides, however, can harm wildlife, contaminate water and soil and harm people. Proper use of pesticides used in conjunction with other methods of pest control can minimize these risks.

Integrated Pest Management—The Common Sense Approach

To help prevent over population of lawn and garden pests, consider using *Integrated Pest Management* (IPM). IPM is a common sense pest control plan that has been practiced for centuries.

The purpose of IPM is to get the best long-term results with the least disruption of the environment. IPM involves the carefully managed use of three different pest control tactics: biological, cultural, and chemical. Bio-logical control means using natural enemies of the pest to control their population, such as lady bugs to control aphids. Cultural or horticultural control involves methods of making conditions less favorable for pests, such as mowing your grass high to shade out weeds or using different turf seed mixes to resist a variety of lawn pests (See Fact Sheet **WD-SP-2** for proper lawn care techniques).

IPM is regarded as a highly effective approach to pest control that minimizes the use of pesticides. The use IPM requires a sophisticated understanding of the ecosystem of turf and the available pest control tactics. Detailed information regarding IPM is available from University of New Hampshire Cooperative Extension Office, 59 College Road, Taylor Hall, University of New Hampshire, Durham, NH 03824 or (603) 862-1520.

Pesticides

Chemical pesticides can be used effectively and safely but their misuse can harm beneficial organisms as well as contaminating ground and surface waters. The New Hampshire Pesticide Control Board rules prohibits the use of pesticides within 25 feet of any surface water or in any manner the would result in the presence of pesticides within 25 feet of the reference line in protected shorelands (Pes 1001.02). Chemical pesticides should only be applied the minimum amount necessary and only according to the manufacturers guidelines.

Appendix B

Standard Operating Procedures – Waste Management

B.20 Garbage Storage

Standard Operating Procedure for:	
B.20 Garbage Storage	
Purpose of SOP:	To protect storm water from contamination by properly storing garbage. Garbage and leachate can be transported by storm water and enter the storm drain system and receiving waterbodies.

Always:

- Cover rubbish bins to keep rubbish and leachate in and wind and rain out.

Whenever Possible:

- Store garbage containers beneath a covered structure or inside to prevent contact with storm water.
- Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.
- Locate dumpsters on a flat, concrete surface that does not slope or drain directly into the storm drain system.
- Locate dumpsters and trash cans in convenient, easily observable areas.
- Provide properly-labeled recycling bins to reduce the amount of garbage disposed.
- Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.
- Keep bins free of improperly discarded trash.
- Provide training to employees to prevent improper disposal of general trash.
- Minimize waste by purchasing recyclable products that have minimal packaging.
- Request/use dumpsters without drain holes.

Never:

- Never place hazardous wastes in a dumpster or trash bin.
- Never place gasoline-contaminated wastes in a rubbish bin (but small quantities of adsorbents from virgin oil spills are acceptable).
- Never place oil-contaminated materials that release free draining oil into a rubbish bin.

Related Guidance:	
	– USEPA National Menu of BMPs

Appendix C

Inventory of Municipal Facilities

Public Works Vehicle Inventory

Town of Salem, NH		
Inventory of Municipally Owned Buildings and Facilities		
Property Description	**Location**	**Responsible Party**
Brookdale Rd Pump Station	15 BROOKDALE RD	Utilities Department- 603-890-2171
Butler Rd Pump Station	23 BUTLER ST	Utilities Department- 603-890-2171
Cemetery Garage	327 MAIN ST	Parks Department- 603-890-2150
Central Fire Station	150 MAIN ST	Fire Department- 603-890-2200
Commercial Drive Pump Station	2 COMMERCIAL DR	Utilities Department- 603-890-2171
Communications Building/ Lawrence Rd Water Tower	21 CROSS ST	Utilities Department- 603-890-2171
Copper Beech Pump Station	14 COPPER BEECH RD	Utilities Department- 603-890-2171
Depot Train Station	81 MAIN ST	
DPW Facility (Office/ Garage)	21 CROSS ST	Department of Public Works- 603-890-2150
Fire Station #2	170 LAWRENCE RD	Fire Department- 603-890-2200
Fire Station #4	279 N MAIN ST	Fire Department- 603-890-2200
Freedom Drive Pump Station	1 FREEDOM DR	Utilities Department- 603-890-2171
Haigh Ave Pump Station	37 HAIGH AVE	Utilities Department- 603-890-2171
Hedgehog Park	53 LOWELL RD	Parks Department- 603-890-2150
Howard Street Water Tank/ Communications Shelter	20 HOWARD ST	Utilities Department- 603-890-2171
Keewaydin Dr Pump Station	12 KEEWAYDIN DR	Utilities Department- 603-890-2171
Kennel	346 S BROADWAY	
Lawrence Road Water Tank	82 LAWRENCE RD	Utilities Department- 603-890-2171
Library	234 MAIN ST	Library Department- 603-898-7064
Main St Pump Station	403 MAIN ST	Utilities Department- 603-890-2171
Manor Parkway Pump Station	9 MANOR PKWY	Utilities Department- 603-890-2171
Old Fire Station	304 MAIN ST	Fire Department- 603-890-2200
Old North Fire Station #3	115 E BROADWAY	Fire Department- 603-890-2200
Old School House	6 SCHOOL ST	
Old Town Hall/ Old Library/ Salem Common	310 MAIN ST	
Parks Building	53 OLD ROCKINGHAM RD	Parks Department- 603-890-2150
Police Station and Shed	9 VETERAN MEMORIAL PKY	Police Department- 603-893-1911
Recreation Center	111 E BROADWAY	Recreation Department- 603-890-2003
South Policy Pump Station	129 S POLICY ST	Utilities Department- 603-890-2171
Stiles Road Sewer Pump Station	STILES RD	Utilities Department- 603-890-2171
Town Hall/ Courthouse	33 GEREMONTY DR	

Town of Salem, NH		
Inventory of Municipally Owned Buildings and Facilities		
Property Description	**Location**	**Responsible Party**
Transfer Station	101 SHANNON RD	Department of Public Works- 603-890-2150
Utility Building	1A NIRVANA DR	Utilities Department- 603-890-2171
Twinbrook Ave Pump Station	15 TWINBROOK AVE	Utilities Department- 603-890-2171
Water Treatment Plant/ Pump Station	161 N POLICY ST	Utilities Department- 603-890-2171
Recreation Restroom Building	119 MILLVILLE CIR	
Submersible Pump Station	41 SALEM ST	Utilities Department- 603-890-2171
Wheeler Dam Pump Station	22 WHEELER DAM RD	Utilities Department- 603-890-2171

VEHICLE INVENTORY - PUBLIC WORKS DEPARTMENT

Dept	Vehicle ID	Yr/Make/Model	Vin#	Purchase Date	Replace. Date	Replacement Cost
H/s&s	A43	1996 Ing-Rand Compressor	265260UEG327	9/1/1996	**9/1/2011**	$20,000
H/s&s	A44	1985 Stone Cement Mixer	2151169	4/1/1985	*****	XXXXXX
U	A58	1989 Ing-Rand Compressor	190979U89U89329	6/1/1989	**1/1/2004**	$20,000
U	BH31	2017 Case 590	JJGN59SNPHC746245	1/1/2018	1/1/2033	$100,000
H/s&s	BH38	2016 Case 590	NGC736249	1/1/2017	1/1/2032	$100,000
H/p&p	***BH56***	***JCB 212***	***SLP212AS3E0939575***	***1/1/2004***	***1/1/2019***	***$100,000***
H/s&s	C49	1993 Brush Bandit Chipper	4206	6/1/1993	**1/1/2008**	$50,000
H/s&s	CB20	Ford F800 CB Cleaner	3FEXF8015XMA07593	1998	***1/1/2008***	$150,000
H/s&s	D12	2019 International 7300 dump	1HTWDTAR4KH358996	9/1/2018	9/1/2028	$195,000
H/s&s	***D13***	***2007 International 7300 dump***	***1HTWAAARX8J641644***	***6/1/2007***	***6/1/2017***	***$195,000***
H/s&s	D14	2018 International 7300 dump	3HAWDSTR2JL653742	9/1/2017	9/1/2027	$195,000
H/s&s	S15	2015 International 7400 salter	1HTWDAAR8FH637930	9/1/2014	9/1/2024	$195,000
H/s&s	S16	2015 International 7400 salter	1HTWDAARXFH637931	9/1/2014	9/1/2024	$195,000
H/s&s	***D17***	***2007 International 7300 dump***	***1HTWAAAR88J641643***	***6/1/2007***	***6/1/2017***	***$195,000***
H/s&s	***D18***	***2008 International 7300 dump***	***1HTWAAAR79JO86573***	***6/1/2008***	***6/1/2018***	***$195,000***
H/s&s	***D19***	***2010 International 7300 dump***	***1HTWAAAR2AJ234598***	***5/1/2009***	***5/1/2019***	***$195,000***
H/s&s	D21	2017 International 7300 dump	3HAWDSTR9HL501984	1/1/2017	1/1/2027	$195,000
H/s&s	***S22***	***2010 International 7300 salter***	***1HTWAAAR5AJ234594***	***5/1/2009***	***5/1/2019***	***$195,000***
H/s&s	***S23***	***2010 International 7300 salter***	***1HTWAAAR7AJ234595***	***5/1/2009***	***5/1/2019***	***$195,000***
H/s&s	***S24***	***2010 International 7300 salter***	***1HTWAAAR9AJ234596***	***5/1/2009***	***5/1/2019***	***$195,000***
H/s&s	***S25***	***2010 International 7300 salter***	***1HTWAAAR0AJ234597***	***5/1/2009***	***5/1/2019***	***$195,000***
H/s&s	D26 (Retired)	1998 Ford N80 dump/salter	1FDYN80F9WVA31360	12/4/1997	*****	XXXXXXX
H/s&s	S27 (Retired)	2007 Freighliner M2 salter	1FVAC3DC97HY02466	1/1/2007	*****	XXXXXXX
H/s&s	S28 (Retired)	2002 Freightliner FL80 salter	1FVABXAK13HK73143	7/1/2002	*****	XXXXXXX
H/s&s	D82	2016 Ford F450 Dump - 1 ton	1FDUF4HY9GEB08269	2/1/2016	2/1/2026	$55,000
H/s&s	D83	2017 Ford F450 Dump - 1 ton	1FDUF4HYXHDA00802	1/1/2017	1/1/2027	$55,000
H/s&s	D84	2011 Ford F450 Dump - 1 ton	1FDUF4HYXBEA5794	6/1/2010	6/1/2020	$55,000
H/p&p	***D85***	***2009 Ford F450 Dump - 1 ton***	***1FDXF47FOXER37155***	***6/1/2009***	***6/1/2019***	***$55,000***
H/s&s	D86	2012 Ford F450 Dump - 1 ton	1FDUF4HYCEA13435	10/1/2011	10/1/2021	$55,000
H/s&s	F36 (Retired)	2006 Freightliner M2	1FVAC3DCX6HW07300	9/14/2005	*****	XXXXXXX
H/s&s	G40	1987 CAT 1406 Grader	72V10640	9/1/1987	***1/1/2003***	$275,000
H/s&s	L29	1997 CAT 938-F Loader	6FN00548	6/1/1997	**1/1/2012**	$185,000
H/Landfill	L30	2018 Komatsu WA320-6 Ldr.	KMTWA135EHNA38293	11/1/2017	11/1/2032	$185,000
H/s&s	L32	2011 Komatsu WA320-6 Ldr.	A35154	7/1/2011	7/1/2026	$185,000
H/s&s	***L33***	***1989 JD Loader***	***DW544EB523900***	***9/1/1989***	***1/1/2004***	***$185,000***

VEHICLE INVENTORY - PUBLIC WORKS DEPARTMENT

Dept	Vehicle ID	Yr/Make/Model	Vin#	Purchase Date	Replace. Date	Replacement Cost
H/p&p	LV2	2008 Billy Goat Vac	102708425	11/5/2008	*****	$7,500
H/p&p	M49	1989 JD Front Mower	M00420X59592	4/1/1989	*****	XXXXXX
H/s&s	***M50***	***2002 Walker Diesel Mower***	***02-58058***	***5/1/2002***	***1/1/2012***	***$12,500***
H/s&s	***M51***	***2002 Walker Gas Mower***	***02-57587***	***5/1/2002***	***1/1/2012***	***$8,200***
H/p&p	M52	2005 Exmark Mower 48" Gas	528663	5/5/2005	1/1/2015	$8,200
H/p&p	M53	2006 Sentar Mower 36"	32263	4/19/2006	1/1/2016	$8,200
H/p&p	M54	2007 Sentar Mower 36"	35107	4/1/2007	4/1/2017	$8,200
H/p&p	M55	2008 Exmark Mower 60" Diesel	751396	7/1/2008	7/1/2018	$8,200
U	M56	2008 Wright Sentar 48"	42503	7/1/2008	7/1/2018	$8,200
H/s&s	C1- MS Director	2017 Ford Taurus	1FAHP2MK1HG130898	7/1/2017	7/1/2027	***$30,000***
H/s&s	***P1- DPW Director***	***2011 Ford F350 4X4 cab pickup***	***1FT8X3B66BEA57942***	***6/1/2010***	****6/1/2017****	***$45,000***
H/s&s	***P3- Engineering Dir.***	***2008 Ford F350 4x4 Pickup***	***1FDWF31558EB30497***	***6/1/2007***	***6/1/2014***	***$45,000***
H/s&s	***P6 - WF/S&S***	***2011 Ford F350 4X4 Utility***	***1FDRF3B6XBEA57901***	***6/1/2010***	***6/1/2017***	***$52,000***
H/s&s	P7- WF/S&S	2017 Ford F350 4X4 Utility	1FTRF3B68HEE72471	10/1/2017	10/1/2024	$52,000
H/s&s	P8 - WF/P&P	2014 Ford F350 4X4 Utility	1FTRF3B62EEA16624	10/1/2013	10/1/2020	$52,000
U	***P70 - WF/Dist.***	***2012 F350 4x4 Utility***	***1FDRF3F6XCEC02088***	***6/1/2012***	***6/1/2019***	***$52,000***
U	***P71 - WF/Meters***	***2012 F350 4x4 Utility***	***1FDBF3F68CEA07902***	***11/1/2011***	***11/1/2018***	***$52,000***
U	***P72 - Admin. Asst.***	***2012 F150 4X4 Pickup***	***1FTEX1EM6CKD88749***	***7/1/2012***	***7/1/2019***	***$30,000***
U	***P73 - Meters***	***2008 Ford Ranger***	***1FTYR10D88PA06651***	***8/14/2007***	***1/1/2014***	***$25,000***
U	P74 - Meters	2014 F150 4X2 Pickup	1FTMF1CM6EFC01376	9/1/2014	9/1/2021	*$25,000*
U	P75 - Dist.	2018 Ford F450 4x4 Utility	1FDUF4HY0JEC85283	9/1/2018	9/1/2025	$49,000
U	P76 - Systems	2013 F150 4X2 Pick up	1FTMF1CM9DFD70242	11/1/2013	11/1/2020	*$30,000*
U	***P77 - WF/Systems***	***2012 F350 4x4 Utility***	***1FDBF3F6XCEA07903***	***11/1/2011***	***11/1/2018***	***$52,000***
U	D78	2019 International Dump	1HTWDTAR9KH358234	9/1/2018	9/1/2028	$100,000.00
U	V79 - Meters	2018 Ford T150	1FYTE2CM6JKB21376	9/1/2018	9/1/2028	
H/s&s	P80	2002 Ford F350 4x4 Pickup	1FTSF31L42ED21451	5/1/2002	**1/1/2009**	$40,000
H/p&p	P81- Signs	2009 Ford F350 4X4 Utility	1FDWF31519EB25413	7/1/2009	7/1/2016	$52,000
H/s&s	P88 - Fleet	2000 Ford F313 Pickup	1FTSF31L61EA53971	10/30/2000	**1/1/2007**	XXXXXX
Engineering	***P100***	***2002 GMC 1500 Pickup***	***1GTEC14W62Z182903***	***1/1/2002***	***1/1/2012***	***$35,000***
H/s&s	R45	1998 LeeBoy Roller 300	SN650	9/1/1998	**1/1/2008**	$45,000
H/s&s	HB	2013 Falcon Reclaimer	1F9P31424DM339093	4/1/2014	4/1/2024	$30,000
H/s&s	T-1	2018 Trackless	MT71250	6/1/2018	6/1/2028	
H/s&s	***T-2***	***2001 Trackless MT-V***	***MT5T1910***	***4/1/2002***	****4/1/2012****	***$145,000***
H/s&s	T-3	1996 Trackless sidewalk plow	MT5T924 (Recon)	1/1/2015	1/1/2020	$145,000
H/s&s	T-4	2008 Trackless MT5V	3667	4/1/2008	4/1/2018	$145,000

VEHICLE INVENTORY - PUBLIC WORKS DEPARTMENT

Dept	Vehicle ID	Yr/Make/Model	Vin#	Purchase Date	Replace. Date	Replacement Cost
H/s&s	***SW50***	***2009 Johnston 4000 Sweeper***	***1J9VM4HF39C172193***	***6/1/2009***	***6/1/2019***	***$225,000***
H/s&s	T51	Shopbuilt Utility Trailer	102T131	1969	*****	XXXXXX
H/p&p	T60	1985 Shopbuilt Water Tank Trlr	NHTR072024	6/1/1985	*****	XXXXXX
H/p&p	T61	1992 OTR Landscape Trailer	109FS1718N2022415	6/1/1992	*****	XXXXXX
H/s&s	T62	1985 Cory Tilt Trailer	109165903FL178067	6/1/1985	*****	XXXXXX
H/p&p	T63	Masson Flatbed Trailer	1M9FL1014XD441074	1/1/1999	*****	XXXXXX
H/s&s	T64	2002 Mid-Atlantic Trailer	5ANNA16252R012028	5/1/2002	*****	XXXXXX
H/s&s	T65	1998 Int. Equipment Trailer	1JK00S108WA0012118	9/1/1998	*****	XXXXXX
H/s&s	T66	2012 Carmate Utility Trailer	5A3U61056BL002643	8/10/2011	*****	XXXXXX
U	T67	2012 Utility Trailer	5JPBU2222CP029704	3/21/2012	*****	XXXXXX
U	T70	1999 OTR Landscape Trailer	109FS1715X2022276	6/1/1999	*****	XXXXXX
H/s&s	V51 (Retired)	1998 GMC Box Van	1GDHG31RXW1029436	6/1/1998	*****	$40,000
H/s&s	VJ41	2008 International/Camel VJ	1HTWNAZT28J039129	3/22/2012	3/22/2022	$400,000

Appendix D

Standard Operating Procedures – Use, Storage & Disposal of Petroleum Products & Other Stormwater Pollutants

B.16 Petroleum and Chemical Disposal
B.17 Petroleum and Chemical Handling
B.18 Petroleum and Chemical Storage – Bulk
B.19 Petroleum and Chemical Storage – Small Quantity

NHDES Environmental Fact Sheet WMD-HW-4 –
"Waste Antifreeze: Management Requirements for Handlers and Transporters"

NHDES Environmental Fact Sheet WMD-HW-5 –
"Federal and State Regulations: Hazardous Materials and Waste"

NHDES Environmental Fact Sheet WMD-HW-6 –
"Contaminated Cloth Wipers for Laundering"

NHDES Environmental Fact Sheet WMD-HW-30 –
"Management of Fuel and Water Mixtures"

NHDES Environmental Fact Sheet WMD-REM-3 –
"Monthly Inspection Guidelines for Aboveground Petroleum Storage Tanks"

NHDES Environmental Fact Sheet WMD-REM-5 –
"Registration of Aboveground Petroleum Storage Tanks (ASTs)"

NHDES Environmental Fact Sheet WMD-SW-29 –
"Best Management Practices for 55-Gallon Drums"

Standard Operating Procedure for:	
B.16 Petroleum and Chemical Disposal	
Purpose of SOP:	To protect storm water from petroleum and chemical products due to improper disposal practices.

Always:

- Maintain tracking and manifest, where necessary, of chemicals and petroleum products being disposed or recycled off-site.
- Transport used petroleum and chemical products with a licensed transporter and maintain records for three years.
- Train employees on proper disposal practices.
- Drain used oil filters for 24-hours before crushing and disposal (disposal in regular trash allowed).
- Analyze floor drain solids (from sediment trap) for TCLP to determine if hazardous waste or not.
- Contaminated cloth wipe may be laundered onsite or offsite, liquid free, and stored in a closed, labeled container.

Whenever Possible:

- Minimize the number of solvents used to reduce the variety of waste generated and to make recycling easier.
- Use safer alternatives. (see Alternative Products SOP)
- If burning used oil for on-site heat, analyze for NHDES Used Oil Standards (Arsenic, Lead, Cadmium, Chromium, F- listed Halogens, Flashpoint, PCBs) approximately once every 1,000 gallons.

Never:

- Never place hazardous waste in solid waste dumpsters.
- Never pour liquid waste down floor drains, sinks or outdoor storm drain inlets.
- Never mix petroleum waste and chemical waste.
- Never dispose of any gasoline-contaminated waste in the regular trash. Dispose of it only as a hazardous waste.

Related Guidance:	
	– NHDES Environmental Fact Sheets: • WMD-HW-6 Contaminated Clothwipes for Laundering • WMD-HW-5 Federal and State Regulations: Hazardous Materials and Waste • WMD-HW-4 Waste Antifreeze - NHPPP Pitstop Manual

Standard Operating Procedure for:	
B.17 Petroleum and Chemical Handling	
Purpose of SOP:	To protect storm water by properly managing petroleum products and chemicals used by municipalities.

Always:

- Train employees in hazardous material handling, safety, spill cleanup and reporting on an annual basis.
- Handle petroleum products and chemicals according to manufacturer's specifications.
- Conduct oil changes indoors for equipment that fits indoors.
- Use proper protective equipment.
- Maintain Material Safety Data Sheets (MSDS) for all chemicals used.
- Make MSDS sheets available on materials that require special handling, storage and/or disposal.
- Create a sign-off sheet for employees stating that they know the location of the MSDS(s).
- Train new employees within six months of hire.

Whenever Possible:

- Assess hazardous material needs to minimize the amount and variety of hazardous material in storage.
- Keep an inventory of hazardous materials on hand.
- Transfer materials from one container to another indoors in a well ventilated area. Properly label containers.

Never:

- Never treat or dispose of hazardous materials unless licensed to do so.
- Never mix petroleum or chemicals unless directed by manufacturer's instructions.

Related Guidance:
– USEPA National menu of BMPs – NHPPP Pitstops Manual

Standard Operating Procedure for:	
B.18 Petroleum and Chemical Storage - Bulk	
Purpose of SOP:	To protect storm water by properly storing bulk petroleum products and chemicals (containers larger than 55 gallons).

Always:

- Store materials away from high traffic areas, posted with appropriate signage.
- Store materials according to manufacturer's specifications in approved containers and conditions.
- Be prepared for possible spills by having a spill kit nearby.
- Register ASTs if your facility stores more than 660 gallons of petroleum products (10,000 gallons if used for on-site heating).
- Develop and use a Spill Prevention Control and Countermeasure (SPCC) plan if storing more than 1,320 gallons of petroleum (required).
- Store incompatible hazardous materials in separate areas.
- Inspect storage areas for leaks or drips frequently.
- Store bulk items within secondary containment areas if bulk items are stored outside.
- Conduct annual employee training to reinforce proper storage techniques for petroleum and chemical products.

Whenever Possible:

- Store bulk chemicals and petroleum products inside or under cover.
- Provide secondary containment for interior storage.
- Cover transfer areas.

Never:

- Never store bulk chemicals or petroleum products near a storm drain.

Related Guidance:	
	– NHDES Environmental Fact Sheet: • WMD-REM-3 Monthly Inspection Guidelines for ASTs • WMD-OIL-17 Registration of Aboveground Petroleum Storage Tanks

Standard Operating Procedure for:	
B.19 Petroleum and Chemical Storage – Small Quantity	
Purpose of SOP:	To protect storm water from pollution by properly storing petroleum products or chemicals (containers 55 gallons and smaller).

Always:

- Store materials away from high traffic areas.
- Store materials according to manufacturer's specifications (e.g. in a flammable materials storage cabinet).
- Dispose of unused or waste materials properly.
- Train employees on proper storage procedures for petroleum and chemical products.
- Store materials in their original containers to maintain appropriate labeling.
- Be prepared for spills by having a spill kit nearby.
- Frequently inspect the storage areas for leaks or spills.
- Conduct annual employee training to reinforce proper storage techniques for petroleum and chemical products.

Never:

- Never store petroleum or chemical products near a floor drain or storm water inlet.

Related Guidance:
– NHDES Environmental Fact Sheet: • WMD-SW-29 Best Management Practices for 55-Gallon Drums

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WMD-HW-4 2011

Waste Antifreeze:
Management Requirements for Handlers and Transporters

Introduction

Antifreeze is used as an engine coolant and commonly consists of ethylene glycol or propylene glycol. Antifreeze breaks down over time and forms acids, which corrode the vehicle's cooling system. During its use, antifreeze may become contaminated with traces of fuel, metal particles, and grit. Benzene, lead and other hazardous constituents may cause used automotive antifreeze to be characterized as a hazardous waste.

Types of Antifreeze Recycling

Recycling methods include filtration, distillation and ion exchange. Distillation and ion exchange restore the antifreeze to a high level of purity. Some major vehicle manufacturers allow antifreeze recycled by these methods to be used in vehicles under warranty. Check with vehicle manufacturers for m ore information. Simple filtration processes are not designed to remove dissolved contaminants. However, use of very fine filters or a series of filters, followed by the addition of chemicals to refortify the antifreeze, such as rust and corrosion inhibitors, acid neutralizers, anti-clogging and anti-foaming agents, and pH buffers, can result in a product that meets the American Society of Testing and Materials (ASTM) standards.

Requirements for Managing Waste Antifreeze

Universal Waste

"Universal wastes" are wastes that meet the definition of hazardous waste in the New Hampshire Hazardous Waste Rules, but that, during accumulation and transport, pose a relatively low risk compared to other hazardous wastes. Wastes that the Department of Environmental Services (DES) has determined meet universal waste criteria include antifreeze, mercury-containing lamps and devices, cathode ray tubes (CRTs), certain types of batteries, and recalled or suspended hazardous waste pesticides regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Generator Status

If waste antifreeze and other universal wastes are managed in accordance with the Universal Waste Rule, Env-Hw 1100, such wastes do not need to be included in the calculation of hazardous waste generator's status (see Env-Hw 503 of the Hazardous Waste Rules). Universal wastes, when recycled, are also not subject to the generator fee at Env-Hw 512.02.

Universal Waste Consolidation
A facility may collect waste antifreeze from other sites or generators without a permit provided the facility meets the handler requirements covered in the Universal Waste Rule Env-Hw 1101-1114 and complies with other applicable federal, state, and local regulatory requirements.

Recycling/Disposal Options and Prohibitions
On-site recycling at a generator's facility is not subject to permitting requirements. Generators may purchase an antifreeze distillation or filtration unit and recycle their own antifreeze on-site, hire a contractor to come in with a mobile recycling unit, or ship the antifreeze to a recycling facility.

Waste Antifreeze Mixtures
Waste antifreeze should not be mixed with used oil or other hazardous wastes, such as gasoline or solvents. Waste antifreeze mixed with any other material may lose its ability to be recycled and may be subject to the full requirements of the Hazardous Waste Rules. In order to avoid contamination of antifreeze with other wastes, do not use collection equipment and storage containers, which have been previously used to collect other hazardous wastes or materials, unless the equipment has been decontaminated. This includes collection funnels, transfer pans, or buckets, drums, and tanks.

Filters and Sludges
Any filters or sludges generated from the antifreeze recycling process must be evaluated as to whether they are hazardous wastes and managed accordingly. Refer to the Hazardous Waste Rules, Env-Hw 502 for hazardous waste determination requirements.

A recycling contractor who removes a spent antifreeze filter and sludges from a recycling unit at his or her own facility becomes the generator of these wastes. If the contractor brings a mobile recycling unit to a waste antifreeze generator's site and removes a filter and sludges from the recycling unit at the generator's site, then one of the following alternatives must be chosen:

(a) The recycling contractor becomes the generator of the spent filter and sludges and transports them back to his or her site where s/he will perform a hazardous waste determination; or
(b) The contractor may leave the filter and sludges with the waste antifreeze generator who then becomes the generator of the spent filter and sludges.

Prior arrangements should be made between the waste antifreeze generator and the contractor as to which of these options will be chosen. In either case, theses wastes must be managed in accordance with the Hazardous Waste Rules.

Requirements for Handlers

A "handler" of waste antifreeze means: (1) a generator of universal waste antifreeze; or (2) an owner or operator of a facility that receives universal waste antifreeze from other handlers, accumulates the antifreeze, and sends the antifreeze to another handler or to a destination facility. Handlers of universal waste antifreeze must either meet the following standards or comply with the generator and/or facility requirements of the Hazardous Waste Rules.

1. Release Prevention
Manage waste antifreeze in a way that prevents releases of antifreeze to the environment.

2. Quantity Limits
Universal waste handlers are either very large, large, or small quantity handlers:

a. Small Quantity Handlers - accumulate less than 5,000 kilograms (approximately 11,000 pounds) of combined universal wastes on-site at any time. 5,000 kilograms of antifreeze is equivalent to approximately 1,250-gallons.

b. Large Quantity Handlers - accumulate 5,000 kilograms or more, but less than 20,000 kilograms, of combined universal wastes at any one time and must also comply with Env-Hw 1104 described in this fact sheet in the section titled, *Additional Requirements for Large Quantity Handlers*.

c. Very Large Quantity Handlers – accumulate 20,000 kilograms or more of combined universal wastes at any one time and must also comply with Env-Hw 1105 described in this fact sheet in the section titled, *Additional Requirements for Very Large Quantity Handlers.*

3. Labeling

Clearly label or mark each container or tank of waste antifreeze with any one of the following phrases: "Universal Waste – Antifreeze," or "Waste Antifreeze," or "Used Antifreeze."

4. Containers and Tanks

Accumulate waste antifreeze in containers or tanks that are structurally sound, compatible with the antifreeze, and are closed at all times except when antifreeze is being added to or removed from the container. The containers must not show evidence of leakage, spillage, or damage. Containers stored outside shall be covered to prevent precipitation from coming in contact with the waste.

5. Accumulation Time Limits

a. Accumulate waste antifreeze for no longer than one year from the date the waste antifreeze is generated or received from another handler.

b. Demonstrate the length of time that the waste antifreeze has been accumulated from the date the waste antifreeze became waste or were received. The handler may make this demonstration by:
   (1) Marking or labeling containers with the starting accumulation date; or
   (2) Maintaining an inventory system on-site that identifies the earliest date that waste antifreeze was added to a container or received from off-site.

6. Training

Ensure that all employees who handle or have responsibility for managing waste antifreeze are thoroughly familiar with the handling and emergency procedures appropriate to antifreeze.

7. Response to Releases

Immediately contain and clean up all releases of antifreeze.

Manage any residues resulting from the cleanup of antifreeze spills or leaks that exhibit a characteristic of hazardous waste, in accordance with the Hazardous Waste Rules. The handler is considered the generator of the residues and other clean-up waste and must meet the requirements of Env-Hw 500.

Any releases that pose a threat to human health or the environment must be reported immediately to DES at 603-271-3899, Monday through Friday, 8 am to 4 pm or to New Hampshire Department of Safety (DOS) at 603-223-4381, 24 hours/day and to the municipality in which the release occurred.

8. Off-Site Shipments

a. Handlers are prohibited from sending or taking waste antifreeze to a place other than another universal waste handler, an antifreeze recycling facility, or an authorized hazardous waste facility.

b. Prior to sending a shipment of waste antifreeze to another handler or destination facility, the originating handler must ensure that the receiving handler agrees to receive the shipment.
c. Shipments must meet all applicable United States Department of Transportation (USDOT) and DOS regulations for antifreeze.
d. If a waste antifreeze shipment is rejected by an intermediate handler or destination facility, arrangements must be made by the originating handler to:
(1) Receive the waste antifreeze back when notified that the shipment has been rejected, or
(2) Send the device shipment to an alternate facility.

9. Exports

A handler of waste antifreeze who sends the devices to a foreign destination must comply with the requirements for international shipments as set forth in Env-Hw 1102.08 of the Universal Waste Rule.

Additional Requirements for Large Quantity Handlers

A handler who accumulates 5,000 kilograms or more of combined universal wastes must comply with Env-Hw 1104. These requirements include:

1. Prior to collecting 5,000 kilograms or more of combined universal wastes, notify DES of this activity and obtain an EPA Identification Number if one has not already been obtained.

2. Keep records for three years on each shipment of waste received or sent. These records must include:
a. The date of each shipment.
b. The quantities of each shipment.
c. The name and address of the handler or facility from which waste antifreeze were received or shipped to.

Additional Requirements for Very Large Quantity Handlers

A handler who accumulates 20,000 kilograms or more of combined universal wastes must comply with Env-Hw 1105. These requirements include:

1. Submit a notification form for each on-site location where universal waste is accumulated.

2. Ensure universal waste is not stored within a 100-year floodplain.

3. Complete and document weekly inspections of all universal waste storage areas.

4. Establish and post contingency plans and emergency procedures and provide emergency response equipment.

5. Post emergency response information at each universal waste storage area and provide access security measures to universal waste storage areas.

6. Provide closure plans and sufficient financial assurance for closure.

Requirements for Transporters

1. Transporters are not required to obtain a New Hampshire hazardous waste transporter registration or use a hazardous waste manifest for waste antifreeze, but must meet all applicable US DOT and DOS regulations.

2. Transporters are prohibited from sending or taking waste antifreeze to a place other than:
   a. another handler;
   b. an antifreeze recycling facility; or
   c. an authorized hazardous waste facility.

3. Staging During Transportation
   a. Transporters who remove waste antifreeze from their vehicles and stage them temporarily are not required to obtain a hazardous waste transfer facility permit, but are subject to US DOT and DOS regulations.
   b. Transporters who stage waste antifreeze for more than 10 days must also meet universal waste handler requirements.
   c. Transporters must not stage more than a combined total of 5,000 kilograms (approximately 11,000 pounds) of waste antifreeze and other universal wastes on-site at any time.

For more information

Questions regarding this fact sheet should be directed to the DES, Waste Management Division at (603) 271-2942 or toll free within New Hampshire at 866-HAZWAST. For a complete description of the requirements, refer to the New Hampshire Hazardous Waste Rules, Env-Hw 100-1100, available from DES's website at www.des.nh.gov.

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WMD-HW-5 2009

Federal and State Regulations: Hazardous Materials and Waste

Resource Conservation and Recovery Act: (RCRA/1976)

RCRA was the second amendment to the 1965 Solid Waste Disposal Act--the first amendment was the 1970 Resource Recovery Act. The primary goals are to: 1) protect human health and the environment from potential hazards of waste disposal; 2) conserve energy and national resources; 3) reduce the amount of waste generated; and 4) ensure that wastes are managed in an environmentally sound manner. RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments (HSWA). RCRA is divided into subtitles. Subtitles C, D, and I set forth the framework for the U.S. Environmental Protection Agency's comprehensive waste management programs.

Subtitle C establishes a system for controlling hazardous waste from "cradle to grave," or generation to ultimate disposal.

Subtitle D establishes a system for controlling solid waste, such as household waste.

Subtitle I (established by HSWA) regulates toxic substances and petroleum products stored in underground tanks.

In New Hampshire, RCRA Subtitle C is implemented through RSA 147-A and the New Hampshire Hazardous Waste Rules Env-Hw 100-1100. This law and these rules provide criteria for determining whether a waste is hazardous, setting standards, procedures and reporting requirements for waste generators, and establishing a permit process for treatment, storage, disposal and transfer facilities. It also establishes a registration system for transporters of hazardous waste.

The transportation of hazardous materials (virgin and waste materials) in New Hampshire is regulated by the Department of Safety.

Comprehensive Environmental Response, Compensation and Liability Act: CERCLA/1980)
In 1980, the U.S. Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). That legislation created the EPA's Superfund Program and a $1.6 million trust fund for cleaning up abandoned and uncontrolled hazardous waste sites. In 1986, the Superfund Amendments and Reauthorization Act (SARA) was signed into law, increasing

the fund by $8.5 billion and strengthening EPA's authority to conduct cleanup and enforcement activities. That authority and money may be passed on to the states through cooperative agreements that allow state agencies to coordinate the cleanup activities. In New Hampshire, the state agency responsible for Superfund activities is the Department of Environmental Services. All activities conducted under CERCLA and SARA are described in the National Oil and Hazardous Substances Pollution Consistency Plan (NCP).

EPA has identified over 11,500 sites across the country, 90 of them in New Hampshire, that may qualify for Superfund monies and remedial actions. For a site to undergo remedial actions financed by the trust fund, it must be included on the National Priority List (NPL). The NPL is a list of over 1,200 hazardous waste sites across the country which present the greatest risk to public health and welfare or to the environment. To date, 21 sites in New Hampshire have qualified and have been listed on the NPL.

Title III of SARA created the Emergency Planning and Community Right-to-Know Act. The law requires facilities to provide information on the presence of hazardous chemicals (not only waste) to local officials. It also assigns responsibility for preparation for and response to emergencies to the Local Emergency Planning Committee. The New Hampshire Emergency Management and Homeland Security Office oversees and assists these local committees.

For more information

Questions regarding this fact sheet should be directed to the DES Waste Management Division at (603) 271-2942 or toll free within New Hampshire at 866-HAZWAST. For a complete description of the requirements, refer to the New Hampshire Hazardous Waste Rules, Env-Hw 100-1100, available from DES's website at www.des.nh.gov .

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WMD-HW-6 2009

Contaminated Cloth Wipers for Laundering

The New Hampshire Department of Environmental Services receives many inquiries concerning the regulatory status of contaminated cloth wipers and the commercial laundering industry in New Hampshire. This fact sheet clarifies DES's position on wipers contaminated with minor amounts of hazardous waste constituents that are to be laundered. The regulatory status of contaminated wipers destined for laundering is one that has been of concern for a long time in New Hampshire, and elsewhere. After DES's thorough review of the issues, the Hazardous Waste Rules (Env-Hw 100-1100), and the positions of other states and regions, DES determined the following management requirements.

Definition

DES defines "contaminated wipers" as rags, shop towels, and wipers that have been used, contaminated with minor amounts of hazardous waste constituents such as solvents or oils, and are intended to be laundered before reuse. Contaminated wipers must be managed in a manner that will not pose a threat to human health or the environment. Other wastes, including spill absorbent materials and debris, do not meet the definition of contaminated wipers and therefore are not to be laundered or mixed with contaminated wipers destined for laundering. Spill absorbent materials may be laundered as long as they were not used to clean up spills of listed hazardous waste, do not exhibit any characteristic of hazardous waste, and would not otherwise be regulated as a hazardous waste mixture under Env-Hw 404.01. To the extent that the spill absorbent materials are used to clean up spills of listed hazardous waste (i.e., P, U, F, or K-listed hazardous waste), if the used spill absorbent materials exhibit any of the characteristics of hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity via the Toxicity Characteristic Leaching Procedure), or if the used spill absorbent materials meet the classification of a hazardous waste mixture, the spill absorbent materials would be classified as a hazardous waste and therefore not able to be laundered.

Management

DES has determined that the following conditions must be complied with in order to manage contaminated wipers in accordance with this fact sheet.

1. The contaminated wipers shall contain no free liquids as identified by the paint filter test (PFT, EPA SW 846 method 9095B) or the liquids release test (LRT, EPA SW 846 method 9096). Any contaminated wiper that fails one of the tests may release free liquid hazardous waste constituents as defined in the Hazardous Waste Rules.

2. The contaminated wipers must be placed in containers such as lidded drums or sealed laundry bags. The containers are to be closed and sealed at all times except when it is necessary to add or

remove the contaminated wipers. The containers must also be stored away from sources of ignition.

3. The container must be labeled "Contaminated Wipers for Laundering" in order to prevent incompatible materials and wastes from being placed in the container.

4. The contaminated wipers are to be managed and transported in accordance with the United States Department of Transportation (US DOT) standards.

5. The contaminated wipers must either be laundered at a commercial off-site laundry facility or laundered on-site.

   A. Off-site laundering:

      1. Any industrial wastewater discharge from a commercial laundry must be in compliance with applicable state and federal permits (*i.e.*, local pretreatment permit or National Pollutant Discharge Elimination System NPDES permit).

      2. The generator of the contaminated wipers must have a contractual agreement (such as a current signed purchase order) in place with the commercial laundry which documents that the contaminated wipers are being laundered. Copies of the contractual agreements and related receipts must be retained by the generator and available for inspection by DES personnel, in accordance with Env-Hw 803.05.

   B. On-site laundering:

      On-site laundering of the contaminated wipers can be done, provided that industrial wastewater is discharged in compliance with applicable state and federal permits, i.e., local pretreatment permit or NPDES permit.

6. Facilities not managing their contaminated wipers in an environmentally sound manner as described above can and shall be subject to full regulation under the New Hampshire Hazardous Waste Rules and RSA Ch. 147-A.

Please note that this position pertains only to the regulation of contaminated wipers under New Hampshire's Hazardous Waste Rules. Regulation of these materials under any other federal or state rule or statute, such as the federal Clean Air Act or the New Hampshire Department of Safety transportation regulations, remains in full effect.

Effective December 2, 2014 there are revisions to the rules that regulate cloth wipers: Please refer to Env-Hw 401.03 (a)(11) and (b)(28)and (29), (j), (k), and (l). This fact sheet will be updated to reflect these changes early in 2015.

For more information

Questions regarding this fact sheet should be directed to the DES Waste Management Division at (603) 271-2942 or toll-free within New Hampshire at 866-HAZWAST. For information on the regulation of contaminated wipers by other state or federal agencies, contact the agency in question. For a complete description of the requirements, refer to the New Hampshire Hazardous Waste Rules, Env-Hw 100-1100, available from DES's website at www.des.nh.gov.

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WMD-HW-30 2009

Management of Fuel and Water Mixtures

Fuels, and in particular gasoline, spilled or leaked into the environment are a major source of water pollution, and at elevated levels, can adversely affect drinking water quality. Therefore, unwanted fuels must be properly handled to ensure that they do not adversely impact the environment. A mixture of fuel and water is often generated through fuel management activities and may be recycled.

Applicability
This policy applies to mixtures of fuels and water generated from fuel management activities, e.g., dispensing, storage. These mixtures include, but are not limited to, gasoline and water mixtures, fuel storage tank bottom water, water/fuel mixtures that are generated as a result of fuel product storage, including any water collected from secondary containment, sumps, and spill buckets. This policy does not apply to tank cleaning wastes, rinsewater, water containing hazardous constituents not found in the fuel product, tank bottom sludge, bilge water, and manufacturing wastes.

Description
Fuels and water mixtures are frequently handled as hazardous wastes, however, when properly managed according to the guidelines of this fact sheet, fuel and water mixtures may not need to be handled as hazardous wastes. According to the New Hampshire Hazardous Waste Rules, commercial chemical products are not wastes when they are recycled by being reclaimed. The EPA has stated that a fuel and water mixture is considered an off-specification product and is excluded from being a solid waste when it is recovered and used as a fuel. Therefore, fuel and water mixtures generated as a result of fuel management activities may be managed as an off-specification commercial chemical product and not as a hazardous or solid waste provided that the mixture only contains fuel and water, and the fuel portion is legitimately reclaimed and used as a commercial fuel. To manage these mixtures as a commercial chemical product the generator must:

- Manage the material as a product, in an environmentally sound manner prior to reclamation.
- Ship the material to a **legitimate reclamation** facility.
- Ensure that the facility reclaiming the fuel product is able to demonstrate that legitimate reclamation is occurring.
- Ensure the recovery facility properly manages the leftover wastewater as a waste and thus a potential hazardous waste when it is disposed.
- Maintain records to document that the mixture is not a waste and is being reclaimed for use as a fuel, e.g., letter from the facility reclaiming the mixture.

If these mixtures are not managed as off-specification commercial chemical products, they are considered wastes. The Hazardous Waste Rules require that all generators of waste determine if their waste is a hazardous waste. Wastes determined to be hazardous must be handled pursuant to the requirements of the Hazardous Waste Rules.

Definition of Legitimate Reclamation

1. The mixture must contain a recoverable quantity of fuel. The recovery facility must be able to demonstrate that fuel reclamation is occurring.
2. The material must be managed according to industry standards for fuel products at the reclamation facility and the recovered fuel product must be either used as a fuel or blended with other fuels.
3. The reclamation process should be able to recover and utilize most if not all the fuel product from a mixture. Low recovery efficiencies indicate that the reclamation may be primarily treatment and not legitimate reclamation.
4. Residual wastewater must be properly disposed of under a wastewater discharge permit issued by the state or local government.

Container/Tank Management

DES has determined that the following conditions must be complied with in order to manage fuel and water mixtures:

Storage

- Store containers and tanks on an impervious surface.
- Ensure that containers and tanks are in good condition.
- Secure storage areas against unauthorized entry.
- Inspect storage areas weekly for leaks.
- Cover containers in outside storage areas.
- Keep containers and tanks, stored outside, more than 50 feet from surface water.
- Keep containers and tanks at least 50 feet from storm drains, if no secondary containment.
- Label containers and tanks clearly and visibly, e.g., “Gasoline for Recycle.”

Handling

- Operate to minimize the possibility of spills.
- Keep containers and tanks closed and sealed.
- Have spill control and containment equipment readily available.
- Have fire control equipment readily available.

Release Response Information

- Post information on what to do in the event of a spill.

Facilities not managing their fuel and water mixtures in an environmentally sound manner as described above can and shall be subject to full regulation under the New Hampshire Hazardous Waste Rules and RSA Ch. 147-A.

Questions regarding this fact sheet should be directed to the DES, Waste Management Division at (603) 271-2942 or toll free within New Hampshire at 866-HAZWAST. For a complete description of the requirements, refer to the New Hampshire Hazardous Waste Rules, Env-Hw 100-1100, available from DES’s website at www.des.nh.gov.

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WMD-REM-3 2014

Monthly Inspection Guidelines for Aboveground Petroleum Storage Tanks

Owners of regulated aboveground storage tanks (ASTs) are required by Administrative Rules Part Env-306.07 to inspect their AST facilities not less than monthly. The records showing the results of the monthly inspection must be maintained for at least three years. The purpose of the inspection is to identify conditions at an AST facility that could result in a release from a tank, piping or fitting to the environment, if not corrected in a timely manner.

Who must inspect their tanks?
Owners of regulated AST facilities must inspect all their tanks at least monthly. Regulated AST facilities include:

- Those facilities having a single aboveground storage tank system with an oil storage capacity of more than 660 gallons, and
- Those facilities with two or more aboveground storage tank systems, to include 55-gallon drums, having a combined oil storage capacity of more than 1,320 gallons intended for storage, transfer, or distribution of oil as defined in RSA 146-A:2,III.

Regardless of other oil storage, ASTs which store heating oil (to include used engine, transmission, gear, or hydraulic oil) used solely for heating an on-premise structure are exempt from the requirements of Env-Or 300 if they have a combined storage capacity of 1,320 gallons or less.

What must be inspected?
Pursuant to Env-Or 306.07(a & b), a monthly inspection shall include:

- Deficiencies such as leaks, surface wetting, discoloration, blistering or evidence of corrosion, cracks, chime distortion or other structural damage;
- Cracks, areas of wear, visible shell thinning, evidence of poor maintenance and operating practices, excessive settlement of structures, separation or swelling of tank or piping insulation, malfunctioning equipment, and structural and foundation weaknesses;
- For insulated tanks and insulated piping, all exterior surfaces of insulation. For other than insulated tanks and insulated piping, all exterior surfaces of tank and piping;
- All secondary containment, pipes, valves and other associated equipment;
- All exterior surfaces of tank and piping supports; and

- All visible system components of each high level alarm and each leak detection system which is in place at the facility.

How should the inspection be performed?
The monthly inspection is generally intended to be visual in nature. Each AST facility and system is different in terms of tank size, style, contents and sophistication. Facility owners may use the inspection form created by their engineer for their Spill Prevention, Control and Countermeasure (SPCC) Plan provided that is inclusive of the requirements of Env-Or 306.02 or create their own. The important element is that the facility be inspected at least monthly and the results of the monthly inspection are documented, signed and retained for three years.

What if an inspection identifies a deficiency?
If it appears that a failure that could result in a release is eminent, the owner shall immediately implement measures to prevent the release per Env-Or 306.10. If a lesser deficiency is identified during an inspection, NHDES expects the owner to correct it as soon as practical but no later than 30 days. There is no need to notify NHDES of a deficiency unless a release of petroleum has been discovered or is suspected. The release shall be reported to NHDES in accordance with Env-Or 600. The action taken to correct the deficiency should be noted on the inspection form.

How will this inspection requirement be enforced?
Owners of AST systems are required by Env-Or 306.07 to keep records of the monthly inspection for a period of not less than three years. Maintaining a file of completed, signed and dated monthly check-off lists will meet the intent of this rule. DES will review the content of monthly inspection files during facility visits and compliance inspections.

Facility owners should be aware that compliance with Env-Or 300 is a requirement for access to state funds otherwise available to reimburse the owner of expenses associated with the cost of cleaning up an oil spill should one occur. Maintaining documented evidence of routine inspections is necessary to remain in compliance.

Who do I contact for more information?
For more information concerning AST facilities or the New Hampshire Oil Spill Cleanup Reimbursement Funds, please contact the Oil Remediation and Compliance Bureau at (603) 271-3899, or visit the NHDES website at http://des.nh.gov/organization/divisions/waste/index.htm.



DISCLAIMER: Information contained in this Fact Sheet is current as of February 7, 2014. Statutory or regulatory changes that may occur after that date may cause part or all of the information to become invalid. If there are any questions concerning the current status of this information, please contact us at (603) 271-3899.

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WMD-REM-5 2014

Registration of Aboveground Petroleum Storage Tanks (ASTs)

Owners of regulated petroleum aboveground storage tanks (ASTs) are required under the New Hampshire Code of Administrative Rules, Part Env-Or 300, Aboveground Petroleum Storage Facilities, to register their AST facility with the New Hampshire Department of Environmental Services (NHDES). Registration is also required to be eligible for reimbursement of incurred expenditures associated with the cleanup of a petroleum release to the environment.

Who Must Register?

- Those facilities having a single aboveground tank system with an oil storage capacity of more than 660 gallons, and
- Those facilities with two or more aboveground tank systems to include all 55-gallon drums, having a combined oil storage capacity of more than 1,320 gallons, intended for storage, transfer, or distribution of oil as defined in RSA 146-A:2,III.
- Owners of facilities that have oil-filled electrical equipment that contain more than 660 gallons of oil.

Who is Exempt?

- Regardless of other oil storage, ASTs which store heating oil (to include used engine, transmission, gear, or hydraulic oil) used solely for heating an on-premise if they have a combined storage capacity of 1,320 gallons or less.
- Tanks that store any liquid that is a gas at atmospheric temperature and pressure such as propane.

When Do I Have to Register?
If you have an existing tank, you should register your tank as soon as possible. In fact, to ensure eligibility for New Hampshire petroleum reimbursement funds, tanks used for the storage, transfer and distribution of oil should have been registered by July 1, 1996, or within 30-days of their installation, whichever is later.

If your existing tank has not been registered, and you wish to obtain access to the funds, you may apply for a waiver of this deadline. The sooner you register your existing tank, the better your chances that a waiver of the statutory deadline will be granted by the Oil Fund Disbursement Board. If you are installing a new tank, you must register the tank no more than 30 days after the tank was installed. Also, if you are installing a new tank sized greater than 660 gallons, you must have prior approval from NHDES pursuant to the requirements of Env-Or 307.01.

How Do I Register My Aboveground Storage Tank?
Registration is accomplished by completing a Registration of Aboveground Petroleum Storage Tank (ASTs) System Form. A copy can be obtained by calling NHDES at (603) 271-3899 or by visiting the NHDES website at http://des.nh.gov/organization/divisions/waste/orcb/ocs/astp/index.htm. Complete the form, entering all the information that applies to your facility. Email the signed form as an attachment to orcb.wmd@des.nh.gov or mail the form to:

New Hampshire Department of Environmental Services
Attn: AST Program
P.O. Box 95, 29 Hazen Drive
Concord, NH 03302-0095

Is There a Registration Fee?
There is no fee to register your AST facility.

Who Do I Call If I Have Questions When Filling Out the Form?
Contact the NH Department of Environmental Services at (603) 271-3899.

If I Have Already Registered My Tanks, Do I Have to Do It Again?
Only if you make changes at your AST facility. The registration form doubles as a notification form. If you are changing the use of any of your tanks, or remove a tank, that change shall be indicated on an amended registration form submitted to NHDES within 30 days of that change. If you are installing a new tank at your facility, you must complete a new registration form providing information on that tank prior to operating the tank.

DISCLAIMER: Information contained in this Fact Sheet is current as of February 7, 2014. Statutory or regulatory changes that may occur after that date may cause part or all of the information to become invalid. If there are any questions concerning the current status of information, please contact NHDES at (603) 271-3899.

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WMD-SW-29 2011

Best Management Practices for 55-Gallon Drums

The New Hampshire Department of Environmental Services encourages the reuse and recycling of properly prepared 55-gallon steel drums. Since many drums may contain, or may have contained, hazardous materials that could contaminate groundwater or lead to personnel health and safety concerns, it is imperative that operators of solid waste facilities be informed about the best management practices for collecting and processing drums.



Drums not properly managed can lead to expensive liabilities for communities or businesses, such as testing, removal, and disposal as well as contaminated soil and groundwater that will also have to be disposed of properly or treated. For example, open drums that contain a residual product and that are allowed to collect rainwater, may overflow, leading to their contents being tested and handled as a hazardous waste.

Collection of Drums

Drums collected for reuse or recycling should arrive at the facility empty. This means that all wastes have been removed from the drum by the generator using common practices such as pouring, pumping, and aspirating for liquids (no free liquid can remain). For closed head drums with contents that cannot be poured, there can be no more than one inch of residue in the drum, or no more than 3 percent of net weight stuck to the bottom, top and sides.

Collection and reuse of drums that have contained acutely hazardous materials, like pesticides or cyanides, is discouraged as the drums will contain residues of prior materials unless they are "triple rinsed." In addition, the residue on the bottom of one drum should not be added to the residue of another drum as this may lead to the mixing of incompatible materials or the accumulation of a hazardous waste mixture.

Drums Being Used or Collected for Reuse

The following should be addressed if drums are being used or destined to be reused by solid waste facilities:

- Drums should be empty, with no residual materials inside, on the top or outside.
- Drums should be structurally sound, without big dents or rust.
- Drums should be located in areas clearly visible to prevent damage from motor vehicles.
- Open head drums should be covered with lids sealed by heavy-duty, bolt clamps or snap rings or bungs.
- Drums should be placed off the ground on an impermeable surface in a covered containment area to prevent corrosion and discharges to groundwater.
- Drums should be stored away from the eaves of a roof and any heat sources.

- Drums should be located away from wetlands, surface water, wells, property lines, flood zones, and drainage areas.
- Drums should not be covered with other materials where they may become forgotten, knocked over, or develop unseen leaks.
- Drums being used should be labeled and face outward so as to be easily read, and accessible year-round in case of fire, removal or spills.
- Drums should be regularly inspected for structural integrity, e.g., rust, cracks, leaks, etc.

Drums for Scrap Metal Recycling
Drums collected for recycling as scrap metal should meet the following criteria:

- Empty drums should have the top and bottom removed by the generator before being accepted by the facility to prevent the accumulation of rainwater. A torch should not be used to remove the top or bottom of a drum as the drum may contain a flammable gas and could explode. Mechanical openers are commercially available that should be used to accomplish this task.
- Drums should be clean.
- Drums should be flattened to save space.

Many communities that collect used oil for recycling, use drums to collect and store the used oil and/or used oil filters. Drums containing used oil must be labeled “Used Oil for Recycle,” and drums containing used oil filters should be labeled “Used Oil Filters.” For more information on the management of used oil or funding opportunities, call toll-free 1-888-TAKEOIL.

Summary
All drums should be managed to prevent contamination. Keep your drums sealed, easily accessible, labeled, and frequently inspect them for possible leaks or spills.

For additional information on the proper management of 55-gallon drums, or a copy of the Hazardous Waste Rules, should contact the DES Waste Management Division at (603) 271-2942, or go to http://des.nh.gov/organization/divisions/waste/hwcb/hwcs/index.htm.

Disclaimer: The information contained in this fact sheet does not relieve persons from knowing the applicable hazardous waste and solid waste laws and regulations.

Appendix E

Standard Operating Procedures – Spill Prevention and Response

B.12 Spill Cleanup
B.15 Alternative Products/Use/Storage/Disposal
B.22 Floor Drains

NHDES Environmental Fact Sheet WD-DWGB-22-8 –
Holding Tanks for Floor Drains

NHDES Environmental Fact Sheet WD-DWGB-22-9 –
“Protecting Groundwater from Floor Drains and Other Typical Discharges”

NHDES Environmental Fact Sheet WMD-REM-13 –
“Reporting Oil Spills, Hazardous Waste Spills and Groundwater Contamination”

Standard Operating Procedure for:	
B.12 Spill Cleanup	
Purpose of SOP:	To protect storm water by educating employees on proper spill cleanup procedures, state reporting requirements and preventative actions.

Always:

- Stop the source of the spill, if possible to safely do so.
- Contain any liquids, if possible to safely do so.
- Contact the appropriate emergency response number (see below) during normal working hours (8:00 a.m. – 4:00 p.m., Monday - Friday) to report spills.

  NHDES Petroleum Products Spill Response (603) 271-3644
  NHDES Hazardous Material (non-oil spill) (603) 271-3899
  United States Coast Guard – Coastal Oil Spills (207) 780-3251
  National Response Center – Chemical or Oil Spills that Impact Surface Water (800) 424-8802
  USEPA – 24-hour Emergency Inland Spills Response (617) 918-1279
  All other times, nights-weekends-holidays, contact NHDES via the New Hampshire State Police (800) 346-4009 or out of state (603) 271-3636
- Cover the spill with absorbent material such as kitty litter, sawdust, or oil absorbent pads. Do not use straw or water. (See SOP B.16 for adsorbent disposal.)
- Petroleum spills involve, but are not limited to: crude oil, gasoline, heating oil, various fuel oils, lubricating oil, hydraulic oil, asphaltic residuals.
- Report a petroleum spill if:
  - The spill is greater than 25 gallons, or
  - The spill cannot be immediately contained, or
  - The spill and/or contamination cannot be completely removed within 24 hours, or
  - There is an impact or potential impact to ground/surface water.
  - IF IN DOUBT, REPORT THE SPILL
- Hazardous materials spills involve non-oil spills that pose a threat to human health or the environment, such as chemical releases.
- Report any discharge of hazardous waste immediately, (within one hour) to local emergency officials [fire department], then contact NHDES Hazardous material Department (as described above).
- Contact local fire department _____ (phone #).
- Develop and maintain a Spill Prevention, Control, and Countermeasure (SPCC) Plan if the facility stores more than 1,320 gallons of petroleum.
- Fit petroleum and chemical storage containers with secondary containment structures.
- Keep a spill kit in areas where petroleum or hazardous materials are stored.
- Train employees in spill response procedures and equipment.
- Deploy containment booms if spill could potentially reach a storm drain or waterbody.
- Position mats to contain drips from equipment or vehicles until they can be repaired.

Whenever Possible:

- Seal the floor with paint to prevent absorption of fluids into concrete.
- Install low-level or low-pressure alarms and/or cut-off systems on hydraulic equipment.

Never:

- Never wash a spill into the storm drain or a water body.
- Never leave a spill without cleaning it up.

Related Guidance:	
	– NHDES Fact Sheets: o WMD-REM-13 Requirements for Reporting Oil and Hazardous Waste Spills and Groundwater Contamination to DES – NHPPP Pitstops Manual

Standard Operating Procedure for:	
B.15 Alternative Products Use/Storage/Disposal	
Purpose of SOP:	To protect storm water by using alternative products that are more environmentally friendly.

Always:

- Ask product suppliers, peers, or regulatory agents if there is a more environmentally friendly alternative, when ordering any product.

Whenever Possible:

- Use alternative products when deemed appropriate:
  - Instead of solvent-based parts cleaners use citrus–based cleaners or steam/pressure wash to an oil/water separator/holding tank.
  - Instead of herbicides use bark mulch.
  - Instead of fertilizer use compost or manure.
  - Instead of pesticides plant marigolds, onion, or garlic as deterrents; release or attract beneficial insects.
  - Instead of synthetic adsorbents, use corncob or cellulose products for petroleum spills that can be burned for energy recovery.
- Train employees on the benefits of using alternative products.
- Minimize waste by purchasing recyclable products that have minimal packaging.
- Use less harmful deicers such as calcium magnesium acetate, potassium acetate, or organic deicers such as Magic Salt™.
- Use a "pre-mix" of 4 to 1 sodium chloride and calcium chloride, which is the most cost-effective alternative to straight salt.
- Substitute synthetic fertilizers with natural compost and organic fertilizers to improve soil pH, texture and fertility, and cause less leaching to groundwater.
  - Use no-phosphorus lawn fertilizer (phosphorus is rarely lacking in New Hampshire soils).
  - Use natural or certified organic fertilizers with low phosphorus levels (8-2-4, 6-2-4, 9-1-1, 6-1-1).
- Use slow-release nitrogen fertilizers.
- Reduce or eliminate mown lawn in areas that are not actively used.
- Consider converting unused turf to meadow or forest.

Related Guidance:	
	– USEPA National Menu of BMPs – NHPPP Pitstop Manual

Standard Operating Procedure for:	
B.22 Floor Drains	
Purpose of SOP:	To protect storm water from pollution caused by discharges of hazardous materials to the subsurface, ground surface, waterway, or storm sewer through floor drains.

Always:

- Keep a spill kit in the vicinity of the floor drains.
- Obtain and use drain mats, adsorbent booms or covers to keep larger spills out of drains.
- Use floor drains that are (1) connected to a holding tank or (2) connected to the sanitary sewer via an oil/water separator.
- Register floor drains that have regulated contaminants stored or used near them with the NHDES (603) 271-2858.
- Register holding tanks with the NHDES.

Whenever Possible:

- Minimize water use or run a dry shop.

Never:

- Never dump hazardous materials down the floor drains.
- Never use floor drains if you are unsure of their discharge location.
- Never store regulated contaminants near a floor drain that discharges directly to the environment.

Related Guidance:	
	– NHDES Environmental Fact Sheet: • WD-WSEB-22-8 Holding Tanks for Floor Drains • WD-WSEB-22-9 Protecting Groundwater from Floor Drains and Other Typical Discharges – NHPPP Pitstops Manual

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-22-8 2010

Holding Tanks for Floor Drains

Holding tanks that receive wastewater from floor drains in areas where regulated contaminants[1] are used or stored or that will receive non-domestic, non-hazardous wastewater must be registered with the Water Division of DES under New Hampshire Administrative Rules Env-Wq 402.35, "Holding Tank Registration for Discharges of Non-domestic, Non-hazardous Wastewater."

What Are DES's Requirements for Holding Tanks?

- The minimum holding tank capacity must be 1,000 gallons.
- Holding tanks and piping must be watertight and sealed with materials compatible with the liquid or sludge being stored.
- Access must be provided to each compartment of the tank for inspection and cleaning by means of either a removable cover or manhole (minimum diameter 20 inches). Manholes must extend to finished grade.
- The tank must be designed for the expected maximum structural load and ballast must be provided when necessary to prevent structural damage when the tank is emptied.
- The volume between inlet cover and the maximum water depth must be equal to approximately 20 percent of the liquid volume stored below the maximum water depth. An alarm with both visual and audio signals must be activated once the water level reaches the maximum water depth.
- The holding tank must be registered with DES. Use the form at http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge/documents/holdreg.pdf.
- Records of pumping events shall be kept and made available for review if requested by DES.

For Additional Information

For additional information, please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit www.des.nh.gov, click on A-Z List and choose Groundwater Discharges. The "Holding Tank Registration Form" can also be found here. All of the bureau's fact sheets are online at http://des.nh.gov/organization/commissioner/pip/factsheets/index.htm.

Note: This fact sheet is accurate as of June 2010. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

1 **What is a Regulated Contaminant?** State law defines a regulated contaminant as "any physical, chemical, biological, radiological substance or other matter, other than naturally occurring substances at naturally occurring levels, in water which adversely affects human health or the environment." Consult the Material Safety Data Sheets (MSDSs) for the products you use; see the disposal information in the "Spills or Leaks" section of each MSDS.

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WD-DWGB-22-9 2010

Protecting Groundwater from Floor Drains and Other Typical Discharges

Why the Concern About Floor Drains and Other Discharges?
The main concern is for the protection of human health. There have been instances of drinking water contamination from improper disposal of wastewater, solvents, oils and various industrial wastes onto or into the ground in New Hampshire. The N.H. Department of Environmental Services wants to ensure that the use of floor drains and the discharge of wastewater onto or into the ground do not cause the contamination of groundwater, which is the state's main source of drinking water. Preventing groundwater contamination is also the property owner's concern, because the owner is responsible for preventing—and cleaning up—contamination. When groundwater does become contaminated, cleanup costs can easily run into tens or hundreds of thousands of dollars.

Do I Have to Let DES Know About Discharges?
Any regular discharge of non-domestic wastewater to the ground must be registered with, and in some cases requires a permit from, the DES Water Division.

Can I Continue to Discharge to the Ground?
While the state does allow some groundwater discharges as long as they are properly registered or permitted (see table of examples on following page), state rules prohibit any discharge to the ground of non-domestic wastewater containing a regulated contaminant (see box at right) without treatment with best available technology. Your first step is to determine whether your wastewater contains regulated contaminants or whether you store or use regulated contaminants in the area served by a floor drain. If the answer is no, you may continue the discharge by registering it with DES using the **"**Registration and Notification Form for Floor Drains and Discharges to Groundwater" located at www.des.nh.gov; click on "A to Z List," scroll to "Groundwater Discharges" and click on "Forms/Applications."

What Is A Regulated Contaminant?
State law (RSA 485-C:2 XIII) defines a regulated contaminant as "any physical, chemical, biological, radiological substance or other matter, other than naturally occurring substances at naturally occurring levels, in water which adversely affects human health or the environment." Consult the material safety data sheets (MSDS) for the products you use; see the disposal information in the "Spills or Leaks" section of the MSDS.

What Are My Options?
If the wastewater or the area served by the floor drain does contain regulated contaminants, you must choose one of the following five options:

1. Eliminate the discharge; permanently seal the drain to prevent releases to groundwater.
2. Eliminate regulated contaminants from the wastewater or, if a floor drain, eliminate regulated

contaminants from the area served by the floor drain and register the discharge with DES.

3. Connect the drain or discharge line to a municipal sanitary sewer in accordance with DES and local regulations.
4. Connect the drain or discharge to a registered holding tank that meets DES requirements.
5. Obtain a groundwater discharge permit. This is allowed only if the wastewater receives best available treatment and meets ambient groundwater quality standards.

If you choose options # 1-4, you must file the **"**Registration and Notification Form for Floor Drains and Discharges to Groundwater" (located at the address referenced above) with DES.

Discharges Generally Allowed with Registration	Discharges Requiring a Permit	Discharges That Are Not Allowed
• Beauty salon wastewater • Kennel wastewater • Bathroom floor drains • Non-contact cooling water	• Car washes • Non-domestic wastewater from industry or commercial business	• Floor drains where regulated substances are stored • Laboratory sinks • Manufacturing process water • Floor drains at automotive facilities

If you intend to continue the discharge as is (option #5), contact DES for a groundwater discharge permit application.

How Do I Seal My Floor Drain?

First, you need to be certain that no contaminants have been released to groundwater. If you are not familiar with the property's history, or if it is possible that regulated contaminants have been released to the ground through the drain, you should contact an environmental consultant to investigate (contact DES for a list of consultants). If you are positive that no regulated contaminants were ever discharged to the floor drain, you must fill out the "Discharge Well & Floor Drain Pre-Closure Notification Form**"** (located at the address referenced above) and submit it to DES at least 30 days prior to sealing the floor drain(s) with concrete. However, this does not remove any future liability associated with the drain. It is customary when property is to be sold or refinanced to perform an environmental assessment (sampling) of floor drains as well as other locations where contaminants may have been released.

What About Connecting to a Municipal Sanitary Sewer?

Connections to your municipal sanitary sewer are controlled by the local sewer authority. Contact the local authority regarding restrictions. Some local sewer authorities do not allow connection of floor drains, while others allow connection only with adequate pretreatment (e.g., oil/grit separator) or other controls. If you connect a floor drain to a municipal sanitary sewer, you still need to notify DES using the attached notification form.

What Are the Requirements for Holding Tanks?

DES has design standards for holding tanks. For more information please review fact sheet WD-DWGB-22-8 "Holding Tanks for Floor Drains" at the fact sheets website referenced below.

For Additional Information

For additional information, please call (603) 271-2858 or visit http://des.nh.gov/index.htm, click on A to Z List and choose Groundwater Discharges. The forms mentioned in this fact sheet can also be found on this page. All of the Drinking Water and Groundwater Bureau's fact sheets can be found on-line at http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm.

Note: This fact sheet is accurate as of June 2010. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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WMD-REM-13 2011

Reporting Oil Spills, Hazardous Waste Spills and Groundwater Contamination

The State of New Hampshire has statutory and regulatory requirements regarding the reporting of discharges of both petroleum products and hazardous wastes. To promote compliance with these "duty to report" requirements, the following excerpts are presented from the appropriate laws and regulations.

IN THE EVENT OF A HAZARDOUS WASTE SPILL

Duty To Report, N.H. Hazardous Waste Management Act RSA 147-A:11,

1. Any generator, operator, transporter, or employee of a hazardous waste facility who becomes aware of any storage, treatment, or disposal of hazardous waste in violation of this chapter shall immediately report the violation to the NH Department of Environmental Services Waste Management Division.

2. Any person who fails to give notice as required by RSA 147-A:11,1, shall be guilty of a misdemeanor if a natural person, or guilty of a felony if any other person.

3. Each day of a continuing violation shall constitute a separate offense.

Immediate Action, "Requirements for Hazardous Waste Generators" Env-Wm 500,

The generator shall report any discharge of hazardous waste or discharge of any material which when discharged becomes a hazardous waste that poses a threat to human health or the environment, for example, into storm or sanitary sewers, onto the land or into the air, groundwater or surface waters. Notification shall be both:

1. Immediately, not to exceed one hour from discharge discovery, to local fire department

2. Immediately, not to exceed one hour from discharge discovery, to the DES Emergency Response group at (603) 271-3899 (Monday through Friday, 8 a.m. to 4 p.m.), or to the New Hampshire Department of Safety at (603) 223-4381, 24 hours/day).

IN THE EVENT OF A PETROLEUM (OIL) SPILL

Duty To Report , N.H. Oil Spillage In Public Waters Act RSA 146-A:5,

1. The person/party responsible for the operation of any oil facility, carrier, or vessel that discharges oil in violation of this chapter shall immediately notify the DES Waste Management Division. Any person who fails to give such notice shall be guilty of a misdemeanor if a natural person, or guilty of a felony if any other person.

2. Each day of a continuing violation shall constitute a separate offense.

3. Any person who becomes aware of an oil discharge in violation of this chapter shall immediately notify the DES Waste Management Division.

Notification, "Contaminated Sites Management" Env-Or 600

Any responsible party or other person having knowledge of a discharge of oil shall report such discharge to the DES Waste Management Division immediately (603)271-3899 (Monday through Friday, 8 a.m. to 4 p.m.), or to the New Hampshire Department of Safety at (603)223-4381, 24 hours/day), unless all of the following conditions are met:

1. The discharge is less than 25 gallons.
2. The discharge is immediately contained.
3. The discharge and/or contamination is completely removed within 24 hours.
4. There is no impact or potential impact to groundwater or surface water.
5. There is no potential for vapors which pose an imminent threat to human health.

IN THE EVENT OF GROUNDWATER QUALITY VIOLATIONS

"Contaminated Sites Management" Env-Or 600

The responsible party shall notify the DES Waste Management Division within 60 days of discovery of a violation of the ambient groundwater quality standards of Env-Or 603.01.

Disclaimer:
Information contained in this fact sheet is current as of April 9, 2007. Statutory or regulatory changes that may occur subsequent to this date may cause part or all of the information to be invalid. If there are any questions concerning the status of this information, please contact DES at (603)271-3899.

Appendix F

Standard Operating Procedures – Facility Housekeeping

B.14 Spare Parts Storage
B.21 General Facility Housekeeping

Standard Operating Procedure for:	
B.14 Spare Parts Storage	
Purpose of SOP:	To protect storm water by properly storing spare parts. Improper storage of materials can result in pollutants and toxic materials entering ground and surface water supplies.

Always:

- Store spare parts in a designated area.
- Use drip pans for any parts that are dripping.

Whenever Possible:

- Store spare parts inside or under cover.
- Monitor storage areas for staining/leaks on a schedule decided on by the appropriate personnel.
- Clean the majority of petroleum products from the parts that are to be stored.

Related Guidance:	
	– USEPA Manual of BMPs

Standard Operating Procedure for:	
B.21 General Facility Housekeeping	
Purpose of SOP:	To protect storm water by maintaining a clean, organized facility.

Always:

- Keep open areas clean and orderly.
- Pick up litter.
- Conduct regular employee training and public education to reinforce proper housekeeping.
- Remove unused scrap/junk materials.
- Store hazardous materials as specified by the manufacturer.

Whenever Possible:

- Store materials and wastes inside or under cover if outside.
- Substitute less or non-toxic materials for toxic ones.
- Perform a routine cleaning of the facility.
- Inspect facility (interiors, exterior, parking areas, etc.) for stains.

Related Guidance:	
	– USEPA National Menu of BMPs

Appendix G

Standard Operating Procedures – Vehicle Storage, Maintenance and Repair

B.9 Vehicle and Equipment Storage
B.13 Parts Cleaning
B.14 Spare Parts Storage
B.15 Alternative Products/Use/Storage/Disposal
B.23 Painting

Standard Operating Procedure for:	
B.9 Vehicle and Equipment Storage	
Purpose of SOP:	To protect storm water from petroleum products that may drip or leak from vehicles and equipment being stored or from dirt and sediment that accumulate in the storage areas.

Always:

- Inspect parking areas for stains/leaks on a regular basis.
- Use drip pans or adsorbents for leaking vehicles (provide a labeled location to empty and store drip pans).
- Address any known leaks or drips as soon as possible.
- Clean up spills.

Whenever Possible:

- Store vehicles inside where floor drains have been properly connected and registered.
- Store vehicles on paved areas, and street sweep on a regular basis to remove drips/leaks/dirt, and dispose of street sweepings properly.
- Maintain vehicles to prevent leaks.

Never:

- Never store leaking vehicles over a storm drain.

Related Guidance:	
	– USEPA National Menu of BMPs – NHPPP Pitstops Manual

Standard Operating Procedure for:	
B.13 Parts Cleaning	
Purpose of SOP:	To protect storm water by practicing proper parts cleaning techniques and disposing of waste cleaners properly.

Always:

- Perform all cleaning in a designated area to minimize the potential for spills.
- Store waste cleaners in properly labeled containers in accordance with regulations.
- Dispose of all waste cleaners properly with a licensed contractor, on a regular basis.
- Close parts-cleaner lid when it is not in use.

Whenever Possible:

- The variety of cleaners should be minimized to make recycling and disposal simpler.
- Use citrus-based cleaners and dispose of properly.
- Use steam cleaning, pressure washing, or aqueous washers instead of solvents; however wastewater must be discharged to an oil/water separator and the wastewater treatment plant notified, or to a NHDES registered holding tank.

Never:

- Never dispose of spent cleaners down the floor drains, sinks, storm drain, on the ground or into the air. Disposal by evaporation violates the New Hampshire Hazardous Waste Rules.
- Never mix or add spent or fresh solvents to used oil.
- Never use gasoline as a cleaner or solvent.
- Never burn spent parts cleaning fluids in a used oil burner.
- Never use a hand-held cleaner in/near the parts cleaner; never mix cleaners.

Related Guidance:	
	– NHPPP Pitstops Manual

Standard Operating Procedure for:	
B.14 Spare Parts Storage	
Purpose of SOP:	To protect storm water by properly storing spare parts. Improper storage of materials can result in pollutants and toxic materials entering ground and surface water supplies.

Always:

- Store spare parts in a designated area.
- Use drip pans for any parts that are dripping.

Whenever Possible:

- Store spare parts inside or under cover.
- Monitor storage areas for staining/leaks on a schedule decided on by the appropriate personnel.
- Clean the majority of petroleum products from the parts that are to be stored.

Related Guidance:	
	– USEPA Manual of BMPs

Standard Operating Procedure for:	
B.15 Alternative Products Use/Storage/Disposal	
Purpose of SOP:	To protect storm water by using alternative products that are more environmentally friendly.

Always:

- Ask product suppliers, peers, or regulatory agents if there is a more environmentally friendly alternative, when ordering any product.

Whenever Possible:

- Use alternative products when deemed appropriate:
  - Instead of solvent-based parts cleaners use citrus–based cleaners or steam/pressure wash to an oil/water separator/holding tank.
  - Instead of herbicides use bark mulch.
  - Instead of fertilizer use compost or manure.
  - Instead of pesticides plant marigolds, onion, or garlic as deterrents; release or attract beneficial insects.
  - Instead of synthetic adsorbents, use corncob or cellulose products for petroleum spills that can be burned for energy recovery.
- Train employees on the benefits of using alternative products.
- Minimize waste by purchasing recyclable products that have minimal packaging.
- Use less harmful deicers such as calcium magnesium acetate, potassium acetate, or organic deicers such as Magic Salt™.
- Use a "pre-mix" of 4 to 1 sodium chloride and calcium chloride, which is the most cost-effective alternative to straight salt.
- Substitute synthetic fertilizers with natural compost and organic fertilizers to improve soil pH, texture and fertility, and cause less leaching to groundwater.
  - Use no-phosphorus lawn fertilizer (phosphorus is rarely lacking in New Hampshire soils).
  - Use natural or certified organic fertilizers with low phosphorus levels (8-2-4, 6-2-4, 9-1-1, 6-1-1).
- Use slow-release nitrogen fertilizers.
- Reduce or eliminate mown lawn in areas that are not actively used.
- Consider converting unused turf to meadow or forest.

Related Guidance:	
	– USEPA National Menu of BMPs – NHPPP Pitstop Manual

Standard Operating Procedure for:	
B.23 Painting	
Purpose of SOP:	To protect storm water by properly storing, using and disposing of paint and preparation materials.

Always:

- Store waste paints, solvent, and rags in sealed containers.
- Perform abrasive blasting and spray painting in accordance with regulations.
- Properly clean, store, and dispose of paint and associated waste materials.
- Train employees on Best management Practices concerning painting activities, cleanup, and disposal.

Whenever Possible:

- Replace solvent-based paint with less toxic paints such as latex or water-based paints.
- Practice "source reduction" – buy only the paint that is needed.
- Use up, donate or recycle unused paint.
- Use drop cloths under any painting or preparation activity such as scraping or sandblasting.
- Use techniques such as brushing and rolling to avoid overspray.
- Use vacuum sanders to collect paint dust.
- Perform abrasive blasting and spray painting in an enclosed or covered area that is safe for personnel.

Never:

- Never dispose of paint or waste paint products into the storm drain system, a waterbody, or onto the ground.

Related Guidance:
– NHPPP Pitstops Manual – NHDES Environmental Fact Sheets: • WMD-HW-14 Pollution Prevention Tips for Paint • WMD-HW-6 Contaminated Cloth Wipes for Laundering

Appendix H

Standard Operating Procedures – Vehicle and Equipment Fueling

B.11 Vehicle and Equipment Fueling

NHDES Environmental Fact Sheet WD-DWGB-22-6 –
“Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment”

Standard Operating Procedure for:	
B.11 Vehicle and Equipment Fueling	
Purpose of SOP:	To prevent storm water contamination originating from vehicle and equipment fueling.

Always:

- Fuel carefully to minimize drips to the ground surface.
- Maintain clean fuel dispensing areas using dry cleanup methods.
- Clearly label and tag all valves to reduce human error.
- Train employees and subcontractors on proper fueling methods and spill cleanup techniques.
- Maintain fuel storage tanks in accordance with local, state and federal laws.
- Have absorbent spill cleanup kits and materials available at fueling areas.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.
- When fueling small equipment from portable containers, fuel in a designated area away from stormdrains and waterbodies.

Whenever Possible:

- Install a canopy or roof over aboveground storage tanks and fuel transfer areas.
- Regularly inspect fueling equipment for corrosion and structural failure, cracks in foundations, and physical damage to container systems.
- Use designated fueling areas built upon a level impervious surface (hard cement is best). If paved with asphalt, add a protective coating to create an impervious surface, inspect regularly, and street sweep quarterly at a minimum.
- Protect storm drains from fueling areas using berms and dikes.
- Use absorbent material or absorbent pads during fueling to collect leaks.

Never:

- "Top off" fuel tanks (post signs to remind employees).
- Hose down or bury a fuel spill.

Related Guidance:	
	– USEPA National Menu of BMPs – NHDES Fact Sheet: • WD-WSEB-22-6 BMPs for Fueling and Maintenance of Excavation and Earthmoving Equipment

ENVIRONMENTAL Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-22-6 2010

Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment

Env-Wq 401, Best Management Practices for Groundwater Protection, applies to a variety of businesses and activities considered potential contamination sources under the Groundwater Protection Act, RSA 485-C. If you operate a *permanent* facility for fueling or maintenance of excavation or earthmoving equipment (or other vehicles), consult DES fact sheet WD-DWGB-22-4, Best Management Practices for Groundwater Protection. **If you fuel or maintain excavation or earthmoving equipment *in the field*,** this fact sheet explains how to meet the requirements of the best management practices (BMP) rules. The BMP rules apply to "regulated containers" holding five or more gallons of a regulated substance, **which include motor fuels, lubricants, hydraulic fluids, other petroleum products, degreasers, and other substances that are capable of contaminating drinking water.**[1] The rules do not apply to petroleum storage tanks regulated under Env-Wm 1401 Underground Storage Facilities (USTs) or Env-Wm 1402 Control of Aboveground Petroleum Storage Facilities (ASTs), but may apply to the transfer of fuel or other petroleum products between ASTs/ USTs and equipment or portable containers.

1. Store fuels and regulated substances in sealed, clearly labeled containers.
Regulated containers must be labeled (specifying contents), closed and sealed at all times, except to add or remove fluids.

2. Store regulated containers on a stable, level, impervious surface.
Regulated containers must be stored in such a way that they will not easily tip over. Fueling, fuel storage, and maintenance areas, where transfers of fuel/fluids or work on equipment or vehicles that might result in spills, must be located on level ground with an impervious floor surface constructed of concrete, asphalt, chemically compatible polymer material or any other impervious surface that will contain gas, oil or other fluids in use. If the facility is subject to Env-Wm 1402 (AST rules; see above) the impervious surface must be concrete. Impervious surfaces together with secondary containment barriers (e.g., tank vaults, positive limiting barriers, containment berms) can effectively contain spills or tank failures. Containers must not be stored on pervious surfaces (wood, soil) or otherwise come in contact with moist earth.

[1] Under Env-Wq 401, "Regulated substance" means any of the following, with the exclusion of ammonia, sodium hypochlorite, sodium hydroxide, acetic acid, sulfuric acid, potassium hydroxide, and potassium permanganate: (1) Oil as defined in RSA 146-A:2, III; (2) Any substance that contains a regulated contaminant for which an ambient groundwater quality standard has been established pursuant to RSA 485-C:6; and (3) Any substance listed in 40 CFR 302, 7-1-05 edition.

3. Provide secondary containment around fuel storage containers and during transfers. Secondary containment must be provided for all regulated containers and be in place during refueling activities involving transfers of fuel from "on-road" delivery trucks, "off-road" tank trucks (referred to as "mobile refuelers") or portable containers to field equipment.

Option 1 (Mobile Fueling): This involves fueling earthmoving or excavation equipment from a tank truck or some other container that is moved around the site. Secondary containment equipment used during mobile fueling should be sized to contain the *most likely* volume of fuel to be spilled during a fuel transfer.[2] Portable containment equipment should be positioned to catch any fuel spills due to overfilling the equipment and any other spills that may occur at or near the fuel filler port to that equipment. The selection of containment equipment and its positioning and use should take into account all of the drip points associated with the fuel filling port and the hose from the fuel delivery truck.[3] Personnel must attend to the fueling process to ensure that any spills will be of limited volume. See the diagram in Figure 1A and Attachment 1, photos A and B for examples of portable spill containment that may be used during mobile fuel transfers.

Option 2 (Fuel Storage and Transfer Areas): This involves fueling equipment in a fixed location on the site. Refueling containers (skid-mounted tanks, drums, five-gallon cans) must have secondary containment. Secondary containment areas for fuel storage tanks must be able to contain 110 percent of the volume of the largest fuel storage container and have an impervious floor. Tanks may be placed within a metal, plastic, polymer or pre-cast concrete vault providing 110 percent of the volume of the largest fuel storage container. For smaller volumes stored in fuel drums, containment pallets provide suitable secondary containment. See Attachment 1, photos E and F. Fuel transfer should be done over a flat, impervious fuel transfer area adjacent to the fuel storage tank(s). The impervious fuel transfer area should extend beyond the full reach (length) of the fuel hose to avoid spills directly onto a pervious surface. See Figure 1B. Portable containment equipment may provide both secondary containment for the fuel storage tank (110 percent of the volume) and the required impervious area (typically raised at the perimeter) necessary for conducting fuel transfers. See Attachment 1, photos C and, D. Tank storage and fuel transfers may also be within secondary containment areas constructed by forming a basin sloped down to a central low point or bermed along the perimeter, lined with a continuous sheet of 20 mil (or greater) polymer material or appropriate geomembrane liner[4], and backfilled with at least six inches of sand.

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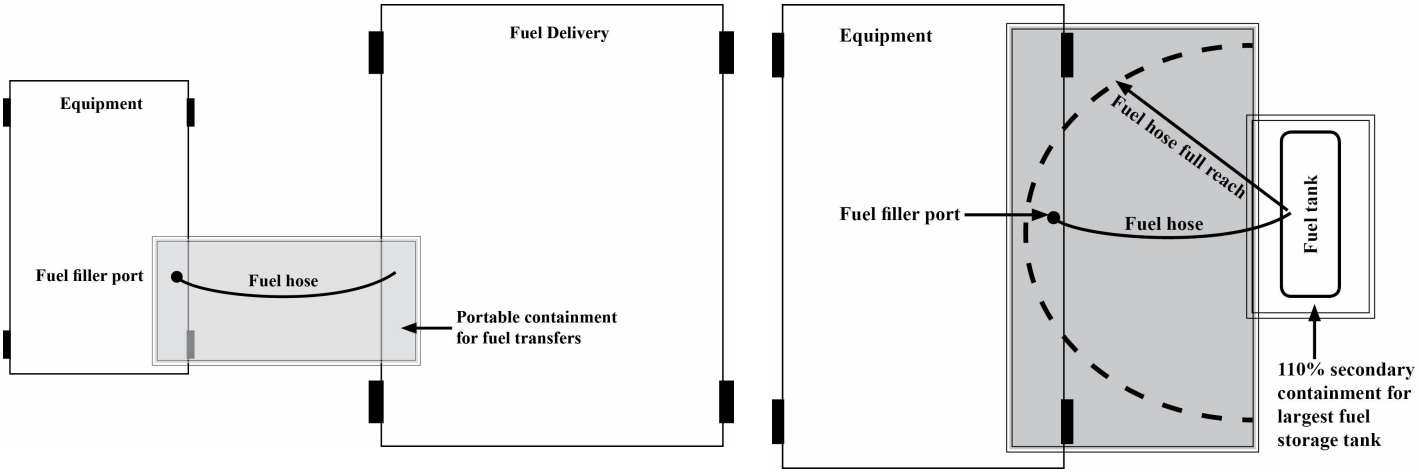
[2] The "most likely" volume to be spilled is dependent upon factors such as the fuel transfer rate (gallons per minute), amount of fuel being transferred, the distance between the hose nozzle and pump shut off switch, and the response time of personnel and equipment available at the facility.

[3] Drip points include any points from which fuel may drip to the ground if leaked from or spilled near the fuel tank filler port or the fuel nozzle on the hose. Portable containment systems typically include a floor having an impervious geotextile with an attached berm or sidewall to contain spilled fluids.

[4] Portable containment products must be used according to manufacturer's specifications including those related to environmental, chemical resistance limits including exposure time, bonded seam strength, and puncture and tear strength. An ASTM Puncture rating (D4833) of 200 lbs or greater and tear strength (D4533) to equal 30/30 lb should be minimum requirements for all liners.

Figure 1A
Containment with Impervious Surface (in grey) for Mobile Fuel Transfers

Figure 1B
Tank Containment with Impervious Surface (in grey) for Fuel Transfers



4. Keep secondary containment area covered and dry.
Secondary containment for outdoor storage areas (for fuel or other regulated substances) must be covered with a roof, plastic sheeting, or waterproof tarpaulins to keep containers dry, except when materials are being added or removed. The area must be kept free of rain, snow, and ice to ensure sufficient containment volume remains to contain a release from the largest storage tank. For relatively small storage areas, spill containment pallets and covers are commercially available. (See Attachment 1, photos E and F) If the water collected from the containment area has a visible sheen, DES must be contacted at (603) 271-3644 before disposal of the water.

5. Comply with Related State and Federal Requirements
Construction, installation or use of aboveground tanks storing petroleum products with a capacity greater than 660 gallons in any one tank, or a combined volume of petroleum products tanks on a site greater than 1,320 gallons, must be pre-approved and registered with DES per Env-Wm 1402. (Contact the AST Program at 271-3644)

Sites storing more than a total of 1,320 gallons (in containers 55-gallons or larger) of oil products are also regulated under the federal Spill Prevention Control and Countermeasure (SPCC) Rule, 40 CFR 112. In addition to secondary containment requirements for "bulk storage" these sites must also provide spill containment during mobile fuel transfers complying with the rule's provisions.[5] Both fuel trucks that come to the site to deliver fuel (e.g. "on-road") and vehicles only used at the site to dispense fuel to equipment (e.g., "mobile refuelers") are subject to the SPCC rules involving secondary containment during fuel transfers. Guidance on the SPCC rule with examples of secondary containment options may be found within *EPA's Spill Prevention, Control, and Countermeasure (SPCC) Guidance for Regional Inspectors*. For a copy of this guide, please see www.epa.gov/OEM/content/spcc/spcc_guidance.htm#Content.[6]

[5] Tanks regulated under Env-Wm 1402 (AST rules) must also comply with the federal (SPCC) and must conduct fueling activities in accordance with a facility plan summarizing the structural and/or non-structural measures in place or in use to contain spills or releases of "oil" as defined under the rule.
[6] For more information concerning the SPCC rule, contact the EPA Region 1 SPCC Enforcement Coordinator (Joseph Canzano) at (617) 918-1763 or canzano.joseph@epa.gov.

Stationary fuel tanks over 60 gallons and portable containers under 60 gallons that provide fuel to off-road vehicles (e.g. excavators) must also comply with National Fire Protection Association (NFPA) standards, specifically NFPA 30 Flammable and Combustible Liquids Code, and, if fueling "on-road" vehicles, NFPA 30A Motor Fuel Dispensing Facilities and Repair Garages. NFPA standard 30 establishes minimum fabrication standards for tanks and containers holding flammable and combustible liquids, limits on the amount of materials that can be stored in any one pile or rack, distances between piles or racks, property line setbacks and accessibility.

Any fuel container larger than 60 gallons must meet UL standard 142, *Steel Aboveground Tanks for Flammable and Combustible Liquids* establishing minimum requirements for fabrication, installation and inspection for aboveground storage tanks.[7]

6. Train employees to prevent, contain, and clean up spills.
Train employees in all aspects of proper storage and handling of fuel or other regulated substances. Instruct employees to use spill prevention equipment (e.g., drip pans, etc.), be present during all fuel transfers, and *immediately* clean up spills and contaminated soil. Absorbents to pick up spills and leaks must be located in the immediate area where fuels are transferred, used, or stored. In addition**,** spill response information must be posted at all storage areas (poster available from DES).

7. Immediately report significant or uncontrolled spills.
Small spills that are quickly cleaned up do not need to be reported. However, if *any* of the following occurs, the spill must be immediately reported to the N.H. Department of Environmental Services at (603) 271-3899 or (603) 271-3636 after 4 p.m. on weekdays or on weekends:

- ✓ The spill is 25 gallons or more.
- ✓ The spill is not contained immediately.
- ✓ The spill and contamination are not completely removed within 24 hours.
- ✓ There is impact or potential impact to groundwater or surface water.

8. Properly store and dispose of contaminated soil and materials.
Store small quantities of contaminated soil, leaking drums/cans or used absorbent materials in covered, water-tight containers. If you are going to transport contaminated absorbents or leaking drums/cans, they must be shipped in a DOT or UN Salvage Drum that complies with DOT 49 CFR 173.3 (c). Do not mix absorbents contaminated with different petroleum products or other regulated substances. This can create a hazardous waste that requires disposal by a licensed hauler. If wastes with petroleum or other regulated substances are mixed, contact DES to determine whether it is necessary to manage the waste as a hazardous or solid waste. Determining whether the waste is hazardous may require lab testing. Contact the Hazardous Waste Management Bureau's Compliance Section at (603) 271-2942 for more information. Information concerning proper disposal of petroleum contaminated solid wastes (e.g., absorbents) is available from the Solid Waste Bureau's Compliance Section at (603) 271-2925.

9. Keep storage areas secure.
Fuel storage areas must be kept secure. Employ a locked gate at the entrance to the site, a fence and a locked gate around the storage area, and/or store regulated substances in a locked trailer or shed. Access to storage areas must be under lock whenever the site is unattended. If the site is inactive for a period, the storage area must be inspected weekly for leaks and security. To keep storage areas secure from collision damage, berms or boulders should be used and the storage area should be located away from the active portion of the site.

[7] See Underwriters Laboratory Standards at http://ulstandardsinfonet.ul.com/ for access to a complete copy of the standards.

10. Keep containers away from surface waters, catch basins (stormwater), private and public water supply wells.
Containers must be kept at least 50 feet from catch basins and surface waters, 75 feet from private wells, and outside the sanitary radius (varies from 150 to 400 feet) of a public well Contact the local public water supplier or DES (271-0688) to determine the sanitary radius for the well.

Waivers
While the BMP rules are intended to apply to a variety of circumstances, DES recognizes that strict compliance may not fit every situation. Requests for specific waivers should be directed to DES at (603) 271-2947.

This fact sheet is a statement of DES's policy for interpreting Env-Wq 401, in terms of its applicability to fueling and maintenance of earthmoving and excavation equipment. Information contained in this fact sheet is current as of March 2010. Statutory or regulatory changes that may occur after this date may change this information. If there are any questions concerning the status of the information, please contact DES at (603) 271-2947.

Attachment 1

Portable Containment, Storage and Cover[8]

Containment with Rigid or Flexible "pop-up" Pool or Berm (for mobile refueling)

A.

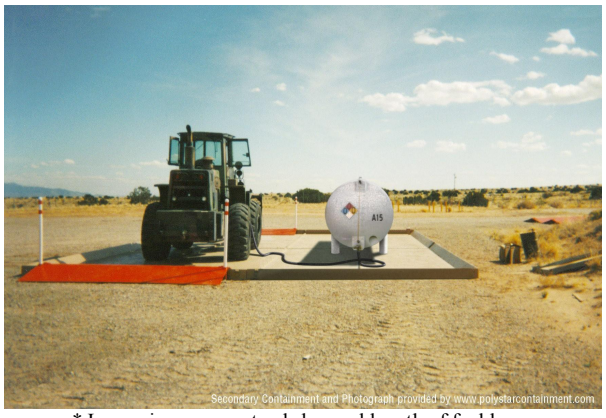


B.



Tank Storage and Fuel Transfer Area

C.



* Impervious area extends beyond length of fuel hose.

D.



* Outdoor storage greater than 10 days must also include a cover.

Portable Drum Containment Pallet and Cover

E.



F.



[8] Photos have been provided courtesy of Dawg Inc., Interstate Inc., Safetyshop, UltraTech International Inc., and PolyStar Inc.

Appendix I

Standard Operating Procedures – Vehicle and Equipment Washing

B.10 Vehicle and Equipment Washing

NHDES Environmental Fact Sheet WD-DWGB-22-10 –
"Wastewater Discharges from Vehicle Washing"

Standard Operating Procedure for:	
B.10 Vehicle and Equipment Washing	
Purpose of SOP:	To protect storm water using proper washing techniques, proper washing locations, and proper disposal of wash water for heavy and light-duty vehicles and equipment.

Always:

- Operate a closed system with wastewater recycling (like a floor drain discharge to a holding tank), or
- Discharge to a municipal sanitary sewer, or
- Obtain a groundwater discharge permit, or
- Wash fewer than 30 vehicles per week and discharge to the ground surface, if
    - The Best Management Practices Rules (see references Env-Wq 401) are followed,
    - The discharge is registered, and
    - The washwater:
        - is not from power washing, steam cleaning, engine cleaning, or undercarriage cleaning,
        - does not contain soaps or other products which contain regulated contaminants, and
        - does not discharge to a surface water.

Whenever Possible:

- Use a commercial car wash for light duty vehicles.
- Obtain and use drain guards (filter inserts) to catch sediments, petroleum products, etc. that might enter the storm drains as a result of vehicle washing.
- Minimize water and soap use when washing or rinsing vehicles.

Never:

- Never perform engine or undercarriage washing outside.
- Never wash vehicles over a storm drain or near drinking water wells.
- Discharge washwater to a surface water.

Related Guidance:	
	– NHDES Environmental Fact Sheet: • WD-WSEB-22-10 Wastewater Discharges from Vehicle Washing – NHDES BMP Rules Env-Wq 401 – NHDES Water Supply Engineering at (603) 271-2858

ENVIRONMENTAL Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-22-10 2015

Wastewater Discharges from Vehicle Washing

Water used in washing cars, trucks, and other vehicles may contain a wide range of contaminants. These contaminants can include oil, fuels and other hydrocarbons, metals, detergents, road salt and grit. Discharged into surface waters, these contaminants can degrade water quality and harm aquatic life. Discharged into groundwater, they can make water unfit for drinking. To avoid these problems and the legal consequences that may result, the following guidelines apply to facilities where vehicles are washed on a regular basis and the wash water is collected by a conveyance such as a drain, catch basin, ditch or swale and infiltrated to the ground or groundwater*. Owners of facilities that conduct washing activities have four options for their wastewater discharges:

1. Operate a closed system with wastewater recycling (no discharge of wastewater).
2. Discharge to a municipal sanitary sewer.
3. Obtain a groundwater discharge permit.
4. Obtain registration to wash fewer than 30 vehicles per week and discharge to the ground *surface only*.

1. Closed System with No Discharge

This does not require a permit. However, it may require a "Holding Tank Registration" if the treatment system has a grit and oil tank that is pumped out. The water and sludge that are pumped from the tank must be collected and disposed of at an approved disposal facility, i.e., a wastewater treatment plant or hazardous waste disposal facility, depending on the nature of the material.

2. Discharge to Municipal Sanitary Sewer

Connections to your municipal sanitary sewer are controlled by the local sewer authority. Contact the local authority regarding restrictions. Some local sewer authorities do not allow connection of floor drains, while others allow connection only with adequate pretreatment, e.g., an oil/grit separator, or other controls. If you connect an existing floor drain to a municipal sanitary sewer, you still need to notify NHDES.

* These restrictions do not apply to occasional vehicle washing, such as at residences or occasional events such as fundraising car washes. For more information on community car washes and water quality see fact sheet WD-WMB-14 "Community Car Washes and Water Quality" at http://des.nh.gov/organization/commissioner/pip/factsheets/wmb/documents/wmb-14.pdf .

3. Obtain a Groundwater Discharge Permit

You may discharge vehicle wash water directly to the ground if both of the following are true:

a. A groundwater discharge permit is obtained in accordance with Env-Wq 402.11; and
b. The wash water is treated to ambient groundwater quality standards (Env-Or 600, Table 600-1) using best available technology (typically granular activated carbon).

4. Wash Fewer than 30 Vehicles per Week

If you wash fewer than 30 vehicles per week, you may be able to discharge indirectly to groundwater without obtaining a groundwater discharge permit. However, you need to follow Env-Wq, 401 Best Management Practices for Groundwater Protection to avoid contamination of your wash water with regulated substances. You also need to register your discharge and floor drain, if any. To avoid having to obtain a groundwater discharge permit, you must meet *all* of the following conditions:

a. Best Management Practices for Groundwater Protection are followed.
b. The floor drain is *not* in an area where regulated contaminants are used or stored.
c. The wastewater:
    - Is *not* from power washing, steam cleaning, engine cleaning or undercarriage cleaning.
    - Is *not* from a chemical or acid wash.
    - Does *not* contain soaps or other products that contain regulated contaminants.
    - Does *not* result in a surface water discharge.
    - Discharges to the ground surface.
    - Contains only approved detergents.
    - Leads to an oil/water separator or other pretreatment method prior to infiltration.
    - Is registered with NHDES in accordance with Env-Wq 402.33.

Owners of facilities with these discharges are responsible for ensuring that regulated contaminants are not discharged and that groundwater is suitable for drinking without treatment. NHDES reserves the right to verify compliance by requiring the collection and analysis of soil samples from the discharge area(s) under Env-Wq 402.33.

Surface Water Discharges

In order to adequately protect the quality of surface water in New Hampshire, direct discharges of wastewater derived from car washing into surface water is **prohibited**. For more information about permitting of discharges to surface water, contact the NHDES Wastewater Engineering Bureau at (603) 271-3908.

For Additional Information

For more information about groundwater discharges, holding tank registration, floor drain registrations, and rules, please call (603) 271-2858 or visit NHDES' Groundwater Discharge Permitting & Registration webpage at: http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge/index.htm.

For additional information, please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov, or visit http://des.nh.gov/organization/divisions/water/dwgb/index.htm.

Note: This fact sheet is accurate as of January 2015. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

Appendix J

Standard Operating Procedures – Catch Basin Cleaning and Street Sweeping

B.1 Catch Basin Cleaning
B.24 Street Sweeping

NHDES Environmental Fact Sheet WMD-SW-32 –
“Management of Street Wastes”

Standard Operating Procedure for:	
B.1 Catch Basin Cleaning	
Purpose of SOP:	To protect storm water by maintaining the ability of catch basins to trap sediments, organic matter, and litter. This reduces clogging in the storm drain system as well as the transport of sediments and pollutants into receiving waterbodies.

Always:

- Inspect catch basins for structural integrity and evidence of illicit discharges during cleaning. Use the Catch Basin Cleaning Form.
- If gross contamination (sewage or oil), stop cleaning and report to supervisor for follow up.
- 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 stockpile as follows:
  - If obviously (by visual and/or olfactory examination) contaminated with sanitary wastewater, animal wastes, oil, gasoline or other petroleum products, test the solids pursuant to the hazardous waste determination requirements in ENV-Hw 502 and dispose of as follows:
    - If non-hazardous – dispose at any permitted, lined solid waste landfill or other solid waste treatment facility permitted to accept this material.
    - If hazardous – dispose of in accordance with NH Hazardous Waste Rules, ENV-Hw 100-1100
  - If not obviously contaminated,
    - Test for metals, VOCs and PAHs.
    - Compare to NHDES Risk Characterization and Management Policy (RCMP) S-3 Soil Standards (see following page) for reuse as road base or subbase.
    - Compare to NHDES RCMP S-1 Soil Standards (see following page) for unrestricted reuse.

Whenever Possible:

- Inspect each catch basin at least annually, during catch basin cleaning.
- Create a checklist for catch basins to help classify which catch basins require maintenance and how often.
- Perform street sweeping on an appropriate schedule to reduce the amount of sediment, debris and organic matter entering the catch basins, which in turn reduces the frequency with which they will need to be cleaned.
- Discharge fluids collected during catch basin cleaning to a sanitary WWTP, or buffered detention area.

Related Guidance:	
	– NHDES Environmental Fact Sheet: • WMD-SW-32 Management of Street Wastes

Catch Basin Cleaning Form

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

Supervisor/Crew Leader:_____

Catch Basin ID	Basin Location	Problem Identified? (Check all that apply)				Comments
		Flow	Poor Condition	Oil Sheen	Excess Sediment	

Catch Basin Cleanings Reuse Guidance			
Maximum Contaminant Concentrations			
Regulated Contaminant	*S-1 Standards (mg/kg)*	*S-3 Standards (mg/kg)*	*USEPA SW-846 Test Method*
Metals			
Arsenic	11	11	6010B
Barium	750	3,400	6010B
Cadmium	32	230	6010B
Chromium	1000	5,000	6010B
Lead	400	400	6010B
Mercury	13	13	7471A
Selenium	260	260	6010B
Silver	45	200	6010B
VOCs			
Benzene	0.3	0.3	8260B
Dichloroethane, 1,2-	0.08	0.08	8260B
Isopropyl benzene	123	123	8260B
Methyl-t-butyl ether	0.13	0.13	8260B
Toluene	100	100	8260B
Xylene	500	1,100	8260B
Aklylbenzenes Butylbenzene, n- Butylbenzene, sec- Butylbenzene, tert- Isopropyl toluene, 4- Propylbenzene, n- Trimethylbenzene, 1,2,4- Trimethylbenzene, 1,3,5-	59 (total)	59 (total)	8260B
PAHs - Carcinogenic			
Benzo(a)anthracene	0.7	40	8270C
Benzo(a)pyrene	0.7	4	8270C
Benzo(b)fluoranthene	7	400	8270C
Benzo(k)fluoranthene	7	400	8270C
Chrysene	70	4,000	8270C
Dibenzo(a,h)anthracene	0.7	4	8270C
Indeno(1,2,3-cd)pyrene	0.7	40	8270C
PAHs – Noncarcinogenic			
Acenaphthene	270	270	8270C
Acenaphthylene	300	300	8270C
Anthracene	1,000	1,700	8270C
Fluoranthene	810	5,000	8270C
Fluorene	510	510	8270C
Methylnaphthalene,2-	150	150	8270C
Napthalene	5	5	8270C
Benzo(g,h,i)perylene Phenanthrene Pyrene	480 (Total)	5,000 (Total)	8270C

Standard Operating Procedure for:	
B.24 Street Sweeping	
Purpose of SOP:	To remove sediment, debris and other pollutants from streets, parking areas, and paved surfaces through regular, properly timed sweeping schedules.

Always:

- Sweep all publicly accepted paved streets and parking lots at least once per year as soon as possible after snowmelt.
- Dispose of street sweepings properly (reuse is unrestricted if visual evidence of litter, animal waste, and petroleum contamination is absent).

Whenever Possible:

- Start at the "top" of town and work down.
- Sweep downtown areas more frequently (daily).
- Perform additional sweeping on a seasonal schedule and document areas swept.
- Sweep in locations that generate debris, such as construction entrances, sand/salt loading areas, vehicle fueling areas, and vehicle and equipment storage areas on an as needed basis.
- Street sweep before a major rain event.
- Use dry vacuum assisted street sweepers (the most effective).
- Maintain street sweeping equipment for maximum effectiveness.
- Cover storage areas or locate storage areas where runoff discharges to a buffer.
- Clean catch basins after streets are swept.

Never:

- Never store street sweepings in areas where storm water could transport fines to the storm drain system or a waterbody.
- Never purposely sweep into the storm drain system.

Related Guidance:	
	– NHDES Environmental Fact Sheet: • WMD-SW-32 Management of Street Wastes

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WMD-SW-32 2006

Management of Street Wastes

This fact sheet describes the requirements applicable to the disposal or reuse of street sweepings, roadside ditch cleanup soils, and catch basin cleanings, collectively referred to as "street wastes." RSA 149-M requires that solid waste be disposed of at a facility permitted to accept the material. These soils have the potential to be contaminated with petroleum hydrocarbons, road salt, trash, lit-ter, animal waste, or other solid waste, and therefore need to be managed appropriately. Waiver Ap-proval DES-SW-WV-06-001, attached, allows for the disposal or utilization of street wastes in ac-cordance with this fact sheet.

DISPOSAL

Street wastes that **are** obviously contaminated with wastewater, animal wastes, oil, gasoline, or other petroleum products must be tested pursuant to the hazardous waste determination requirements in Env-Hw 502 of the NH Hazardous Waste Rules. Contamination is determined by visual and/or olfac-tory examination.

- If determined to be non-hazardous, these soils may be disposed of at any permitted, lined solid waste landfill or other solid waste treatment facility permitted to accept the material.
- If determined to be hazardous, these soils must be disposed of in accordance with NH Hazardous Waste Rules, Env-Hw 100-1000.

Street wastes that **are not** obviously contaminated with wastewater, animal wastes, oil, gasoline or other petroleum products may be taken without testing directly to any permitted solid waste landfill for disposal or deposited for use as daily cover. Contamination is determined by visual and/or olfac-tory examination. Any material used for daily cover must meet the performance objectives found in Env-Sw 806.03 of the New Hampshire Solid Waste Rules.

REUSE

Street wastes that **are not** obviously contaminated with wastewater, animal wastes, oil, gasoline, or other petroleum products may be reused as described below. Contamination is determined by visual and/or olfactory examination. Prior to reuse, trash, leaves, and other debris should be re-moved. This is often accomplished by screening, but other methods may also be used.

Street Sweepings and Roadside Ditch Cleanup Soils

Street sweepings and roadside ditch cleanup soils may be reused without restriction.

Catch Basin Cleanings

Catch basin cleanings may be reused in any of the following ways if they are tested and any contaminants do not exceed the concentrations listed on the attached table:

- Cleanings may be reused in the production of base and subbase aggregate for the construction of a paved roadways and parking lots, if they do not exceed Department of Envi-ronmental Services Risk Characterization and Management Policy (RCMP) S-3 soil stan-dards as listed in the attached table.

- Cleanings may be reused without restriction if they do not exceed RCMP S-1 soil standards as listed in the attached table.

Catch basin cleanings must be stockpiled in a manner to prevent erosion and release to the environment until test results are known. Annual testing of one representative, composite sample for an initial period of two years shall be required. The composite sample must be representative of the soils being tested. At least five to 10 samples should be taken from different locations around the pile and at varying depths between 25 cm and 1 meter. Composite samples must be thoroughly mixed in a large container to provide a representative sample of the pile. Laboratory staff should be consulted to determine the amount of soil required to carry out the analyses.

For as long as test results are below the concentrations identified in the attached table, sample frequency may be reduced to one representative, composite sample, every three years.

For More Information

For more information, contact the N.H. Department of Environmental Services, Waste Management Division, PO Box 95, 29 Hazen Drive, Concord, NH 03302-0095; (603) 271-2925.

Appendix K

Standard Operating Procedures – Storm Drain System Inspection and Maintenance

Inventory of Town-Owned Stormwater BMPs

Recommended Maintenance on Common Long-Term Stormwater BMPs

B.2 Storm Drain System Repair and Maintenance

BMP Inspection Form

Salem, NH		
Inventory of Town-Owned Stormwater BMPs		
Structure Type	**Structure ID**	**Nearest Address**
Detention Basin	DET-1	6 Sally Sweets Way
Detention Basin	DET-2	6 Aspen Way
Detention Basin	DET-3	109 E Broadway
Detention Basin	DET-4	3 Millville Lake Dr
Detention Basin	DET-5	5 Millville Lake Dr
Detention Basin	DET-6	12 Millville Lake Dr
Detention Basin	DET-7	224 N Broadway
Detention Basin	DET-13	25 Pelham Rd
Detention Basin	DET-15	99 Veterans Memorial Pkwy
Detention Basin	DET-21	15 Red Roof Lane
Detention Basin	DET-26	10 Ganley Dr
Detention Basin	DET-30	55 Pelham Rd
Detention Basin	DET-32	103 S Broadway
Detention Basin	DET-34	8 Meredith Rd
Detention Basin	DET-37	Behind Walmart on Route 28

Standard Operating Procedure for:	
B.2 Storm Drain System Repair and Maintenance	
Purpose of SOP:	To protect storm water by replacing or repairing components of the storm drain system on a regular basis to prevent a failure of the storm drain system.

Always:

- Practice preventive maintenance for cracks, leaks, and other conditions that could cause breakdowns in the system by identifying condition issues:
  - For catch basins during catch basin cleaning (see SOP B.1)
  - For outfalls during IDDE inspection (see SOP A.1, A.2 and A.3)
- Repair defective structures or equipment identified during an inspection as soon as possible.
- Test and dispose of stockpiled materials as described in SOP B.1.
- Document inspections, cleanings and repairs and maintain complete records in a record-keeping system (SOP B.1 for catch basins, SOPs A.1 through A.3 for outfalls, and attached example form for pipes).
- Use appropriate erosion and sediment control practices when performing repairs.

Whenever Possible:

- Practice preventive maintenance for pipes by televising:
  - Prior to reconstruction of roadways, or
  - On a regular schedule beginning with high priority areas.
- Research and implement new technology that will improve the overall performance of the storm drain system.
- Perform street sweeping on a regular basis to reduce the amount of sediment, debris and organic matter entering the storm drain system, which in turn reduces the frequency with which the system will need to be cleaned.
- Use documentation of repairs and maintenance to develop a capital improvement and O&M plan for future system maintenance.

Never:

- Never allow defective equipment or structures to go unrepaired.

Related Guidance:	
	- USEPA National Menu of BMPs - NHDES BMPs to Control Nonpoint Source Pollution

Example of documentation of condition issues identified during televising.

INSPECTION REPORT

DATE:	WORK #:	WEATHER:	OPERATOR:	SECTION NR:	SECTION NAME:
PRESENT:	VEHICLE:	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:	MAP #1:	MH:	874
CITY:	MAP #2:	MH:	872
LOCALE:	TAPE #:	TV'D LGTH:	288.2 ft

INSPECT REASON:		PIPE SIZE:	6"
SECTION TYPE:		MATERIAL:	Clay Tile JT LGTH: 2ft
AREA:		LINING:	...no data
		RSRVD:	

REMARK: apparent defects in coating throughout line



1:495 POSITION		OBSERVATION	MPEG	PH	RATE
0.00		inspection begins at upstream manhole		1a	0
4.10		roots light		2a, b	3
37.55		roots light		3a, b	3
48.60	S1	sag begins, START		4a	2
51.80	E1	sag ends, END		5a	2
64.40		service connection, at 09 o'clock		6a, b	2
92.80		Infiltration Running at joint at 03 o'clock		7a, b	4
93.20		service connection, at 02 o'clock		8a, b	1
96.75		pipe material changes at this point to SDR 35		9a	2
100.00		service connection, at 09 o'clock		10a, b	1
101.20		pipe material changes at this point to clay tile		11a	2
102.90		offset joint, slight		12a, b	2
110.65		pipe Broken, from 02 to 09 o'clock		13a, b	5
130.30	S2	Longitudinal Crack, at 12 o'clock, START		14a, b	3
131.05	E2	Longitudinal Crack, at 12 o'clock, END		15a	3
135.30		service connection capped, at 09 o'clock, REMARK: roots medium		16a, b	3
136.85		Hole in pipe at 07 o'clock		17a, b	4
146.95		Hole in pipe at 04 o'clock		18a, b	4
153.40		Longitudinal Crack, at 12 o'clock		19a	3
154.95		Longitudinal Crack, at 03 o'clock		20a	2
161.50	S3	Multiple Cracks, from 07 to 03 o'clock, START		21a, b	4
163.55	E3	Multiple Cracks, from 07 to 02 o'clock, END		22a, b	4
172.90		Hole in pipe at 12 o'clock		23a, b	4

INSPECTION IMAGES

CITY:	STREET:	DATE:	SECTION NR:	SECTION NAME:
			1	

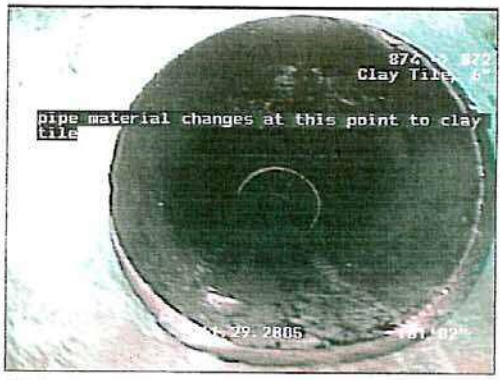


IMAGE: 11a, TAPE #: 11/29/2005
101.2FT, pipe material changes at this point to clay tile

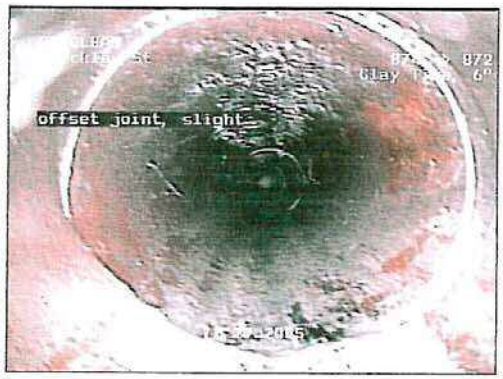


IMAGE: 12a, TAPE #: 11/29/2005
102.9FT, offset joint, slight

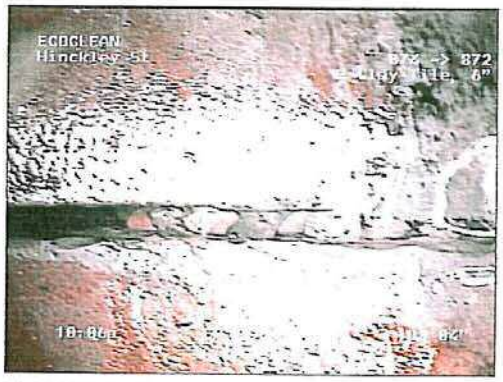


IMAGE: 12b, TAPE #: 11/29/2005
102.9FT, offset joint, slight



IMAGE: 13a, TAPE #: 11/29/2005
110.65FT, pipe Broken, from 02 to 09 o'clock

Date: _____
Representative(s): _____

Town of Salem
Department of Public Works

Annual Stormwater BMP Inspection and Maintenance Form

Location: _____

General Questions (apply to all BMPs)	Yes	No	N/A	
Has trash accumulated in the BMP?	_____	_____	_____	(1)
Is there visible erosion, settlement, or structural damage?	_____	_____	_____	(1)
Are there any obstructions or clogs at the inlet or outlet?	_____	_____	_____	(1)
Is there water in the BMP above the outflow invert?	_____	_____	_____	(1) (2)

(complete all that apply)

☐ Infiltration System

Average Sediment Depth: _____ (Cleaning is required when this exceeds 3" in chambers)

☐ Oil/Water Separator (Vortechs or other Model # _____)

Water Depth to Sediment: _____ (Cleaning is required when this is < 18")

Floatable Layer Thickness: _____ (Cleaning is required when this is > 2")

☐ Particle Separator (Stormceptor or other Model # _____)

Water Depth to Sediment: _____ (See appendix for sediment depths necessitating cleaning)

☐ Detention Basin/ Pond
Are there any upstream or downstream conditions that may impact basin/ pond operation? (Y/N)
If YES include notes to clarify changed conditions.

☐ Drywell(s) Quantity: _____
Indications of Hazardous Substances? (Y/N)

Average Sediment Depth: _____

☐ Deep Sump CB Quantity: _____ (include a sketch if more than one)

Sediment Depth(s): _____ (Cleaning is required if sediment exceeds 2')

☐ Bioretention Area (Rain Garden or Treatment Swale)
Has mulch recently been replaced? (Y/N)

☐ Sediment Forebay/ Treatment Chamber

Average Sediment Depth: _____ (Cleaning is required if sediment exceeds 2')

Grass Length: _____ (Mowing is required if grass is longer than 6")

Notes/ Recommendations:

(1) If the answer is "YES" clarifying notes and photographs are required. Maintenance may be necessary.
(2) For drywells and infiltration systems the invert is the base of the system.

Appendix L

Standard Operating Procedures – Winter Road Maintenance

2018-2019 Winter Emergency Operation Plan

B.15 Alternative Products Use/Storage/Disposal
B.25 Snow Disposal
B.26 Deicing Material Storage
B.27 Deicing Material Application

NHDES Environmental Fact Sheet WMB-3 –
"Snow Disposal Guidelines"

NHDES Environmental Fact Sheet WD-WMB-4 –
"Road Salt and Water Quality"

NHDES Environmental Fact Sheet WD-DWGB-22-30 –
"Storage and Management of Deicing Materials"

TOWN OF SALEM
NEW HAMPSHIRE

DIVISION OF PUBLIC WORKS

2018-2019
WINTER EMERGENCY OPERATION PLAN

Roy Sorenson
Municipal Services Director

Dave Wholley
DPW Director

Joe Feole
Highway Division Foreman

Geoff Benson
Highway Division Foreman

Ryan Pike
Chief Mechanic

James Pacheco
Parks & Properties Foreman

Dave Cantor
Transfer Station Foreman

Maureen Sullivan
Administrative Assistant

2018 – 2019 SNOW PLAN STATISTICS

TOWN EQUIPMENT

1	Grader	w/ plow & wing
2	Backhoe	w/ plow
4	Loader	w/ plow
14	6-Wheeler	w/ plow, wing & salter
1	6-Wheeler	w/ salter
6	1-Ton	Dump body w/ plow
9	1-Ton	Utility body w/ plow
2	1-Ton	Pick Ups w/ plow
4	Trackless	Sidewalk plows w/ blowers
43	**Pieces of snow fighting equipment**	
25	***Available personnel***	

CONTRACTED EQUIPMENT

1	10-Wheeler	w/plow & salter
2	10-Wheeler	w/ plow
1	10-Wheeler	w/plow & salter & wing
2	Sm Loaders	w/ plow
3	Lg Loaders	w/ plow
5	Sm 6-Wheeler	w/ plow
2	Sm 6-Wheeler	w/plow & salter
0	Lg 6-Wheeler	w/ plow
3	Lg 6-Wheeler	w/ plow and salter
1	Lg 6-Wheeler	w/ plow, wing & salter
0	¾ -Ton	Pick Ups w/ plow
17	1-Ton	Pick Ups w/ plow
3	Tri-Axle	
40	**Pieces of snow fighting equipment**	
40	***Available personnel***	

ROADS MAINTAINED

358.1 Lane miles of paved roads

30 **Lane miles of unpaved roads**

388.1 **Lane Miles of roads, comprised of:**

36	Plow routes
16	Primary routes
17	Secondary routes

SIDEWALKS MAINTAINED

35 **Miles of sidewalks**

4 Plow routes

BUILDINGS MAINTAINED

(Plowing, Shoveling, Salting & Sanding)

13 Town Hall, Police Department, Court House, Ingram Senior Citizen Center, Public Works, Museum, Hose House, #5 School, Palmer School, Transfer Station, Dog Kennel, Kelly Library, Depot Train Station

PARKS AND PARKING LOTS MAINTAINED

(Plowing, Salting & Sanding)

8 Municipal Lot, Field of Dream*s*, Centerville Ave School District Lot *(no plowing)*, Town Forest Parking Lot, Central Fire *(no plowing),* North Fire *(no plowing),* Old North Fire *(no plowing),* South Fire *(no plowing).*

MISCELLANEOUS AREAS

(Salting & Sanding)

7 High School, Woodbury Middle School, Fisk School, Soule School, North Salem School, Barron School, Lancaster School (Bus Ports only).

2 Millville Arms Salem Housing Authority & Telfer Circle Assisted Living

30 Buildings & Parking Areas

WATER DEPARTMENT AREAS

(Plowing, Shoveling, Salting & Sanding)

8 Canobie Lake Water Treatment Plant, Wheeler Dam Pumping Station, Manor Parkway Booster Station, Nirvana Booster Station, Lawrence Road Water Tower, Howard Street Water Tower, Spicket Hill Water Tower, Commercial Dr Fire Booster Station

2 Route 97 Emergency Water Tie-in & Salem Street Emergency Water Tie-in.

SEWER DEPARTMENT LIFT STATIONS

(Plowing & Shoveling)

10 South Policy Street, Keewaydin Drive, Commercial Drive, Stiles Road, Twinbrook Avenue, Brookdale Road, Butler Street, Haigh Avenue, Copper Beech & Freedom Drive.

20 Water and Sewer Department Areas.

SUMMARY

83 Pieces of snow fighting equipment
65 Available personnel
35 Miles of sidewalk
36 Plow routes (Covering 388.10 Lane Miles)
16 Primary routes (Consisting of 199.46 Lane Miles)
17 Secondary routes (Consisting of 188.64 Lane Miles)
4 Sidewalk routes
30 Buildings & parking areas
20 Water & Sewer Department areas

PLAN I - SALTING AND SANDING OPERATIONS

NOTIFICATION: The Town of Salem, Police Department notifies the Public Works on call Foreman immediately when snow has begun or that icing has been reported in Town. (The Public Works Operations Manager makes the decision during normal working hours, Monday through Friday 7:00AM to 3:30PM)

GOALS AND OBJECTIVES: The goal of this plan is to place an initial application of salt and or salt/sand to all Main Arteries (Primary Routes) within three (3) hours of when slippery or icing conditions have occurred. Secondary roads (Secondary Routes) will be treated as conditions require. DPW crews may respond and treat main roads in the evening allowing secondary roads to be treated when crews report for work in the AM. Conditions that do not fall into that of "Normal Winter Conditions" will be handled in the appropriate manner.

OPERATION: Up to Seventeen (17) Salt/Sand spreader trucks may be assigned to (17) predetermined routes, of which the drivers are provided a complete listing of all predetermined salt and salt/sand routes. Application of the salt and/or sand will be made at 500 to 900 pounds per mile, at the determination of the supervisor in charge. All routes are designed in sequence to treat the most traveled roads first.

PLAN II - SALTING AND PLOWING OPERATION

NOTIFICATION: The Town of Salem Police Department notifies the Public Works on call Foreman immediately when snow has begun or icing has been reported in Town. (The Public Works Operations Manager makes this decision during normal working hours Monday through Friday 7:00AM to 3:30PM)

GOALS AND OBJECTIVES: The goal of this plan is to keep the Main Arteries (Primary Routes) within the Town salted during the early stages of a storm or during the hours of high traffic volume. Plowing may commence when there has been between (1) inch to three (3) inches of snow fall and also depending on the intensity, duration and timing of the storm. DPW vehicles and personnel will keep roads clear and call in contracted equipment as needed for assistance. All primary and secondary roads will be treated after completion of the plowing operation if determined to be necessary.

OPERATION: Up to Twenty seven (27) snow fighting vehicles may be assigned to predetermined routes and areas. All routes are designed to keep main streets plowed and/or salted in sequence of the most traveled roads first.

PLAN III - SALTING AND SANDING OPERATION (Severe Weather Conditions)

NOTIFICATION: The Town of Salem Police Department notifies the Public Works On Call Foreman immediately when snow has begun or that icing has been reported in Town. (The Public Works Operations Manager makes this decision during normal working hours Monday through Friday 7:00AM to 3:30PM)

GOALS AND OBJECTIVES: The goal of this plan is to place an initial application of salt during severe weather conditions on the primary routes before and after the storm has stopped. Plan III decreases the time for putting down abrasives and expands the number of streets to which treatment is given during commuting periods, during the early intensity of an approaching storm, and during severe weather conditions (sleet, freezing rain). With sleet and freezing rain it may become necessary to treat secondary routes in order to provide traction for plow vehicles. Even though it doesn't appear to make sense to put down salt prior to plowing it is critical to prevent the snow from hard packing onto the pavement making it difficult and in some cases impossible to scrape down without using several times the normal amount of chemicals prior to attempting to scrape down.
The second goal of this plan is to apply salt and salt/sand to the primary and secondary routes to remove any residual snow.

OPERATION: Up to Seventeen (17) Salt/Sand spreader trucks may be assigned to predetermined routes, of which the drivers are provided a complete listing of all predetermined streets. Application of abrasives will be at 500 to 900 pounds per mile at the determination of the Supervisory in charge. All routes are designed in sequence to treat the most traveled roads first.

PLAN IV - PLOWING OPERATION (Minor Storm)

GOALS AND OBJECTIVES: The goal of this plan is to plow all streets in Town once a storm of one (1) to three (3) inches is completed, or continue plowing of any storm predicted of greater than three (3) inches. In order to keep all streets serviceable throughout the winter, all streets must be plowed curb to curb, or to the turf line once the snow has stopped.

OPERATION: Up to Fifty nine (59) snow fighting vehicles may be assigned to thirty six (36) predetermined routes, of which the drivers are provided a complete listing of all predetermined plow routes. The amount of equipment in operation will be determined by the Supervisor on duty; all routes are in sequence to carry out the plowing operation in an effective and controlled fashion.

PLAN V - PLOWING OPERATION (Major Snow Storm)

GOALS AND OBJECTIVES: The goal of this plan is to keep all the streets in Town plowed and open during major snow storms. Plan V will be implemented after three (3) inches of snow has fallen with the prediction of several more inches of accumulation before the storms end. From time to time during winter months, a storm of strong intensity may hit the town. During this period the Town will implement all available pieces of snow fighting equipment, which includes Contract assistance, with our goal being to continually plow routes without sacrificing service to secondary streets. All streets are to be kept open with a minimum of one pass each direction until the storm has almost stopped this will permit emergency vehicle access thru the entire storm. Once the snow has stopped; all streets will be pushed back curb to curb with the intersections cleaned up last.

OPERATION: Up to Fifty nine (59) pieces of snow fighting equipment may be assigned to thirty six (36) predetermined routes of which the drivers are provided a complete listing of all streets.

PLAN VI - CLEAN UP

GOALS AND OBJECTIVES: The goal of this plan is for the Town to patrol for drifting snow and icing conditions several days following a storm. Normal response to such problem areas is upon request of the Police Department or residents of the Town.

OPERATION: Dispatch one (1) or more snow plows and/or salters as needed to the specific areas being reported.

PLAN VII - SNOW REMOVAL

GOALS AND OBJECTIVES: The goal of this plan is for the Town to remove snow banks from the Center of Town, School Zone areas, and where snow banks create a hazard for sight distance.

OPERATION: Several loaders, dump trucks, street plows and sidewalk plows will be dispatched to these defined areas. The work may involve removing snow banks on each side of the street as well as at intersections and school zones for safety.

PLAN VIII 4AM - 4PM - COMMUTER SAFETY

GOALS AND OBJECTIVES: The goal of this plan is to apply salt to primary routes during peak commuter time. At 4AM or 4PM when the weather conditions favor an icing situation (BLACK ICE) the Town will dispatch three (3) salt trucks to priority salt routes. These routes are a scaled down version of our primary salting plan and represent only the absolute essential routes to be treated, to allow traffic to travel in and out of Town safely during these icing conditions. Additional equipment and personnel will be utilized should the conditions call for it.

OPERATION: Up to Three (3) salting vehicles may be dispatched to predetermined routes. Application of abrasives will be made at 500 to 900 pounds per mile at the determination of the Supervisor in charge.

PLAN IX: SIDEWALKS

GOALS AND OBJECTIVES: The goal of this plan is to plow the snow from the thirty five (35) miles of sidewalks following a snowstorm. Four (4) sidewalk routes have been developed using the same criteria used for streets. In key areas of Town called "special maintenance areas" we prioritize a level of service to accommodate the needs of school children and the elderly. In many ways the maintenance of sidewalks is much more difficult than streets due to many more potential hazards such as utility poles, steps to houses, landscape timbers, trees, shrubs and stone walls, etc. Along with many hazards comes poor visibility which increases the difficulty of the task.

OPERATION: Upon completion of the snowstorm the three (3) sidewalk plows will be dispatched to designated routes, of which the operators are provided a complete listing of all predetermined sidewalk routes, beginning with the high maintenance areas. The sidewalk plows will complete the PRIORITY routes first before starting the others in order to accommodate the school pedestrian traffic.

SUMMARY

In summary each of the preceding plans implemented by the management team is made after reviewing numerous considerations. No two storms are alike. The variables include traffic, time of day, temperature, storm duration, intensity of the storm, predicted snowfall, equipment breakdowns, and weather following the storm. The management team's professional judgment and experience play a key role in this decision process. Plans may be modified to specifically address a storm's individual characteristics.

A careful, thought-out decision can save thousands of dollars. For example, every time a decision is made to salt, we are using **$8,415 in materials alone.**

When the decision is made to call in the contracted plows to supplement the town's work force it costs an additional **$3110.00/hr.**

The Town of Salem, NH has invested approximately **$3,000,000 in snow removal equipment** and with everyone's cooperation we can make it a safer winter for all.

Salem Division of Public Works

WINTER ROAD REGULATIONS

Winter Parking ban is in effect from November 15 to April 15, during which time no operator shall leave an unattended vehicle on any street, except in the case of an emergency, between the hours of 12 Midnight and 6 AM or at any time during a declared snow emergency.

Any vehicle found parking in violation will be moved at the expense of the operator or owner and by or under the direction of a police officer of the Town of Salem.

No vehicle shall be left unattended on any street when new snowfall has accumulated to a depth of 3 inches, except in case of an emergency. Any vehicle found in violation will be moved at the expense of the operator.

No person shall shovel, plow or in any way move or cause snow to be moved from private property to a street or sidewalk per Town Ordinances §466-10 and §466-15, and subject to a maximum fine of $25.00.

21 Cross Street, Salem, New Hampshire 03079 (603) 890-2150 Fax (603) 890-3882

MAILBOX REPAIR POLICY

The Town of Salem, New Hampshire's Mailbox Repair Policy for the repair of mailboxes and/or posts that are damaged from the Town's snow removal effort is as follows:

A. DPW, after notification by the resident, will immediately initiate a work order to investigate the complaint.

B. DPW will, as soon as practical, dispatch an employee to assess and, if determined to be caused by Town operations, authorized the necessary repairs.

C. If, in the opinion of the DPW, the existing box/post is beyond repair to accept normal delivery it will be replaced with a standard white or black mailbox and a 4X4 wood pressure treated post supplied by the Town. Should it be impossible, due to ground conditions, to install a new ground post at this time, a temporary repair will be attempted so as the residence will be able to receive mail until spring. A DPW tag with a note will be attached to the temporary repair that explains that we will be back at a later date to make the permanent repairs.

This policy in no way is meant that the Town of Salem, NH accepts responsibility for damage within its ROW as stated in RSA 231:92-a nor does it imply that the Town accepts responsibility for interruption in mail service for any length of time until a repair temporary or permanent can be made.

This policy outlines the Department's intent to maintain good public relations with the residents in the community even though state RSA exempts the Town for damage within their ROW's.

21 Cross Street, Salem, New Hampshire 03079 (603) 890-2150 Fax (603) 890-3882

PLOW ROUTES 2018-2019

RTE	DRIVER	VEHICLE	AREA
1	**Joe Feole** **Eric Becker** Matthes Landscaping Matthes Landscaping Advantage Trucking Dellmedco Construction Belko Landscaping Haggar Building Haggar Building	**P7** **G40** 10 Wheeler w/wing&salter 10 Wheeler Tri-Axle Tri-Axle Tri-Axle 10 Wheeler w/salter Large 6 Wheeler w/salter	N. Broadway S. Broadway Veteran's Geremonty
2	**Billy Simone**	**S15**	Main St., Granite, Lincoln
3	Matthes Landscaping Matthes Landscaping	Small Loader Small 6 Wheeler	Howard, Taylor, A Ave. Crescent, Bradford
4	Advantage Trucking Advantage Trucking	1 Ton 1 Ton	Dyer Ave, Dwight, Belair
5	**John Hackett**	**S23**	Bluff St., Artemis, Matthew Hummingbird Way
6	Merrill Construction	Large Loader	Townsend, Dawson, Highland Ave
7	Stacey Tree Service	1 Ton	Captains, Riverdale, Oak
8	**Rick Lessard**	**S22**	Shannon, N. Main St, Hitching Post, Duston
9	**Peter Parrino** **Tom Donahue**	**D13** **P70**	Liberty, Hooker Farm, Lansing, Hawkins
10	**Rusty Gosselin**	**L33**	Millville Circle, Scotland Thomas Drive
11	Kelleher Construction	Large Loader	Meisner, Centerville, Jana
12	Haggar Building Haggar Building	Small 6 Wheeler/salter 1 Ton	Glenn Rd, Ball Ave, Arlington Shore Drive
13	***Dave Hyatt (Temp. Driver)***	**D18**	Old Farm, Old Derry, Haverhill Road
14	**Andy Ramos**	**D12**	Corinthian, Chappy, Parker, Tilton
15	Haggar Building Haggar Building Haggar Building	1 Ton 1 Ton Large 6 Wheeler w/salter	Arlington Lake
16	All Pro Landscaping All Pro Landscaping	Small 6 Wheeler Small 6 Wheeler	S. Shore, Webster, Gail Rd
17	Haggar Construction	Small 6 Wheeler w/salter	Sylvan, High, Hitty, Union
18	Advantage Trucking Advantage Trucking	Large 6 Wheeler w/salter 1 Ton	Zacharys, Hawk, Lady, Emer Road
19	**Jacque Sander** **Jeff Young**	**D19** **P77**	Marianna, Veronica, Clinton, Old Rockingham, St. Mary's
20	**Matt Waldron**	**D21**	Kelly Road, S. Policy, N. Policy, Mall Rd, Trolley
21	**Ryan Pike** Stacey Tree Service	**S28** 1 Ton	Pelham Rd, Sycamore, Brady (N), Harley
22	**Darrell Bible**	**S16**	Manor Parkway, Industrial, Brookdale Road
23	**Kyle Fox**	**D17**	Brady Ave. South, Golden Oaks, Silverbrook

24	Delmedco Delmedco	1 Ton Small Loader	Green Acre, Valeska Weinhold, Lois Ln
25	Chris Medugno Haggar Construction	1 Ton 1 Ton	Checker boards, Hillcrest Kennell
26	**Greg Minnon**	**L32**	Chatham, Waldron, Meridith, Haigh
27	Dave Giroux Dave Giroux	Small 6 Wheeler 1 Ton	Carol Ave, Budron, Sandhill, Pond St.
28	**Kelly Demers**	**S24**	Lawrence Rd, Cluff, Cross Braemoor Woods
29	Advantage Trucking Advantage Trucking Advantage Trucking	6 Wheeler w/wing & salter 1 Ton 1 Ton	Sherwood, Becky, Stanwood
30	**Curt DiGiovanni** Advantage Trucking Advantage Trucking	**D14** 1 Ton 1 Ton	Old Coach Road, Remington, Birchill Rd, Wesley, Cole, Garrison, Ivan Gile
31	Dave Giroux Dave Giroux	Larger Loader Sm 6 Wheeler	Linwood Ave, Blue Fox Run
32	Haggar Construction	1 Ton	Senior Ctr, Brown, Ewins
33	John Peters John Peters	1 Ton 1 Ton	Town Hall, Library, Maple PD, Fairmont, Pt. A Rd
34	Kelleher Construction	10-Wheeler	Zion Hill, E. Bdwy, N. Main
35	**Scott Witkowski**	**S25**	Bridge, School, Lake Wheeler, Tyler, Butler
36	**James Pacheco** **Willard Rock** **Hector Rivera**	**P8** **D85**	Pine Grove, Buildings all Walkways
Yard	**Mike Stickney**	**L30**	DPW Load/Plow
T.S.	**Dave Cantor**	**L29**	Transfer Station
Stations	**Fred Wallace**	**P71**	WTP, lift stations, pump stations, dams, water towers, etc.
		As of 12/17/18	***Bold indicates town equipment/employee**

		SPECIAL ASSIGNMENTS	
		Dave Wholley **DPW Director**	**P2** Operations
		Geoff Benson **Working Foreman**	**P6** Operations
		Ryan Pike **Chief Mechanic**	**P88** Garage
		Maureen Sullivan **Administrative Assistant**	Operations
		Spare Plow Vehicles	
		P3 1 Ton Pickup	
		BH31 Backhoe	
		BH38 Backhoe	
		D69 1 Ton Dump	
		P75 1 Ton utility	
		D82 1 Ton Dump	
		D83 1 Ton Dump	
		D84 1 Ton Dump	
		D86 1 Ton Dump/Salter	
		212 6 Wheel w/salt&wing	

PLOW ROUTE 1

SOUTH BROADWAY	NORTH BROADWAY	VETERANS PARKWAY
GEREMONTY DRIVE (AND EXT.)	GEREMONTY DRIVE	MEISNER CIRCLE

DRIVERS	EQUIPMENT
Joe Feole	**P7**
Eric Becker	**G40**
Advantage Trucking	**Tri-Axle**
Dellmedco Const.	**Tri-Axle**
Belko Landscaping	**Tri-Axle**
Haggar Building	**10 Wheeler w/salter**
Haggar Building	**Large 6 Wheeler w/salter**
Matthes Landscaping	**10 Wheeler w/wing & salter**
Matthes Landscaping	**10 Wheeler**

PLOW ROUTE 2

MAIN STREET (Pelham Rd to N Main)	GRANITE AVENUE	WESTCHESTER ST
BELMONT STREET	PARK AVENUE	PINE STREET
PARKVIEW AVENUE	LOREN ROAD	BERNICE AVENUE
DUNBAR TERRACE	NORTHEASTERN BLVD	CANTERBURY COURT
LINCOLN TERRACE	SCOTT TERRACE	

DRIVER	EQUIPMENT
Bill Simone	**S15**

PLOW ROUTE 3

MILLVILLE STREET (Main St to School)	IRVING STREET	FRANKLIN STREET
TAYLOR STREET	FRANCIS STREET	EARL STREET
HOWARD STREET	CHURCH AVE	SPRING STREET
A AVE	CORLISS STREET	HILL STREET
ASBURY STREET	CHARLES STREET	BRADFORD DRIVE
CRESCENT STREET	CRESCENT CIRCLE	LEE JOY LANE
WILLOW STREET		

DRIVER	EQUIPMENT
Matthes Landscaping	**Small Loader**
Matthes Landscaping	**Small 6 Wheeler**

PLOW ROUTE 4

DYER AVE	MORRISON AVE	DWIGHT AVE
SUMMER STREET	HENRY STREET	ALEXANDER AVE
BEVERLY AVE	DEWEY STREET	ALMA AVENUE
GARDNER AVENUE	CLIFTON AVE	BELAIR LANE
SCOLLAY CIRCLE	WOOD LANE	BRIAN AVENUE
DANDRIDGE AVE	CONNELL DRIVE	EASY STREET

DRIVER	EQUIPMENT
Advantage Trucking	**1 Ton**
Advantage Trucking	**1 Ton**

PLOW ROUTE 5

BLUFF STREET	KAREN LANE	ARTEMIS ROAD
AQUA WAY	ARCADIA LANE	APOLLO LANE
TUDOR DRIVE	MATTHEW DRIVE	BRIARWOOD DRIVE
COVENTRY LANE	GORDAN AVE	ELIZABETH LANE
DELANEY WAY	DIANNA DRIVE	KASHMIR DRIVE
JONATHAN HEIGHTS	ZION HILL RD (E. Broadway-Shadow Lake Road)	
HUMMINGBIRD LANE	PUTNAM FARM RD	

DRIVER	**EQUIPMENT**
John Hackett	**S23**

PLOW ROUTE 6

HIGHLAND AVE EXT	LOU AVE	KYLE DRIVE
GLEN DENIN DRIVE	ROBERT AVE	ELLSMERE AVE
EMERSON WAY	LEMAY ROAD	BANNISTER ROAD
OLIVE AVE	TOWNSEND AVE	COTE RD
DAWSON AVE	JOHNSON AVE	JUSTIN AVE
GENERAL PULASKI DRIVE		

DRIVER	**EQUIPMENT**
Merrill Const.	**Large Loader**

PLOW ROUTE 7

WELLS ROAD	MACMILLAN ROAD	UNNAMED ROAD
JENNINGS ROAD	AUDREY AVE	CAPTAINS ROAD
CAPTAINS DRIVE	SPICKET LANE	MAHONEY AVE
WELLS AVE	PLAISTEAD CIRCLE	OAK AVENUE
CLAY AVENUE	KENTHILL ROAD	KIMBALL AVE
McLAUGHLIN AVE	WESTERDALE AVE	RIVERDALE AVE
TOWN FARM RD (North Main to Bluff St Ext.)		

DRIVERS	**EQUIPMENT**
Stacey Tree Service	**1 Ton**

PLOW ROUTE 8

HAMPSTEAD ROAD	SHANNON ROAD	PROVIDENCE HILL RD
ATKINSON ROAD	HITCHING POST LANE	WEST SIDE DRIVE
N. MAIN ST (Main St to Atkinson Rd)	MEADOW LANE	BALLARD LANE
EYSSI DRIVE	DUSTON ROAD	WHITENECK WAY

DRIVER	**EQUIPMENT**
Rick Lessard	**S22**

PLOW ROUTE 9

GALWAY LANE
OLDE VILLAGE ROAD
FIELDSTONE LANE
DUBLIN WAY
ERIN LANE
TOWN FARM RD (Bluff Ext. to Shannon)
GLENCREST DRIVE
COLLEEN DRIVE
BLUFF ST. EXT
HOOKER FARM ROAD
OLDE WOODE ROAD
LANSING DRIVE
EMILEO LANE
MEGHAN CIRCLE
HAWKINS GLEN DRIVE
SORENSON RD
BROOKHOLLOW DRIVE
CARRIAGE LANE
STONEY BROOK LANE
DON ROULSTON RD
LIBERTY STREET
GANLEY DRIVE
HAWKINS POND LANE
TIMOTHY LANE
CAMELOT COURT

DRIVER	EQUIPMENT
Pete Parrino	**D12**
Tom Donahue	**P70**

PLOW ROUTE 10

GROVE AVE
WESTWOOD ROAD
MILLVILLE ST (School St to Zion Hill Rd)
CAR MAR LANE
SCOTLAND AVE
THOMAS DRIVE
FIELD AVE
SHADY LANE
WOODLAND AVE
MILLVILLE CIRCLE
HARMONY LANE
WALTER PALMER LN
WINDWARD TERRACE
LYNDALE AVENUE
MILLVILLE TERRACE
MILLVILLE LAKE DR

DRIVER	EQUIPMENT
Rusty Gosselin	**L33**

PLOW ROUTE 11

THERRIAULT AVE
HIGHLAND AVE
KIM ROAD
BRIAR AVENUE
ROYAL CIRCLE
KURT ROAD
JANA ROAD
MERRILL AVE
WOODMEADOW LANE
ALTA AVENUE
MAYBERRY AVE
WOODED KNOLL DRIVE
STONEPOST ROAD
WEBB STREET
CENTERVILLE DRIVE
HENDERSON CIRCLE
MEISNER ROAD

DRIVER	EQUIPMENT
Kelleher Construction	**Large Loader**

PLOW ROUTE 12

ARLINGTON SHORE DRIVE
AULSON ROAD
PEAK AVENUE
EVERGREEN ROAD
SECOND STREET
ALFRED DRIVE
DANIEL LANE
AURORA STREET
NOWELL COURT
JULIE AVE
KENYON ROAD
BLAKE ROAD
SANDY BEACH ROAD
THIRD STREET
LOU AL LANE
ARLINGTON POND COURT
SUNSET ROAD
BALL AVE
MARYS LANE
CLARE LANE
GLENN ROAD
FIRST STREET
FOURTH STREET
FRANZ ROAD
BETTY LANE
GILLIS TERRACE

DRIVERS	EQUIPMENT
Haggar Building	**Small 6 wheeler w/salter**
Haggar Building	**1 Ton**

PLOW ROUTE 13

HAVERHILL ROAD
CHRISTINE LANE
FOX RUN LANE
WILDFLOWER LANE
OLD FARM ROAD
OLD DERRY ROAD
NOTTINGHAM LANE
STONEGATE LANE
SMALL BROOK LANE
KLEIN DRIVE
NORWOOD ROAD
THEODORE AVE
CLOVER COURT
EMERALD DRIVE

DRIVER	EQUIPMENT
Dave Hyatt	**D18**

PLOW ROUTE 14

N. MAIN ST. (Mill Pond Rd-Haverhill Rd)
PACHECO DRIVE
CORINTHIAN DRIVE
TILTON TERRACE
DAMASCUS DRIVE
PARKER CIRCLE
EAST BROADWAY (Jamil Lane-N. Main)
BEAVER BROOK LANE
LISETTE DRIVE
JAMIL LANE
JERICHO LANE
TEAGUE DRIVE
SETTLERS LANE
CHAPPY LANE
PAWTUCKET LANE
INDEPENDENCE DR
LAZARUS WAY
IRON WOOD DRIVE

DRIVER	EQUIPMENT
Andy Ramos	**D12**

PLOW ROUTE 15

WHEELER DAM ROAD
BONNANO ROAD
WRECK AVENUE
DEXTER TERRACE
DIORIO ROAD
ANDERSON AVENUE
CHERYL ROAD
BANKS AVENUE
HOYT STREET
JAMES STREET
CHASE STREET
PALMER STREET
FRARY STREET
SHORE DRIVE
COVE ROAD
CLARK AVENUE
PALM ROAD
ISLAND ROAD
MARY ANN AVENUE
ELSIE AVENUE
REID AVENUE
BOGLE AVENUE
GRIFFIN STREET
COBURN STREET
WILSON STREET
HENRY TAYLOR STREET
HAMILTON LANE
COVE ROAD EXT.
HURNEY AVE
FORD AVENUE
WARREN AVENUE
GRAHAM AVENUE
CUSHING ROAD
GULLIVER AVENUE
ROLFE STREET
HUNT STREET
KING STREET
EDWARDS STREET

DRIVERS	EQUIPMENT
Haggar Building	**Lg 6 Wheeler w/salter**
Haggar Building	**1 Ton**
Haggar Building	**1 Ton**

PLOW ROUTE 16

PUMPING STATION ROAD	BIRCH ROAD	JILL ROAD
GAIL ROAD	McGRATH STREET	LAKEVIEW STREET
COMMUNITY STREET	ORCHARD TERRACE	SUNSET CIRCLE
QUEEN ANNE LANE	SMITH STREET	SUMMIT STREET
WEST DUSTON ROAD	CANOBIE AVENUE	SOUTH SHORE ROAD
LAKESHORE ROAD	GOODRIDGE AVENUE	TREY CIRCLE
EMERY STREET	BURNS ROAD	LAKESIDE STREET
WEBSTER STREET		

DRIVER	EQUIPMENT
All Pro Landscaping	**Small 6 Wheeler**
All Pro Landscaping	**Small 6 Wheeler**

PLOW ROUTE 17

UNION STREET	GREENWOOD STREET	WITCH HAZEL ROAD
HARRIS ROAD	HITTY ROAD	HAZELWOOD DRIVE
LONDON ROAD	DENNISON AVENUE	HIGH STREET
MOUNTAIN ROAD	WEST LANE	SYLVAN DRIVE
SYLVAN DRIVE EXT.	**Town Forest Parking Lot**	

DRIVER	EQUIPMENT
Haggar Building	**Small 6 Wheeler w/salter**

PLOW ROUTE 18

ZACHARYS CROSSING	NATHANS WAY	AUTUMN WOODS RD
LADY LANE	ERMER ROAD	PARTRIDGE CIRCLE
GREEN HAVEN ROAD	HAWK DRIVE	ASPEN STREET
DEERFIELD STREET		

DRIVER	EQUIPMENT
Advantage Trucking	**Large 6 Wheeler w/salter**
Advantage Trucking	**1 Ton**

PLOW ROUTE 19

CLINTON STREET	SULLIVAN AVENUE	MARIANNA ROAD
VERONICA AVENUE	PEGGY LANE	MARIANNA ROAD EXT
LONGWOOD ROAD	LUCILLE AVENUE	BETTY LEE TERRACE
WILDWOOD ROAD	SULLIVAN COURT (To 1st drive on right)	
DYSON DRIVE	HIDDEN ROAD	ST. MARY'S LANE
MASON DRIVE	GLORIA ROAD	CATHERINE RD
RENA AVENUE	DARRYL LANE	DENNIS DRIVE
TRINA ROAD	JOSEPH ROAD	HELEN ROAD
OLD ROCKINGHAM ROAD	JOANNA ROAD	THERESE ROAD

DRIVER	EQUIPMENT
Jacque Sander	**D19**
Jeff Young	**P77**

PLOW ROUTE 20

CORNWELL COURT	MALL ROAD	NORTH POLICY ST
SOUTH POLICY STREET	KELLY ROAD	PLEASANT STREET
ENTERPRISE DRIVE	DELAWARE DRIVE	RAYMOND AVE
WOODLAND TERRACE	TROLLEY LANE	

DRIVER	EQUIPMENT
Matt Waldron	**D21**

PLOW ROUTE 21

PELHAM ROAD (Brookdale to West St)	WEST STREET	ABBEY ROAD
HALL ROAD	HARLEY STREET	CINDY AVENUE
SYCAMORE AVENUE	LEONARD LANE	MORONAS DRIVE
MCCORMICK WAY	CASSIDY AVENUE	STANLEY BROOK DR
BRADY AVENUE (Rte. 38-Brookdale Rd)	MCKINSTRY CIRCLE	LANCASTER X-ING
LANCASTER FARM ROAD	QUILL LANE	PORCUPINE CIRCLE

DRIVER	EQUIPMENT
Ryan Pike	**S28**
Stacey Tree Service	**1 Ton**

PLOW ROUTE 22

PELHAM ROAD (N. Policy-Brookdale Rd)	BROOKDALE ROAD	INDUSTRIAL WAY
STILES ROAD	MAY LANE	JEWEL ROAD
COMMERCIAL DRIVE	NORTHWESTERN DRIVE	MANOR PARKWAY
KEEWAYDIN DRIVE	BAILEY ROAD	

DRIVER	EQUIPMENT
Darrell Bible	**S16**

PLOW ROUTE 23

BRADY AVENUE (Cross St-Rte 38)	SALEM STREET	GOLDEN OAKS DRIVE
SLEEPY HOLLOW DRIVE	CONCORD COACH DRIVE	LAMPLIGHTER LANE
CORTLAND DRIVE	WILLISTON ROAD	TICKLE FANCY LANE
SILVERTHORNE DRIVE	RABBIT RUN LANE	SURREY LANE
SILVER BROOK ROAD	CANDLESTICK LANE	NUGGET HILL RD
BEECHWOOD ROAD		

DRIVER	EQUIPMENT
Kyle Fox	**D17**

PLOW ROUTE 24

GREEN ACRE DRIVE
CRESTWOOD CIRCLE
LEESIDE DRIVE
LOIS LANE
MARIE AVENUE
SUNRISE DRIVE
VALESKA LANE
WEINHOLD CIRCLE
DAVID TERRACE
MERIDIAN DRIVE

DRIVER	EQUIPMENT
Dellmedco Construction	**1 Ton**
Dellmedco Construction	**Small Loader**

PLOW ROUTE 25

PATTEE ROAD
BENNING AVENUE
ROSEWOOD AVENUE
BALDWIN STREET
WENDY AVENUE
SEED STREET
EATON STREET
MESSER AVENUE
ANSEL STREET
DOG KENNELL
ANN AVENUE
OTIS STREET
SENTER STREET
HILLCREST AVENUE

DRIVER	EQUIPMENT
Dellmedco Construction	**1 Ton**
Haggar Construction	**1 Ton**

PLOW ROUTE 26

HAIGH AVENUE
GREEN AVENUE
JOYCE HEARD AVENUE
SPENCER AVENUE
CHATHAM CIRLCE
HEMLOCK ROAD
MACGREGOR AVENUE
AZARIAN ROAD
BARRON AVENUE
HANSON AVENUE
SILLEN DRIVE
WALDRON ROAD
MACLARNON ROAD
PLAYCAMP ROAD
FIELDER AVENUE
BAGNELL AVENUE
STREETER AVENUE
MEREDITH ROAD
CHESTNUT ROAD
MACFARLAND ROAD

DRIVER	EQUIPMENT
Greg Minnon	**L32**

PLOW ROUTE 27

HAMPSHIRE ROAD
POND STREET
CAROL AVENUE
TWINBROOK AVENUE
GARABEDIAN DRIVE
HAMPSHIRE STREET
OAKRIDGE AVENUE
BRENTWOOD AVENUE
GIBNEY CIRCLE
SANDHILL ROAD
BUDRON AVENUE
RIDGEVIEW AVENUE
COPPER BEECH ROAD

DRIVERS	EQUIPMENT
Dave Giroux	**Small 6 Wheeler**
Dave Giroux	**1 Ton**

PLOW ROUTE 28

CLUFF ROAD
RIVERSEDGE ROAD
EAGLE NEST RIDGE
CLUFF CROSSING ROAD
BRAEMOOR WOODS RD
CROSS STREET
LAWRENCE ROAD
CASTLE RIDGE RD

DRIVER	EQUIPMENT

Kelly Demers **S24**

PLOW ROUTE 29

MARSH AVENUE	BODWELL AVENUE	ELMWOOD AVENUE
MAGNOLIA AVENUE	DOUGLAS DRIVE	SHERWOOD CIRCLE
TAMMY STREET	STANWOOD ROAD	BECKY DRIVE
ADAM COURT	KAYLA AVENUE	MELISSA AVENUE
DAWN STREET	MATTHIAS STREET	ROBERTSON STREET
WOODBURY STREET	PRIMROSE LANE	NIRVANA DRIVE
PARADISE PLACE		

DRIVER	EQUIPMENT
Advantage Trucking	**Large 6 Wheeler w/wing & salter**
Advantage Trucking	**1 Ton**
Advantage Trucking	**1 Ton**

PLOW ROUTE 30

ACKERMAN STREET	FIR STREET	WILLIAMS STREET
PALOMINO ROAD	SHETLAND CIRCLE	CLYDESDALE ROAD
APPALOSSA ROAD	COLE STREET	SHEPARD AVENUE
GARRISON ROAD	IVAN GILE ROAD	DEBI LANE
FRASER DRIVE	OLD COACH ROAD	SHORT STREET
DEAN AVENUE	MORGAN CIRCLE	WELSH CIRCLE
DANA ROAD	COLONIAL DRIVE	JUNIPER ROAD
HICKORY LANE	EQUESTRIAN ROAD	BRIMSTONE LANE
REMINGTON ROAD	BRIDAL PATH LANE	MARC STREET
FLINTLOCK DRIVE	WESLEY LANE	HUTCH ROAD
FLORAL AVENUE	BIRCHWOOD ROAD	PINEWOOD ROAD
IRIS AVENUE	BIRCH HILL ROAD	RED WOOD ROAD
HAWTHORNE AVENUE	ASHWOOD AVENUE	

DRIVERS	EQUIPMENT
Curt DiGiovanni	**D14**
Advantage Trucking	**1 Ton**
Advantage Trucking	**1 Ton**

PLOW ROUTE 31

LINWOOD AVE	MULLBERRY ROAD	APPLEWOOD LANE
CYPRESS STREET	LINDA STREET	GUY STREET
BARBARA AVENUE	POPLAR ROAD	ELEANOR STREET
RUTH STREET	MILDRED STREET	MULLBERRY TERR.
THERESA AVENUE	EVELYN ROAD	DIAMOND AVENUE
NANCY AVENUE	FLORENCE AVENUE	BOUNTY COURT
HUNTERS RUN	BLUE FOX ROAD	OSHAUGHNESSY LN

DRIVER	EQUIPMENT
Dave Giroux	**Large Loader**
Dave Giroux	**Small 6 Wheeler**

PLOW ROUTE 32

GEORGE AVENUE	BROWN STREET	DEXTER ROAD
EWINS LANE	DOMINIC DRIVE	EDMUNDS CIRCLE
SALLY SWEETS WAY	DURHAM STREET	MCMANN COURT
Senior Citizen Center Parking Lot	FREEDOM DRIVE	

DRIVER	EQUIPMENT

Haggar Building	**1 Ton**

PLOW ROUTE 33

TOWN HALL	DISTRICT COURT	KELLY LIBRARY
POLICE STATION	MAPLE PLACE	CENTRAL STREET
MUNICIPAL LOT (small only)	FIELD OF DREAMS	FAIRMONT ROAD
POINT A ROAD	MUSE TERRACE	MARTIN AVENUE

DRIVER	EQUIPMENT
John Peters	**1 Ton**
John Peters	**1 Ton**

PLOW ROUTE 34

WALNUT TERRACE
EAST BROADWAY (Millpond-Zion Hill)
NORTH MAIN STREET (Millpond-Atkinson Road)
MILLVILLE STREET (Main St-Zion Hill overlap w/Rte 3 and 8)
MILLPOND ROAD
ZION HILL ROAD

DRIVER	EQUIPMENT
Kelleher Construction	**10 Wheeler**

PLOW ROUTE 35

BRIDGE STREET	WHEELER AVENUE	SCHOOL STREET
BUTLER STREET	LAKE STREET	TYLER AVENUE
PENOBSCOTT AVE	SAMOSET DRIVE	MASCOMA ROAD
KIOWA ROAD		

DRIVER	EQUIPMENT
Scott Witkowski	**S25**

PLOW ROUTE 36

MUSEUM	PINE GROVE CEMETERY	PALMER SCHOOL
PARKS BUILDING	MT. PLEASANT CEMETERY	HOSE HOUSE

Shovel and treat Walks and Stairs at all town buildings (TH, PD, Court, DPW, Senior Ctr, etc.)

DRIVERS	EQUIPMENT
James Pacheco	**P8**
Willard Rock	**D85**
Hector Rivera	

SIDEWALK PLOW ROUTES 2018-2019

ROUTE #1 (Soule School)

Cluff Crossing Road	**(1000' Priority Buffer)**
Kelly Road	**(1000' Priority Buffer)**
South Policy Street	**(1000' Priority Buffer)**
Cross Street	
Meredith Road	
Waldron Road	

ROUTE #1 (Barron School)

Butler Street	**(1000' Priority Buffer)**
Fraser Drive	**(To #17 only)**
Main Steet	(Common to Cemetery)
Bridge Street	
Becky Drive	
Adam Court	
Melissa Ave	
Elmwood Ave	
Kayla Ave	

ROUTE #2 (Lancaster School)

Millville Street	**(1000' Priority Buffer)**
Lake Street	(To #9)

ROUTE #2 (Fisk School)

Main Street	**(1000' Priority Buffer)**
Sullivan Ave	**(to Sullivan Court)**
N. Policy St.	**(to Clinton Street)**
Pleasant St	
Pelham Rd	
Stiles Rd	
Old Rockingham Road	

ROUTE #3 (High School)

Main Street	**(1000' Priority Buffer)**
Geremonty Drive	**(Vet's to Main St)**
Veteran's Memorial Pky	
Sally Sweet's Way	
Freedom Drive	
Rte 28	(Vet's to Depot Nbnd)

ROUTE #3 (Haigh School)

School Street	**(Common to Banister)**
Woodmeadow Dr	
Stone Post Rd	
Meisner Road	
Kim Road	
Geremonty Drive Ext.	

ROUTE #4 (Route 28)

North Broadway	From Dyer to Depot
South Broadway	From Cluff Rd to Seed St
South Broadway	From Seed St to State Line

PRIMARY ROUTES 2018-2019

DATE: _____ **FOREMAN:_____**
TIME: _____
TEMP: _____

With Salt_____ With Sand_____

CALLED	TIME IN	RTE #	DRIVER ASSIGNED	TRK	SUBSTITUTE	PRIMARY	SECONDARY
		#1	Advantage Trucking	Dave			
		#1	Haggar Building	Rob			
		#1	Haggar Building	Grant			
		#2	Bill Simone	S15			
		#3	Matt Waldron	D21			
		#4	Eric Becker	S24			
		#5	Curt DiGiovanni	D14			
		#6	Rick Lessard	S22			
		#7		D18			
		#8	Greg Minnon	S23			
		#9		S28			
		#10	Darrell Bible	S16			
		#11		D17			
		#12		D13			
		#13	Andy Ramos	D12			
		#14	Willard Rock	OWN			
		#15	Haggar Building	Isias			
		#15	Haggar Building	Tony			
		#16	Haggar Building	Bob			
		Yard	Mike Stickney	L30			
				D19	SPARE		
				S25	SPARE		
					<u>SUBSTITUTES</u>		
					Scott Witkowski		
					Pete Parrino		
					John Hackett		
					Kyle Fox		
					Jacque Sander		
			As of 12/17/18		Dave Hyatt		

PRIMARY ROUTE #1 — **Advantage Trucking & Haggar Building** — **OWN**

South Broadway **(Depot to Mass line)**

PRIMARY ROUTE #2 — **Bill Simone** — **S15**

North Broadway **(Depot to Old Rockingham Rd)**

Main Street	Old Rockingham Rd
Westchester Street	Pumping Station Road
Granite Ave	Birch Road
Jill Road	

Buildings: Central Fire, Woodbury School, Library, Cemetery main entrance

PRIMARY ROUTE #3 — **Matt Waldron** — **D21**

Pleasant Street	Veterans Parkway
Cornwell Ct	Geremonty Drive
Mall Road	Freedom Drive
	Sally Sweets Way

Buildings: Police Dept, Town Hall, Courthouse, High School (Bus Port and Entrance Road) Ingram Senior Center, Telfer Circle Assisted Living

PRIMARY ROUTE #4 — **Eric Becker** — **S24**

Cross Street	Lawrence Rd **(Rt 28, to Cluff Road)**
Garabedian Drive	Pattee, Messer and Senter **(Cut thru Part)**
Hampshire Road	Cluff Crossing
Hampshire Street	Kelly Road
Oakridge Avenue	Bagnell Ave
Sandhill Rd	Duffy Avenue
Pond Street	

Buildings: South Fire Station, Foss School

PRIMARY ROUTE #5 — **Curt DiGiovanni** — **D14**

Cluff Road	Old Coach Rd **(to Apaloosa)**
Lawrence Rd **(Cluff Rd to Main St)**	Ackerman Street
Bridge Street **(Main to Mass Line)**	Williams Street **(Ackerman to Lawrence Rd)**
Douglas Drive	Tyler Street
Sherwood Circle	Butler Street
Tammy Street	Wheeler Avenue
Dawn Street	Paradise Place
Stanwood Road	

Buildings: Barron School

PRIMARY ROUTE #6 — **Rick Lessard** — **S22**

North Main Street	Settler's Lane
Arlington Shore Drive	Millpond Rd
Atkinson Rd **(N. Main to Duston Rd)**	Ermer Rd
Duston Rd	

Buildings: North Fire Station

PRIMARY ROUTE #7 **D18**

Lansing Drive
Hooker Farm Rd
Providence Hill Rd
Providence Hill Rd Ext
Westside Drive
North main **(Haverhill Rd to Ermer Rd)**
Hampstead Rd
Klein Dr
Atkinson Rd **(Duston to Shannon)**
Haverhill Rd
Shannon Rd

Buildings: Transfer Station

PRIMARY ROUTE #8 **Greg Minnon** **S23**

Lake Street (From Bluff St. – School St.)
Merrill Avenue
School Street
Centerville Dr
Bannister Rd
Lou Avenue
Townsend Ave
Highland Ave.
Meisner Drive
Geremonty Dr Ext.
Liberty St.
Bluff St Ext.
Town Farm Road

Buildings: Haigh School

PRIMARY ROUTE #9 **S28**

Millville St
Howard St
Spring St
Taylor St
A Ave
Corliss St
Hill St
Asbury St
Bluff St.
Charles St
Irving St
Summer St
Francis St
Earl St
Dyer Ave
Franklin St
Scotland Ave

Buildings: Lancaster School, Millville Arms

PRIMARY ROUTE #10 **Darrell Bible** **S16**

Pelham Rd
Stiles Rd
Keewaydin Dr
Manor Parkway
West Street
Industrial Dr
Commercial Dr
Northwestern Dr
Bailey Rd

Buildings: Soule School, Fisk School

PRIMARY ROUTE #11 **D17**

South Policy
Salem St
Brady Ave
Golden Oaks (To Rabbit Run)
North Policy (Brookdale to Main)
Brookdale Rd
Courtland Ave

PRIMARY ROUTE #12 **D13**

Sullivan Ave	Peggy Lane	Therese Rd
Gloria Rd	Marianna Rd	Joanna Rd
Clinton St	Longwood Rd	Dennis Dr
Veronica Ave	Wildwood Rd	St. Mary's Lane
Lucille Ave	Dyson Dr	Rena Ave
Betty Lee Terr.	Joseph Rd	Darryl Lane
Trina Rd	Helen Rd	Catherine Rd
Lake Street (Rte 28-Bluff St)		Samoset Drive (top hill)

PRIMARY ROUTE #13 **Andy Ramos** **D12**

Independence Dr	TeagueDr	Tilton Terr
Pawtucket Ln	Damascus Dr	Corinthian Dr
Parker Circle	Jerico Lane Rd	Ironwood Dr
Lazarus Way	East Broadway	Zion Hill Rd (to Rte 111)

Buildings: North Salem School, Palmer School, Old North Fire Station

PRIMARY ROUTE #14 **Willard Rock** **S27**

Canobie Ave	West Duston Rd	Maylane Dr
Lake Shore Rd	McGrath St	Jewell Dr
South Shore Rd	Lakeside St	Delaware Drive
Goodridge Ave	Lakeview St	Northeastern Blvd (To turn around)
Trey Circle	Community St	Raymond Ave
Emery Rd	N. Policy St	
Burns Rd		

PRIMARY ROUTE #15 **Haggar Building** **OWN**

Hitty Rd	High St	Gordon Ave
West Lane	Hillside Ave	Elizabeth Lane
London Rd	Mountain Ave	Zachary's Crossing Rd
Dennison Ave	Union St	Autumn Woods Rd **(To Hawk Dr)**
Sylvan Dr	Greenwood St	Hawk Dr
Sylvan Dr Ext.	Witch Hazel Rd	
Hazelwood Dr		

PRIMARY ROUTE #16 **Haggar Building** **OWN**

Wheeler Dam Rd (To Shore Dr)
Shore Dr
Hoyt St.

Secondary Routes 2018-2019

DATE:_____ **FOREMAN ON CALL:**
TIME:_____ **_____**
TEMP:_____

With Salt_____ **With Sand_____**

Time In	Rte #	Truck	Assigned Driver	Substitute Driver	Sub Trk #
	#1	S27	Willard Rock		
	#2	S15	Bill Simone		
	#3	S23	Greg Minnon		
	#4	OWN	Haggar Building		
	#5	Dave	Advantage Trucking		
	#6	S22	Rick Lessard		
	#7	D18			
	#8	S28			
	#9	S24	Eric Becker		
	#10	S16	Darrell Bible		
	#11	D17			
	#12	OWN	Haggar Building		
	#13	D12	Andy Ramos		
	#14	D21	Matt Waldron		
	#15	D14	Curt DiGiovanni		
	#16	OWN	Haggar Building		
	#17	OWN	Haggar Building		
	#17	OWN	Haggar Building		
	Load	L30	Mike Stickney		
		D13	SPARE		
		D19	SPARE		
		S25	SPARE	As of 12/17/18	

SECONDARY ROUTE #1 **Willard Rock** **S27**

Riverdale Ave	Ganley Dr	Camelot Court	Jennings Rd
Kimball St	Hawkins Glen Dr	Don Roulston Dr	Audrey Ave
Clay Ave	Hawkins Pond Ln	Dublin Way	Wells Rd
Kenthill Rd	Glencrest Dr	Galway Ln	Spicket Ln
Wells Ave	Sorenson Rd		" No Name Rd"
Mahoney Ave	Timothy Ln		
Oak Ave	Colleen Dr		
Westerdale Ave	Brookhollow Dr		
Macmillan Rd			

Buildings: Transfer Station

SECONDARY ROUTE #2 **Bill Simone** **S15**

Belmont St	Stone Post Rd	Briar Ave	Emerson Way
Park Ave	Jana Rd	Alta Ave	Lemay Rd
Pine St	Woodmeadow Dr	Royal Circle	General Pulaski Dr
Martin Ave	Dawson Ave	Henderson Cir	Kyle Dr
Parkview Ave	Robertson Ave	Mayberry St	Glen Denin Dr
Loren Rd	Highland Ave Ext	Kim Rd	Townsend Ave
Bernice Ave	Ellsmere Ave	Meisner Circle	Cote Rd
Dunbar Terrace	Johnson Ave	Kurt Rd	Justin Ave
	Olive Ave	Theriault Ave	Wooded Knoll Dr
	Lou Ave	Webb St	Canterbury Ct

Buildings: Police Station, District Court, Field of Dreams, Salem High School & Town Hall

SECONDARY ROUTE #3 **Greg Minnon** **S23**

Play Camp Rd	Duffy Ave	Valeska Ln	Chestnut Drive
MacGregor Ave	Barron Ave	Hanson Ave	Hemlock Lane
MacFarland Rd	Azarian Rd	Marie Ave	Meredith Rd
MacLarnon Rd	Green Ave	Green Acre Drive	WaldronRd
Lois Ln	Fielder Ave	Crestwood Circle	Chatham Circle
Weinhold Circle	Haigh Ave	Leeside Dr	Sillen Dr
	Joyce Heard Ave	Sunrise Circle	
		Meridian Dr	
		David Terrace	

Buildings: Soule School

SECONDARY ROUTE #4 **Haggar Building** **OWN**

Seed Street	Rosewood Ave	Carol Ave	Copper Beach
Ann Ave	Messer Ave	Budron Ave	Hillcrest Rd
Benning St	Senter St	Brentwood Ave	
Eaton St	Baldwin St	Twinwood Ave	
Otis Ave	Ansel St	Gibney Circle	
		Ridgeview Ave	
		Oak Ridge Ave	

Buildings: Dog Kennel

SECONDARY ROUTE #5 **Advantage Trucking** **OWN**

Birch Hill Rd	Becky Drive	McMann Ct	Castle Ridge Rd
Redwood Rd	Kayla Ave	George Ave	Eagle Nest Ridge
Pinewood Rd	Melissa Ave	Brown Ave	Braemoor Woods Rd
Ashwood Ave	Elmwood Ave	Dexter Rd	
Birchwood Rd	Adam Ct	Ewing Ln	
Hawthorne Ave	Marsh Ave	Riversedge Rd	
Iris Ave	Magnolia Ave	Dominic Dr	
Hutch Rd	Bodwell Ave	Edmunds Circle	
Wesley St	Floral Ave	Primrose Ln	

Buildings: Ingram Senior Center

SECONDARY ROUTE #6 **Rick Lessard** **S22**

Walnut Terr	Evergreen Rd	Lou-Al Lane	Clare Ln
Arlington Shore Dr	First St	Arlington Pond Court	Aurora St
Aulson Rd	Second St	Franz Rd	Sunset Rd
Julie Ave	Third St	Mary's Lane	Gillis Terrace
Nolet Ave	Fourth St		Nowell Court
Blake Rd	Sandy Beach Rd		Ball Ave
Peak Ave	Alfred Dr		Whiteneck Way
Glen Rd	Daniel Lane		
Kenyon Rd	Betty Lane		

Buildings: North Fire Station

SECONDARY ROUTE #7 **D18**

Eyssi Dr	Christine Lane	Chappy Lane
Old Farm Rd	Theodore Ave	Lisette Dr
Small Brook Rd	Stone Gate Lane	Jamil Ln
Fox Run Lane	Old Derry Rd	Pacheco Dr
Clover Court	Beaver Brook Lane	Nathan's Way
Wildflower Lane		
Norwood Rd		
Notingham Ln		
Emerald Dr		

SECONDARY ROUTE #8 **S28**

Lancaster Crossing	McKinstry Circle	Sycamore Ave
Lancaster Farm Rd	Cindy Ave	Maronos Dr
Abbey Rd	McCormick Rd	Leonard Lane
Harley Ln	Cassidy Ave	Stanley Brook Rd
Hall Ave		

SECONDARY ROUTE #9 **Eric Becker** **S24**

Karen Ln	Millville Circle
Easy St	Westwood Rd
Bradford Dr	Car-Mar Ln
Cresent Dr	Walter Palmer Ln
Cresent Circle	Grove Ave
Windward Terrace	Woodland Ave
Shady Ln	Field Ave
Harmony Ln	Lyndale Ave

SECONDARY ROUTE #10 **Darrell Bible** **S16**

Kashmir Dr	Tudor Dr	Lady Lane
Delaney Way	Matthew Dr	Green Haven Rd
Diana Dr	Briarwood Rd	Deerfield St
Jonathan Heights	Coventry Ln	Aspen St
Arcadia Ln		Autumn Wood Rd
Apollo Way		Partridge Circle
Aqua Way		
Artemis Rd		

Buildings: North Salem School

SECONDARY ROUTE #11 **D17**

Williston Rd	Tickel Fancy Ln	Silverbrook Rd
Concord CoachDr	Lamplighter Ln	Candlestick Lane
Golden Oaks Dr	Surrey Lane	Nugget Hill Rd
Rabbit Run	Quill Ln	
Sleepy Hollow	Porcupine Circle	

SECONDARY ROUTE #12 **Haggar Building** **OWN**

Trolley Ln	Pumping Station Rd	Henry Ave	Alma Ave
Woodlawn Terrace	Jill Rd	Alexander Ave	Gardner Ave
Muse Terrace	Gail Rd	Beverly Ave	Wood Ln
Point A Rd	Queen Anne Ln	Morrison St	Connell Dr
Fairmont Rd	Enterprise Drive	Clifton Ave	Belair Ln
Webster St	Maple Place	Brian Ave	Scollay Circle
Smith St	Central St	Dwight Ave	Danridge Ave
Summit St	Church St	Dewey St	Samoset Rd
Orchard Terr	Willow St	Lee Joy Lane	Penobscott Ave
Sunset Cir	Hidden Rd	Mason Rd	Mascoma Drive
			Kiowa Rd

Buildings: Parks Building, Fisk School, Municipal Parking Lot, Central Fire, Woodbury School, Kelly Library, Lancaster School

SECONDARY ROUTE #13 **Andy Ramos** **D12**

Lincoln Terrace	Olde Woode Rd
Scott Terrace	Stoneybrook Ln
Hitching Post Ln	Carriage Ln
Ballard Ln	Fieldstone Ln
Meadow Ln	Olde Village Rd
Erin Lane	Plaisted Circle
Meghan Circle	
Captains Rd	
Captains Dr	
Emileo Ln	

Buildings: Museum, Pine Grove Cemetery

SECONDARY ROUTE #14 **Matt Waldron** **D21**

Durham St
Linwood Ave
Eleanor St
Linda St
Ruth St
Guy St
Mildred St
Barbara St
Mulberry Rd
Poplar Rd
Wendy Ave
Nancy Ave
Diamond Ave
Hunters Run
Bounty Court
Theresa Ave
Evelyn Rd
Blue Fox Rd
Applewood Lane
Oshaughnessy Lane

Buildings: South Fire Station, Barron School

SECONDARY ROUTE #15 **Curt DiGiovanni** **D14**

Cole St
Dean Ave
Garrison Rd
Shepard Ave
Williams St
Fir St
Debi Lane
Marc St
Ivan Gile St
Fraser Dr
Colonial Dr
Remington Rd
Short St
Juniper Rd
Hickory Ln
Dana Rd
Palomino Rd
Shetland Circle
Clydesdale Rd
Apaloosa Rd
Old Coach Rd
Welch Circle
Brimstone Rd
Equestrian Rd
Flintlock Rd
Woodbury St
Mathias St
Robertson St
Morgan Circle
Nirvana Drive

SECONDARY ROUTE #16 **Haggar Building** **OWN**

Wheeler Dam Rd
Hamilton Lane
Bonanno Rd
Cove Rd
Cove Rd Ext.
Wreck Ave
Hurney Ave
Clark Ave
Dexter Terrace
Palm Rd
Ford Ave
Diorio Rd
Island Rd
Warren Ave
Anderson Ave
Maryann Ave
Graham Ave
Cheryl Rd
Elsie St
Cushing Rd
Banks Ave

Buildings: Pump Station

SECONDARY ROUTE #17 **Haggar Building** **OWN**

Frary St
Edwards St
Henry Taylor St
Wilson St
Palmer St
King St
Coburn St.
Chase St
Hunt St
James St
Griffin St
Shore Dr **(Lakeside)**
Rolfe St
Bogle Ave
Gulliver Ave
Reid Ave

Buildings: Palmer School

Standard Operating Procedure for:	
B.15 Alternative Products Use/Storage/Disposal	
Purpose of SOP:	To protect storm water by using alternative products that are more environmentally friendly.

Always:

- Ask product suppliers, peers, or regulatory agents if there is a more environmentally friendly alternative, when ordering any product.

Whenever Possible:

- Use alternative products when deemed appropriate:
  - Instead of solvent-based parts cleaners use citrus–based cleaners or steam/pressure wash to an oil/water separator/holding tank.
  - Instead of herbicides use bark mulch.
  - Instead of fertilizer use compost or manure.
  - Instead of pesticides plant marigolds, onion, or garlic as deterrents; release or attract beneficial insects.
  - Instead of synthetic adsorbents, use corncob or cellulose products for petroleum spills that can be burned for energy recovery.
- Train employees on the benefits of using alternative products.
- Minimize waste by purchasing recyclable products that have minimal packaging.
- Use less harmful deicers such as calcium magnesium acetate, potassium acetate, or organic deicers such as Magic Salt™.
- Use a "pre-mix" of 4 to 1 sodium chloride and calcium chloride, which is the most cost-effective alternative to straight salt.
- Substitute synthetic fertilizers with natural compost and organic fertilizers to improve soil pH, texture and fertility, and cause less leaching to groundwater.
  - Use no-phosphorus lawn fertilizer (phosphorus is rarely lacking in New Hampshire soils).
  - Use natural or certified organic fertilizers with low phosphorus levels (8-2-4, 6-2-4, 9-1-1, 6-1-1).
- Use slow-release nitrogen fertilizers.
- Reduce or eliminate mown lawn in areas that are not actively used.
- Consider converting unused turf to meadow or forest.

Related Guidance:	
	– USEPA National Menu of BMPs – NHPPP Pitstop Manual

Standard Operating Procedure for:	
B.25 Snow Disposal	
Purpose of SOP:	To protect storm water by minimizing the impact of snow piles which contain sand, salt, and trash and which generate concentrated releases of pollutants during spring snowmelt conditions.

Always:

- Identify sensitive ecosystems prior to disposal and avoid snow disposal in these areas.
- Store snow at least 25 feet from the high water mark of a surface water.
- Store snow at least 75 feet from any private water supply, at least 200 feet from any community water supply, and at least 400 feet from any municipal wells.
- Install a double row of silt fence or equivalent barrier securely between the snow storage area and the high water mark, and inspect periodically throughout the winter season.
- Clear debris in storage area each year prior to snow storage use.
- Clear all debris in snow storage area and properly dispose of no later than May 15 or immediately after snowmelt occurs of each year the storage area is in use.

Whenever Possible:

- Select storage locations that do not drain into surface waters and where environmental impacts of spring melt are minimal.
- Store snow on areas that are well above the groundwater table on a flat, vegetated slope.
- Avoid disposal on pavement, concrete, and other impervious surfaces.
- Do not pile snow in wooded areas, around trees or in vegetative buffers.
- Divert run-on of water from areas outside the snow piles.
- Use less harmful deicers such as calcium magnesium acetate, potassium acetate, or organic deicers such as Magic Salt™.

Never:

- Never dispose of snow in wetlands, lakes, streams, rivers, shellfish beds, or mudflats, or near drinking water sources.
- Never store snow in well-head protection areas (class GAA groundwater).

Related Guidance:
– NHDES Environmental fact Sheet: • WMB-3 Snow Disposal Guidelines – NHDES BMPs to Control Nonpoint Source Pollution

Standard Operating Procedure for:	
B.26 Deicing Material Storage	
Purpose of SOP:	To protect storm water by properly storing deicing materials. Sand, salt and other deicing materials used during winter can be transported by runoff into the storm drain system and eventually into waterbodies if not stored properly.

Always:

- Locate sand/salt piles and deicing fluid tanks on flat, impervious sites that are easily protected from overland runoff and away from surface waters.
- Cover sand/salt and salt piles with a tarp (polyethylene) during non-freezing spring and summer months when indoor storage facilities are not available.

Whenever Possible:

- Contain wash water from trucks used for salting and sanding in a holding tank for disposal or discharge into sanitary sewers.
- Allow rinse water/melt water to drain into vegetated buffers (away from stormdarins).
- Locate deicing material stockpiles and tanks at least 100 feet from streams and flood plains.
- Contain storm water runoff from areas where salt is stored by using buffers to diffuse runoff before entering waterbodies.
- Use diversion berms to minimize run-on to storage areas.
- Cleanup "track out" after storm events.

Never:

- Never dispose of wash water from sanding and salting trucks into the storm drain system, a waterbody, or septic system drain fields.

Related Guidance:
– NHDES Environmental Fact Sheet: • WMB-4 Road Salt and Water Quality – NHDES BMPs to Control Nonpoint Source Pollution

Standard Operating Procedure for:	
B.27 Deicing Material Application	
Purpose of SOP:	To protect storm water by improving application techniques of salt, sand, and other deicing materials.

Always:

- Apply as little sand and salt as needed, and no more than the NHDOT recommended application rates (based on level of service):

Condition	Highways carrying greater than 5,000 vehicles daily	Highway/roads carrying less than 5,000 vehicles daily
Snow - 20°F and greater	250 lbs salt per lane mile	250 lbs salt per lane mile
Snow – below 20° F	250 lbs salt per lane mile	Abrasive chemical mix
Sleet/freezing rain	300 lbs salt per lane mile	300 lbs salt per lane mile

Whenever Possible:

- Inform salt applicators of sensitive areas, such as public water supplies, lakes, ponds, etc b installing permanent signs.
- Use de-icing alternatives such as calcium magnesium acetate, sand, etc. in sensitive areas.
- Use the minimum amount of salt and sand needed to get the job done.
- Use coarse, clean "washed" sand, which is free of fine particles and dust and easier to clean in the spring.
- Equip all spreaders with ground-speed controllers.
- Train drivers to improve application techniques and reduce losses.
- Consider applying salt in a 4-8 foot strip along centerline of a two-lane road (for less traveled roads).
- Know when to plow and reapply salt. Allow maximum melting by salt before plowing.
- Remove snow manually from driveways and sidewalks.
- Street sweep accumulated salt and sand at the end of the season.

Related Guidance:	
	– NHDES Environment Fact Sheet: • WMB-4 Road Salt and Water Quality – NHDES BMPs to Control Nonpoint Source Pollution – NHDOT Winter Maintenance Snow Removal and Ice Control Policy

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WMB-3 2015

Snow Disposal Guidelines

Introduction

Each winter, the Department of Environmental Services receives numerous complaints related to snow disposal into and/or near surface water. There are several different concerns regarding disposal of snow cleared from streets and parking lots ranging from aesthetic concerns, such as minimizing the visibility of debris and huge snow piles, to environmental concerns, such as protection of groundwater quality, drinking water supplies, surface water quality and aquatic life.

The environmental impacts of disposed snow result from high levels of salt, sand, debris and trash, along with contaminants from automobiles including oil and exhaust. The debris and contaminants that inevitably end up in plowed snow make it illegal to dump snow directly into water bodies. RSA 485-A:13,I(a) prohibits discharging wastes to surface waters without a permit. In addition to water quality impacts, snow disposed in open water can cause dangerous ice jams.



Manchester NH sign prohibiting snow dumping. Photo: Robert Robinson, City of Manchester

Groundwater is sensitive to snow dumping due to the high levels of chloride and automotive waste in plowed snow. RSA 485-C:12 prohibits the siting or operation of snow dumps within classified wellhead protection areas.

Refer to the following guidelines for siting legal snow dumps and protecting New Hampshire's water.

Recommended Guidelines for Snow Disposal

These guidelines will assist in identifying snow disposal sites that minimize impact to the environment. Please note that snow dumps are kept out of water bodies due to waste materials, such as litter and debris. Waste does not belong on the land surface either; after the snow melts, all waste must be collected and disposed of properly.

- Disposed snow should be stored near flowing surface waters, but at least 25 feet from the high water mark of the surface water and/or top of stream bank. If a site cannot be found near a flowing surface water, then upland sites further from surface waters are acceptable, provided they do not impact water supply sources as described below.
- A silt fence or equivalent barrier should be securely placed between the snow storage area and the high water mark and/or the top of stream bank with care taken not to exceed the barrier with over-piling. This area should also be accessible for post-melt cleanup. Note: silt fence must be installed prior to the ground freezing.

- The snow storage area should be at least 75 feet from any private water supply wells, at least 200 feet from any community water supply wells, and at least 400 feet from any municipal wells. (Note: Snow storage areas are prohibited in wellhead protection areas.)
- All debris in the snow storage area should be cleared from the site prior to snow storage.
- By May 15 of each year, all debris from active snow storage areas should be cleared and properly disposed of.

Snow Disposal Site Selection Procedures

Municipal public works officials should consider consulting with the local health officer and conservation commission to identify sites. Securing sites prior to the winter season will help to alleviate capacity problems during winters with heavy snowfall. NHDES is available to help municipal officials identify appropriate snow disposal sites. The following are guidelines for site selection:

- Estimate how much snow disposal capacity is needed for the season so that an adequate number of sites can be selected and prepared.
- Sites lacking mature tree growth are preferred; trees make collection of debris more difficult after the winter season.
- Identify sites that could potentially be used for snow disposal such as municipal open space, parks, recreation fields and parking areas. If no additional municipal sites are available, consider securing permission from landowners of non-municipally owned sites.

For more information about snow storage contact the NHDES Watershed Management Bureau at (603) 271-3398.

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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WD-WMB-4 2011

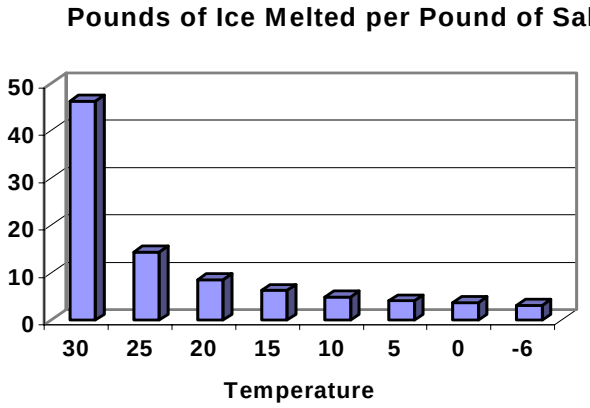
Road Salt and Water Quality

The amount of snowfall in New Hampshire and the necessity of overland travel require winter snow and ice management by the state, the municipalities, and the private sector. Deicing materials are often used in order to keep the public safe during these winter weather events. The most commonly used de-icing chemical is sodium chloride (NaCl) also known more commonly as road salt. Road salt is relatively inexpensive with an average cost of $50 - $60 per ton. Road Salt is readily available and easy to handle, store, and spread. Its purpose is to reduce the adherence of snow and ice to the pavement, preventing the formation of hard pack. Once hard pack forms, it is difficult to remove by plowing alone.

In the United States from 2005-2009 an average of 23 million tons of salt were applied to our roads, parking lots, sidewalks and driveways each year.[1] Studies have shown that, in urbanized areas, about 95 percent of the chloride inputs to a watershed are from road and parking lot deicing. In four impaired watersheds in the southern I-93 corridor of New Hampshire, road salt sources were 10-15 percent from state roads, 30-35 percent from municipal roads, and 45-50 percent from private roads and parking lots.

How Salt Works

The first step in melting ice is to lower its freezing point. This is done through the formation of brine where salt crystals pull water molecules out of ice formation. Once the brine is formed, melting is greatly accelerated. The rate at which melting occurs is dependent on the temperature. Sodium chloride loses its effectiveness (has difficulty going into solution) when temperatures fall below 15° F. Applications below this temperature, even at high rates, will not result in significant snow or ice melting; therefore, it is critical to know the current and expected temperature range of the winter weather event.



Graph obtained from The Salt institute FY03 Snow & Ice Fact #20

What Happens to Salt in the Environment

The applied salt dissolves into 40 percent sodium ions (Na+) and 60 percent chloride ions (Cl-) in the melting snow and ice and make their way into our environment.

[1] U.S. Geological Survey, Mineral Commodity Summaries, January 2010

Chloride(Cl-)*:* Chloride is highly soluble, very mobile, and its density allows for it to settle to the bottom of a waterbody. Chloride is toxic to aquatic life at levels above 230 mg/l, which is the state water quality standard. There is no natural process by which chlorides are broken down, metabolized or taken up by vegetation. In 2008, New Hampshire listed 19 water bodies impaired by chloride; in 2010 that number increased to 40. Trends show that chloride levels continue to rise with increasing use of road salt. Although chloride does not pose a human health concern, it can affect the taste of drinking water.

Sodium (Na+): The transport of sodium in the environment is not as prominent as chloride due to ion exchange; however, this exchange can alter the soil chemistry by replacing and releasing nutrients such as calcium, magnesium and potassium into the groundwater and surface water. This can lead to increased nutrient concentrations and affect the ability of the water to buffer acid deposition impacting the aquatic environment. Contamination of sodium in drinking water is a concern for individuals restricted to low-sodium diets due to hypertension (high blood pressure). The USEPA has set an advisory limit for drinking water for public water systems at 20mg Na/L to assist doctors in making recommendations for those patients on a salt restricted diet.

Road Salt Additives: Additives to road salt like ferrocyanide, which is used as an anti-caking compound in large salt supplies, can have impacts on both the environment and human health due to cyanide ions being released by certain types of bacteria as well as from exposure to sunlight. The USEPA in 2003 added this compound to its list of toxic pollutants under section 307(a) of the Clean Water Act.

Road Salt Management Issues

For many road managers and parking lot maintainers the winter maintenance goal is to obtain bare and dry pavements at the earliest practical time following cessation of a storm for effective regular high speed travel and pedestrian safety. Traffic, volume, speed and gradient are the primary factors in determining the level of winter maintenance service for State and municipal roads. Pedestrian travel along with slip and fall liability are the priority for land owners and private sector operators.

A road manager's duty entails awareness of the current and expected weather events, temperatures, equipment capabilities, de-icing chemical inventories, application rates, driving routes, as well as staffing availability for each winter storm event. Expectations from the driving public, property managers and customers along with balancing the environmental effects of de-icing chemicals makes the job of these managers challenging.

Another concern to road managers, property owners, and to citizens is the damage and cost to infrastructure and vehicles associated with road salt use. Corrosion of concrete reinforcing rods in roads, bridges, parking garages along with the cost of corrosion protection practices for highways and the automobile industry cost a staggering $16 billion-$19 billion a year.[2] Road salt alternatives that help reduce the cost to infrastructure and limit the environmental impact are critical.

[2] Adapted from Report of the Salt Use Subcommittee to the Commission on the Environment on Road Salt Use and Recommendations City of Madison, Wisconsin December 2006

Best Management Practices
Following best management practices and recommendations can help in effective and efficient use of de-icing materials while reducing the impact and preserving the quality of our freshwaters.

Application of Road Salt

- Plow, shovel, and blow the snow. Use mechanical means to remove snow, do not use salt or other de-icing chemical to "burn-off" snow and ice.
- Calibrate your equipment. Knowing your equipment is calibrated and the application rate is accurate will save chemical cost and will reduce the environmental impacts. Calibrate annually and keep a record in the vehicle for spreader settings.
- Choose the right material and apply the correct amount. Know the limits of deicing chemicals. Rock salt is not effective at temperatures below 15°F no matter how much is applied. Check application rates given the current weather conditions.
- Use ground speed controls on your spreader. Application rates should correspond with vehicles speed.
- Pre-wet the salt. Adding brine to salt before it is applied will jump start the melting process and help keep the salt in place by reducing bounce and scatter. Pre-wetting salt can reduce application rates by 20 percent. Typical rates are 8-10 gallons of pre-wet liquid to 1 ton of salt.
- For road applications place salt in a windrow near the centerline. Less salt is wasted and traffic will help work the salt into brine and move it to the shoulder of the road.
- Use anti-icing. Be proactive by applying de-icing chemical prior to snow and ice accumulation. It can reduce the amount of chemical needed by 30 percent. Know when to take action; time plowing operations to allow maximum melting by salt before snow is plowed off the road or parking lot.
- Don't mix salt and sand. Salt is for melting and sand is for traction on top of the ice, they work against each other.
- Be familiar with sensitive areas, such as public water supplies, impaired waters and other water sources. Consider designating reduced salt areas or identifying safe alternatives to road salt in these areas.
- Create a winter snow and ice control policy. Outlining your levels of service, application rates, and plowing frequency and practices provide a reference for decision makers and staff.
- Keep a winter storm log. Record storm events, time, application rates, and other important information describing maintenance activities and results.
- Attend training workshops and stay up to date with new technologies and practices.
- For additional information on training, please refer to UNH Technology Transfer Center at http://www.t2.unh.edu/

Storage and Handling
Salt, sand, and snow storage facilities have the potential to cause water pollution due to runoff. For maximum environmental protection, all salt storage facilities and piles should be covered and placed on an impervious surface with adequate drainage controls to prevent runoff. This is also important for sand piles that may contain a small percentage of salt to prevent the pile from

freezing. Take care while loading salt, sand or chemicals and clean up any spills that occur. Snow piles should be kept away from water sources and below areas where salt is stored. Vehicle washing facilities should have proper drainage to avoid discharge into surface and ground waters.

To obtain more information, please see the following DES fact sheets at: http://des.nh.gov/organization/commissioner/pip/factsheets

- Snow Dumping WD-WMB-3
- Holding Tanks for Floor Drains WD-DWGB-22-8
- Wastewater Discharges from Vehicle Washing WD-DWGB-22-10
- Storage and Management of Salt Deicing Materials WD-DWGB-22-30

Alternatives to Road Salt

Environmental impact should be considered when selecting any de-icing chemical or product. Many of the road salt alternatives have a relatively short history or limited amount of use. It is unclear what the potential long term impacts will be for many of these chemicals. Ongoing research, data analysis, and documentation in scientific literature of non-corrosive and environmentally friendly chemicals are necessary.

Calcium Chloride (CaCl) – is the second most common used chemical, it is available in flake, pellet or liquid. It is effective at lower temperatures with a practical melting temperature of -20°F. In liquid form it can be used to pre-wet salt or applied directly as an anti-icing technique which can help in preventing snow and ice from bonding to the pavement and reduce the application amount needed. Several disadvantages to CaCl include a higher cost, environmental impact due to chloride, corrosive to metal, it can be difficult to handle and store, and can contribute to slippery conditions if applied incorrectly.

Potassium chloride (KCl) – is a naturally occurring material (muriate of potash) that also is used as fertilizer. It is available in liquid or crystal with a practical melting temperature of 20°F. It can be damaging to concrete, has environmental impacts due to chloride and can inhibit plant growth and burn foliage.

Magnesium Chloride (MgCl) – is available in liquid or crystal form that melts faster than rock salt; it has a practical melting temperature of 5°F. MgCl attracts moisture and can lead to slippery conditions if applied incorrectly. It is corrosive and contributes to the chloride load in our waters.

Urea – is used primarily as fertilizer with a practical melting temperature of 25°F. It releases nitrogen into the soil and can lead to a chemical imbalance in water systems due to nutrient loading. Urea is corrosive and breaks down rapidly into ammonia, which is released into the environment.

Potassium Acetate (KA) – has a practical melting temperature of -15°F and is biodegradable and non-corrosive. It can cause slick road conditions if applied in excess and can lower oxygen levels in the waterbody. This is a commonly used deicer in the airline industry and is relatively non corrosive.

Calcium Magnesium Acetate (CMA) – is made from limestone and acetic acid. Its lowest practical melt temperature is 20°F. It is less damaging to soils and vegetation, less corrosive to concrete and steel, less toxic to aquatic organisms, and has limited impact on ground water in comparison to road salt. It is much more expensive than road salt but a full cost analysis may show that is it an economically viable choice given its benefits. It is currently being used in environmentally sensitive areas and on bridges prone to salt corrosion.

Agricultural by-products – are mostly proprietary to the manufacturer and can be derived from sources such as corn, beet, grain, alcohol, or molasses. These products are not good at melting snow and ice; however, they do slow down the formation of ice crystals by having a lower freezing point. They are less corrosive than conventional materials and in many cases act as tackifiers to keep product on the road surface. These attributes make the product good for anti-icing and pre-treating salt. They do have environmental impacts in aquatic systems due to their organic nature and can lead to biological oxygen demand, heavy metals, and nutrient enrichment by nitrogen and phosphorus in our waters.

For Additional Information

For more road salt and water quality information, visit the DES New Hampshire Road Salt Reduction Initiative website at http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/index.htm or contact the DES Watershed Assistance Section at (603) 271-7889 or watershed@des.nh.gov .

For information on road salt and drinking water, see fact sheet “DWGB-3-17 Sodium and Chloride in Drinking Water” at http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-3-17.pdf , or contact the Drinking Water and Ground Water Bureau at (603) 271-2513.

Note: This fact sheet is accurate as of December 2010. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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WD-DWGB-22-30 2011

Storage and Management of Deicing Materials

Storage and management of deicing material can be a source of contamination of surface water and groundwater, causing a violation of state water quality standards. These salt-based products dissolve in precipitation and either infiltrate though the ground surface to groundwater, or run off into surface water. Salt that infiltrates the subsurface at significant concentrations can also react with the soils and release metals into groundwater and surface water at concentrations that exceed water quality standards.

The term “deicing material” used here refers to deicing salts, and may include any of the following in either solid or liquid form: sodium chloride (often called rock salt), potassium chloride, calcium chloride, magnesium chloride, and other mixtures that contain salts (chlorides) including mixtures with abrasives, such as sand, cinder, slag, etc.

Need for Proper Management

Due to their high potential for causing groundwater and surface water pollution, salt storage facilities should not be placed in environmentally sensitive areas. The best strategy to prevent pollution from deicing materials and the associated liability is to use and store these materials responsibly. Facilities should develop good housekeeping practices to minimize loss and waste during the delivery, storage, loading and management of deicing materials.

Existing and new facilities that operate without impermeable surfaces and infiltrate brine to the ground or groundwater need to register with DES under Env-Wq 402 Groundwater Discharge Permit and Registration Rules. This is a free registration and is a method of tracking potential contaminant sources. If there are sensitive receptors nearby, some sites may be required to monitor drinking water wells and/or the groundwater. The registration form can be found at: http://des.nh.gov/organization/divisions/water/dwgb/dwspp/bmps/documents/floor_drain_form.pdf.

Best management practices (BMPs) for locating a new deicing materials storage facility should include the following:

- The facility should be located in an area that is not environmentally sensitive. Avoid areas where there are wells, reservoirs, or within the footprint of stratified-drift aquifers.
- The facility should be located on a flat site away from surface water and wetlands.
- Site drainage should be designed to direct clean stormwater away from the operations and storage areas in order to keep the stockpiles as dry as possible.

- Drainage that is contaminated with salt should be directed to a sewage treatment plant (subject to municipal approval), collected for use in pre-wetting activities or sent for proper disposal.

Structures and Work Areas

Ideally deicing material storage facilities should be completely enclosed, with storage and working areas on impervious surfaces such as asphalt or coated concrete. There should be stormwater drainage controls to prevent runoff water and snow melt from contacting or running through loading and material storage areas. Overhead cover to protect material from exposure to snow and rain should be installed to minimize runoff and inventory loss. A fixed roof is preferred over a tarp, because it is very difficult to keep storage piles completely covered with tarps during winter months and storm events.

Buildings should have concrete foundations and can be designed using dome, barn, or fabric style structures. For more information on constructing salt storage units, calculating how much space is needed for storage, and salting practices, see the Salt Institute's publications at www.saltinstitute.org/. *The Salt Storage Handbook* contains tables that indicate how much space is required to cover different height piles, and provides surface areas of exposed salt piles, to help in calculating number and size of tarps for *temporarily* covering salt piles.

The following BMPs should be considered when storing and managing deicing materials.

Storage Structures

- All salt and sand/salt mixtures should be stored on pads of impermeable asphalt or concrete. Storage and loading areas should have an impermeable floor constructed of asphalt, concrete or other suitable material that extends around the buildings and work area exterior. The area should be sloped away to prevent stormwater from entering the loading areas or structure.
- Concrete pads and walls should be treated to prevent concrete deterioration (spalling).
- Structure hardware should be galvanized and concrete block buildings should be waterproofed inside.
- If using a three-sided building, the exposed salt at the open end should be covered.
- Stormwater and snowmelt runoff should be properly controlled. Building floors and storage pads should be sloped to prevent ponding and allow any water to drain away from the storage piles.

On-Site Management: Delivery/Handling/Loading

- All sand and sand/salt mixtures temporarily out in the open should be covered to prevent salt from being washed or blown from the pile.
- If a permanent under-roof work area is not possible, then storage and handling activities should be conducted on impermeable (bituminous) pads. Any deicing materials left outdoors should be completely covered with waterproof tarpaulins.
- All surplus materials must be removed from the site when winter activity is finished.
- Working areas should be bermed and sloped to allow snow melt and stormwater to drain away from the area. In some cases, it may be necessary to channel water to a collection point, such as a sump, holding tank, or lined basin for collection.
- Storage and distribution should only be conducted during the fall/winter season.

- Spreaders should not be overloaded such that material spills off the vehicle. A plan for loading operations to prevent overfilling vehicles and eliminating material spillage during transportation should be developed and implemented.
- Salt spilled at the storage yard and loading areas should be collected and returned to the storage pile.
- Annual inspection and repairs should be carried out prior to the start of each season. Ongoing inspection of storage structures, work areas, and deicing liquid storage tanks should be carried out during the season.
- Solid bagged materials should be stored securely, indoors if possible.
- Spreaders should only be washed at a location where the wash water is properly managed. (See DES fact sheet WD-DWGB-22-10 Management of Vehicle Wash Water.)
- Liquid storage tanks should be designed such that a plumbing failure will not result in release of the contents. Backflow prevention may be necessary on some plumbing applications.
- Liquid storage tanks should be protected from impact from vehicles moving about the yard and be located such that spilled material can be contained and retrieved in the event of a tank or piping failure. Secondary containment should be provided around large liquid storage tanks.

Brine Storage and Management

In recent years brine has been used on roads prior to storms as an effective ice preventative, reducing the amount of deicing materials needed during a storm event. The water that runs off storage and loading areas can be collected into watertight tanks or lined basin(s) and re-used in pre-storm wetting of roads. Any brine storage should be designed with inert materials that are compatible with salt.

Brine stored using holding tanks must be managed so that there are no releases to drains, groundwater or surface waters. If there is a floor drain in a building where brine is stored, it must be connected to a municipal sewer system (with the approval of the local authority), routed to a registered holding tank or permanently sealed. (see fact sheet WD-DWGB-22-8 Holding Tanks for Floor Drains)

Storage ponds or collection basins used for brine storage must be lined and must not receive runoff from areas other than the storage and operations areas. The basin itself must be impermeable to prevent infiltration of the collected water into the ground. The basin may need a roof or cover to reduce the accumulation of snow and rain water. The collection of this runoff water would only be necessary during the winter maintenance months (November through March). During the remaining seven months of the year, the non-brine stormwater can be redirected from the brine storage to a natural discharge point.

The preferred management option for any brine collected is for use as a pre-wetting agent for roads prior to winter storms. The release of this collected water to the ground, groundwater, or a stormwater system during operation or at season’s end is not permissible and as a consequence, this type of runoff management may require disposal of the brine by one of the following methods: (1) discharge directly to a publicly owned treatment works (POTW) with local approval; (2) pumping and transporting the salt water to a POTW system by tank truck; (3) evaporation; or (4) treatment to remove salt and on-site discharge under a Nondomestic Wastewater Registration.

For Additional Information

For more information, please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov , or visit our website at http://des.nh.gov/organization/divisions/water/dwgb/index.htm. All of the bureau's fact sheets are online at http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm.

References:

Salt Institute (www.saltinstitute.org)

Michigan Department of Environmental Quality (www.michigan.gov/deq/)

Salt and Brine Storage Guidance

Guide to Salt Storage Requirements for Small Commercial Snow Removal Services

Environnent Canada (http://www.ec.gc.ca/nopp/roadsalt/en/index.cfm)

Best Management Practices for Salt Use on Private Roads, Parking Lots & Sidewalks

SIMA (Snow & Ice Management Assoc.) www.sima.org

Appendix M

Standard Operating Procedures – Erosion and Sediment Control

B.23 Erosion and Sediment Control

Standard Operating Procedure for:	
B.3 Erosion and Sediment Control	
Purpose of SOP:	To protect storm water from pollution by reducing or eliminating pollutant loading from land disturbing activities.

Always:

- Use erosion control techniques or devices to stabilize disturbed areas.
- Use effective site planning to avoid sensitive areas.
- Keep land disturbance to a minimum.
- Inspect and maintain erosion control devices.
- Install erosion control devices properly.
- Remove sediment accumulated during construction from permanent BMPs once construction is completed.
- Minimize the amount of bare soil by scheduling phases of construction and stabilization.
- Minimize slope lengths.
- Monitor practices and adjust, maintain, and repair them periodically and after every storm.
- Reduce the velocity of storm water runoff.
- Prevent erosion by covering bare soil with mulch or other cover.
- Protect existing storm water structures from sediment by using temporary sediment traps, silt fence, hay bales, or perforated risers.
- Divert clean water around construction site.

Whenever Possible:

- Limit construction activities during months with higher runoff rates.
- Install erosion control blankets when seeding drainage ways.
- Protect natural vegetation, especially near waterbodies, wetlands, and steep slopes.
- Establish vegetative cover with good root systems prior to freeze/thaw cycles.

Never:

- Never divert runoff into a sensitive area.
- Never remove temporary measures before construction is complete.

Related Guidance:	
	– NHDES BMPs to Control Nonpoint Source Pollution – NHDES/DOT BMPs for Routine Maintenance Activities in New Hampshire – Storm Water Management Erosion and Sediment Control Handbook for Urban and Developing Areas (The Green Book)

APPENDIX I

2017 MS4 Permit Annual Reports

Year 1 Annual Report
New Hampshire Small MS4 General Permit
Reporting Period: May 1, 2018-June 30, 2019

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed.

Part I: Contact Information

Name of Municipality or Organization: Salem, NH

EPA NPDES Permit Number: NHR041031

Primary MS4 Program Manager Contact Information

Name: Roy E. Sorenson Title: Director of Municipal Services

Street Address Line 1: 21 Cross Street

Street Address Line 2:

City: Salem State: NH Zip Code: 03079

Email: rsorenson@salemnh.gov Phone Number: (603) 890-2150

Fax Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofsalemnh.org/engineering-projects/pages/storm-water-reporting

Date SWMP was Last Updated: June 2019

If the SWMP is not available on the web please provide the physical address and an explanation of why it is not posted on the web:

Part II: Self Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4.

Impairment(s)

☐ Bacteria/Pathogens ☒ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

☒ Bacteria/ Pathogens ☒ Chloride ☐ Lake and Pond Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 1 Requirements

☒ Develop and begin public education and outreach program

☒ Identify and develop inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years

- ○ The SSO inventory is attached to the email submission
- ◉ The SSO inventory can be found at the following website:

The SSO inventory is included in the Town's SWMP, which can be found at the following address: https://www.townofsalemnh.org/engineering-projects/pages/storm-water-reporting

☒ Develop written IDDE plan including a procedure for screening and sampling outfalls

☒ IDDE ordinance complete

☒ Identify each outfall and interconnection discharging from MS4, classify into the relevant category, and priority rank each catchment for investigation

- ◉ The priority ranking of outfalls/interconnections is attached to the email submission
- ○ The priority ranking of outfalls/interconnections can be found at the following website:

☒ Construction/ Erosion and Sediment Control (ESC) ordinance complete

☒ Develop written procedures for site inspections and enforcement of sediment and erosion control measures

☒ Develop written procedures for site plan review

☒ Keep a log of catch basins cleaned or inspected

☐ Complete inspection of all stormwater treatment structures

Annual Requirements

☒ Annual opportunity for public participation in review and implementation of SWMP

☒ Comply with State Public Notice requirements

☒ Keep records relating to the permit available for 5 years and make available to the public

☒ Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters

☒ Annual training to employees involved in IDDE program

☒ All curbed roadways have been swept a minimum of one time per year

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Chloride Impairment

Annual Requirements

Public Education and Outreach

☒ Include an annual message in November/ December to private road salt applicators and commercial industrial site owners on the proper storage and application rates of winter deicing material, along with the steps that can be taken to minimize salt use and protect local waterbodies

Phosphorus Impairment

Annual Requirements

*Public Education and Outreach**

☐ Distribute an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.1.d.iii to a minimum of two times per year (spring and fall)

Potential structural BMPs

☐ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix H. Document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each each annual report

Solids, Oil and Grease (Hydrocarbons), or Metals Impairments

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

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

Chloride TMDL

☒ Complete a Chloride Reduction Plan that includes specific actions designated to achieve chloride reduction on municipal roads and facilities, and on private facilities that drain to the MS4 or complete an Alternative Chloride Reduction Plan

Use the box below to input additional details on any unchecked boxes above or any additional information you would like to share as part of your self assessment:

The Town was only able to inspect and maintain a few of their structural BMPs during Permit Year 1 due to limited available resources. As the Town continues to refine mapping of BMPs in Permit Year 2, and develop written operation and maintenance procedures, including inspection forms for BMPs, the Town will work towards implementing a more comprehensive BMP inspection and maintenance program.

While the Town did not distribute separate targeted public information materials about yard waste and leaf litter disposal, the EPA flyer entitled "Protecting Water Quality from Urban Runoff" that was posted online and made available at Town Hall included some information about both of these topics. There is also separate information posted on the Town's Beach Testing Page that warns residents to keep leaves and debris out of street gutters and storm drains; and to apply lawn and garden chemicals sparingly and according to directions. More targeted messaging is planned for Permit Year 2.

Appendix H requires permitees that have direct discharges to water bodies that are impaired for phosphorus or that are tributary to water bodies that are impaired for phosphorus to track and estimate the amount of phosphorus removed by structural BMPs installed as a result of the retrofit inventory conducted as a part of the Phosphorus Source Identification Report, which is due in Permit Year 4. As dictated by the permit, at least one structural BMP must be installed by the end of Permit Year 6. Appendix H does not require permittees to estimate the amount of phosphorus removed by existing structural BMPs-- that is only a requirement for permittees discharging to a waterbody with an existing TMDL for phosphorus where a municipality wants to obtain credit for phosphorus removed as part of a comprehensive Phosphorus Control Plan. Although Captain Pond does currently have a TMDL for phosphorus, that TMDL was established after the permit effective date, therefore under the current permit, the Town is only subject to the requirements of the permit as included in Appendix H. The structural BMP requirement above is therefore not applicable to Salem. However, once the Town begins installation of structural BMPs as identified as part of their Phosphorus Source Identification Report, the Town will track and estimate the phosphorus removed by the BMP consistent with Attachment 3

to Appendix F, including reporting on BMP type, total area treated, design storage volume, and the estimated phosphorus removed in mass per year.

The Town is working to develop a plan to optimize inspection, cleaning, and maintenance of catch basins to ensure that permit conditions are met and that no catch basin is more than 50% full. The Town will continue to collect the necessary metrics to develop this plan in Permit Year 2.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

Yes ☐ No ☒

If yes, describe below, including any relevant impairments or TMDLs:

No changes have been made at present. However, the Town continues to work to confirm outfall ownership and regulated status of outfalls. As field work progresses, the list of regulated outfalls will be revised as needed prior to IDDE investigations.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed during the reporting period: 6

Below, report on the educational messages completed during the first year. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP: Displays/Posters/Kiosks

Message Description and Distribution Method:

A copy of the EPA pamphlet/fact sheet "Protecting Water Quality from Urban Runoff" was posted at kiosks at Canobie Lake and Hedgehog Pond. It was also made available at kiosks in Michelle Memorial Park, the Town Forest, Bill Valentine Memorial Park and the Mall at Rockingham Park, as well as at the front desk in Town Hall and the DPW building.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department, DPW

Measurable Goal(s):

By posting this information at kiosks around town, the Town was able to reach a wide audience as the pamphlet was made available at many locations around town that see significant foot traffic.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

BMP: Brochures/Flyers/Mailings

Message Description and Distribution Method:

The Town posted a Clean Water Campaign brochure entitled "Pick it up, it's your doodie" available at kiosks at Canobie Lake, Hedgehog Pond, Michelle Memorial Park, the Town Forest, Bill Valentine Memorial Park, and the Mall at Rockingham Park. This brochure was also made available at the front desk of Town Hall and at the DPW building.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department, DPW

Measurable Goal(s):

The Town made copies of the brochure available throughout town raising awareness among both pet owners and others of the negative impact pet waste has on water quality. By posting this information at kiosks around town, the Town was able to reach a wide audience as the pamphlet was made available at many locations around town that see significant foot traffic.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

BMP:Brochure/Website

Message Description and Distribution Method:

Salem created and posted on their website a second brochure entitled "Tips for Responsible Dog Ownership", which references the bylaws associated with pet licensing as well as the hazards associated with mishandled dog waste. In addition to being posted on the Town's website, this message was also made available at the Town Clerk's office, where residents must go to obtain or renew a dog license.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Department, DPW, Town Clerk

Measurable Goal(s):

Copies of the brochure were distributed with newly issued and renewed dog licenses. Posting the brochure online made the information available to a broader audience than just dog owners. The exact number of brochures distributed/views of the online information is not known.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

BMP:Flyer

Message Description and Distribution Method:

The Town posted a flyer from NHDES regarding proper storage and application of winter deicing material on its website, under "Public Outreach from State of NH for Education on Use of Salt on Private Property": https://www.townofsalemnh.org/public-works

Targeted Audience: Businesses, Institutions and Commercial facilities; Industrial Facilities

Responsible Department/Parties: Engineering Department, DPW

Measurable Goal(s):

This message informs commercial property owners of the benefits of hiring a certified road salt applicator to handle deicing in their parking lots, including liability protection and reduced impact to receiving waters. The message is easily accessible on the website, and reaches a large audience.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

BMP:Website

Message Description and Distribution Method:

The Board of Health maintains a comprehensive web page dedicated to septic system installation and maintenance. It provides information regarding how often septic systems should be inspected and pumped, the environmental impacts associated with septic system failures, and what materials should not be discharged to the plumbing system as they can have a negative impact on septic systems. There is also a separate link to EPA's website - "Do Your Part, Be Septic Smart", which provides information on septic system maintenance.

Targeted Audience: Residents

Responsible Department/Parties: Engineering, Board of Health

Measurable Goal(s):

By posting information on the Town's website, it is available to all residents, and not just those property owners located in catchments tributary to water bodies impaired for bacteria.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

BMP:Flyer

Message Description and Distribution Method:

The EPA pamphlet/fact sheet "Protecting Water Quality from Urban Runoff" includes information on how fertilizers can harm water quality, how fertilizers should be use sparingly, and how instead of disposing of yard waste, materials can be utilized to start a compost pile. Information is also posted on the Town's website regarding how yard waste is accepted at the transfer station. This information was posted at numerous kiosks

around town, and also made available at Town Hall, at DPW, and on the Town's website.

Targeted Audience: Residents

Responsible Department/Parties: Engineering, DPW

Measurable Goal(s):

The material was circulated widely and reached a large audience. In Permit Year 2, more specific targeted messaging is planned regarding fertilizer use and proper disposal of yard waste.

Message Date(s): FY2019

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

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Town posted its Stormwater Management Plan to the Engineering Division's web page in June 2019. Hard copies of the SWMP are also available at Town Hall and at DPW for review and input by the public. Once submitted, this report will also be made available on the Town's website, and will be incorporated into the SWMP.

After the SWMP was developed, a presentation was made at a Board of Selectmen Meeting on July 17th regarding the status of the Town's MS4 Permit compliance program. The Selectmen and other citizens present were informed of the permit requirements and how the Town intends to comply with the permit requirements including progress to date.

Was this opportunity different than what was proposed in your NOI? Yes ☐ No ☒

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

Salem continued to provide multiple opportunities for public involvement during the reporting period. The Town held its annual Household Hazardous Waste Day on October 13, 2018, collecting 50 cubic yards of material that might have otherwise been disposed of improperly. Material collected included pesticides, aerosols, antifreeze, engine oil, paint, and various kinds of batteries. The Town also serviced 352 vehicles, helping to mitigate impacts to the MS4 from leaks or improperly handled chemicals and fluids.

The Municipal Services Department hosted and participated in a community-wide roadside litter pick-up from April 1 to April 5, 2019. There were 3.01 tons of paper, cans, bottles, batteries, glass, cardboard, tires, needles,

and other kinds of litter that were collected from 41 different streets, preventing the possibility that any of these items will wash into the MS4 during a storm event.

The Town continued its mandatory recycling program. This year, 2025.47 tons of recyclable material was collected.

The Town also continued its rain barrel program, in which residents can order discounted rain barrels through the Town's website during the spring. An educational video was also included on the Town's website regarding how a rain barrel works.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

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

Number of SSOs identified: 3

Number of SSOs removed: 3

Below, report on the total number of SSOs identified in the MS4 system and removed to date. At a minimum, report SSOs identified since 2013.

Total number of SSOs identified: 3

Total number of SSOs removed: 3

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period:

The Town had already developed a comprehensive map of its drainage system prior to the start of the permit term. The map includes outfalls, pipes, manholes, catch basins, interconnections with other MS4s, municipally owned stormwater treatment structures, and impaired water bodies. Catchment areas have been determined for each outfall or interconnection, considering each upstream catch basin and the area that would conceivably drain to that catch basin based on topography and impervious cover. The map will be updated to reflect newly discovered information from investigations over the course of the permit term. The existing map is in accordance with the 2017 MS4 Permit's accuracy guidelines and is attached the NOI included in Appendix D of the Stormwater Management Plan.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- ○ The outfall screening data is attached to the email submission
- ◉ The outfall screening data can be found at the following website:

Outfall screening data has been posted to the Town's website at the following location: https://www.townofsalemnh.org/engineering-projects/pages/storm-water-reporting

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

Number of outfalls screened: 23

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

Percent of total outfalls screened: 13%

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ◉ The catchment investigation data can be found at the following website:

Catchment investigation data has been posted to the Town's website at the following location: https://www.townofsalemnh.org/engineering-projects/pages/storm-water-reporting

Below, report on the number of catchment investigations completed during this reporting period.

Number of catchment investigations completed this reporting period: 2

Below, report on the percent of catchments investigated to date.

Percent of total catchments investigated: 1.5%

Optional: Provide any additional information for clarity regarding the catchment investigations below:

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

N/A

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit.

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

The Town has developed catchment investigation procedures and performed a System Vulnerability Factor analysis. Both items have been incorporated into the Town's IDDE Plan.

Employee Training

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

A training on the IDDE program and Good Housekeeping/ Pollution Prevention was conducted on June 20, 2019. There was 14 town employees that attended the training, including the Director of Engineering and the DPW Director. This training covered the purpose of the the IDDE program, including how to identify illicit discharges and SSOs. It also covered the importance of good housekeeping procedures and the impact those procedures have on reducing pollutants in stormwater runoff from municipal activities and facilities.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed during this reporting period.

Number of site plan reviews completed: 197

Number of inspections completed: 510

Number of enforcement actions taken: 0

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance Development

Describe the status of the post-construction ordinance required to be complete in year 2 of the permit term:

The Town has drafted updates to Chapter 417, Stormwater Management, of the Town's municipal code to meet the post construction stormwater runoff control requirements of the permit. That chapter currently focuses on connections to the MS4 relating to sump pumps and basement drains-- the planned amendments will include additional requirements regarding use of the public storm drain system as well as additional requirements for construction and post-construction stormwater management to supplement what is currently included in the Town's Site Plan Review Regulations and Subdivision Regulations.

As-built Drawings

Describe the status of the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites required to be complete in year 2 of the permit term:

The Town is working to incorporate language that requires submission of as-built drawings and long-term operation and maintenance upon completion of construction projects into Chapter 417, Stormwater Management, of the Town's municipal code. These updates have been drafted and will be presented to the Board of Selectmen for adoption in Permit Year 2.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

The Town will complete the required street design and parking lot assessment by the end of Year 4 as required by the permit.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

The Town will complete the required green infrastructure report by the end of Year 4 as required by the permit.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

The Town is working to compile an inventory of its properties that could be modified or retrofitted with BMPs. This inventory will be complete by the end of Year 4 as required by the Permit.

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

See additional information section below.

If complete, attach the catch basin cleaning optimization plan or the schedule to gather information to develop the optimization plan:

- ○ The catch basin cleaning optimization plan or schedule is attached to the email submission
- ○ The catch basin cleaning optimization plan or schedule can be found at the following website:

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

Number of catch basins inspected: 1,557

Number of catch basins cleaned: 1,557

Total volume or mass of material removed from all catch basins: 670 CY

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

Total number of catch basins: 5,427

If applicable:

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

Street Sweeping

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

All streets in Town were swept at least once during the reporting period. Streets located in catchments tributary to Captain Pond were swept twice, in accordance with the requirements of Appendix H. Written procedures for street sweeping are currently in draft form, and will be finalized along with the SOPs for other municipal activities and facilities in Permit Year 2.

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

- ◉ Number of miles cleaned: 460
- ○ Volume of material removed: [UNITS]
- ○ Weight of material removed: [UNITS]

Winter Road Maintenance

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

The Division of Public Works published its 2018-2019 Winter Emergency Operation Plan in December 2018. This plan is updated each year to account for turnover in operators and equipment, and as existing operations are modified. As part of the Town's Chloride Reduction Plan developed for Policy-Porcupine Brook in Permit Year 1, it was also recommended that this plan be reviewed and updated regularly.

Inventory of Permittee-Owned Properties

Describe the status of the inventory, due in year 2 of the permit term, of permittee-owned properties, including parks and open spaces, buildings and facilities, and vehicles and equipment, and include any updates:

The Town has a draft inventory of municipal facilities and vehicles, which will be updated during Permit Year 2. All vehicles and equipment used for winter road maintenance have been inventoried as part of the Winter Emergency Operation Plan.

O&M Procedures for Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment

Describe the status of the operation and maintenance procedures, due in year 2 of the permit term, of permittee-owned properties (parks and open spaces, buildings and facilities, vehicles and equipment) and include maintenance activities associated with each:

The Town has completed draft Standard Operating Procedures for municipal activities and facilities. These SOPs will be finalized during Permit Year 2, and included in Appendix I of the SWMP once complete.

Stormwater Pollution Prevention Plan (SWPPP)

Describe the status of any SWPPP, due in year 2 of the permit term, for permittee-owned or operated facilities including maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater:

A draft SWPPP has been developed for the DPW facility, which will be finalized in Permit Year 2. SWPPPs for other waste handling facilities, such as the Transfer Station, will also be developed as needed during Permit Year 2. There were two inspections conducted at the Transfer Station during Permit Year 2 in compliance with landfill closure requirements. These inspections are highlighted below.

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

Number of site inspections completed: 2

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

N/A

O&M Procedures for Stormwater Treatment Structures

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

The Town regularly inspects and maintains the Nazarian Drive Detention Basin and the Silver Brook Stormceptor. The Town will work to inspect other stormwater treatment structures and develop written procedures and inspection forms for structural BMP maintenance in the coming permit year.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- (•) Not applicable
- ( ) The results from additional reports or studies are attached to the email submission
- ( ) The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Catch basins in Salem are currently cleaned once every three years on a rotating schedule, either by Town personnel or outside contractors when budget allows. To develop the catch basin cleaning optimization plan, data was collected during the 2018 and 2019 cleaning seasons, and will be collected again in th 2020 cleaning season. This data includes depth from the catch basin rim to the top of sediment, to the bottom of the basin, and to the invert of the outlet pipe. This information will provide needed metrics going forward to determine which catch basins are more than 50% full as part of ongoing and future optimization planning efforts. The data collected will be integrated into the Town's GIS to identify which catch basins fill up more quickly. A final optimization plan will be compiled once all pertinent data is collected for each catch basin.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 2 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Complete system mapping Phase I
- Begin investigations of catchments associated with Problem Outfalls
- Develop or modify an ordinance or other regulatory mechanism for post-construction stormwater runoff from new development and redevelopment
- Establish and implement written procedures to require the submission of as-built drawings no later than two years after the completion of construction projects
- Develop, if not already developed, written operations and maintenance procedures
- Develop an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; review annually and update as necessary
- Establish a written program detailing the activities and procedures the permittee will implement so that the MS4 infrastructure is maintained in a timely manner
- Develop and implement a written SWPPP for maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- Enclose or cover storage piles of salt or piles containing salt used for deicing or other purposes
- Develop, if not already developed, written procedures for sweeping streets and municipal-owned lots
- Develop, if not already developed, written procedures for winter road maintenance including storage of salt and sand
- Develop, if not already developed, a schedule for catch basin cleaning
- Develop, if not already developed, a written procedure for stormwater treatment structure maintenance
- Develop a written catchment investigation procedure *(18 months)*

Annual Requirements

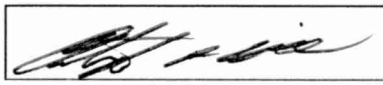
- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Implement procedures for sweeping streets and municipal-owned lots
- Implement procedures for winter road maintenance
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually

Provide any additional details on activities planned for permit year 2 below:

Part V: Certification of Small MS4 Annual Report 2019

40 CFR 144.32(d) Certification

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

Name:	Christopher A. Dillon	Title:	Town Manager
Signature:		Date:	9/30/19

[Signatory may be a duly authorized representative]

Year 2 Annual Report
New Hampshire Small MS4 General Permit
Reporting Period: July 1, 2019-June 30, 2020

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Salem, NH

EPA NPDES Permit Number: NHR041031

Primary MS4 Program Manager Contact Information

Name: Roy E. Sorenson Title: Director of Municipal Services

Street Address Line 1: 21 Cross Street

Street Address Line 2:

City: Salem State: NH Zip Code: 03079

Email: rsorenson@salemnh.gov Phone Number: (603) 890-2150

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofsalemnh.org/sites/g/files/vyhlif3761/f/uploads/salemnh_swmp_updated_2020.06_reduced.pdf

Date SWMP was Last Updated: June 2020

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☐ Bacteria/Pathogens ☒ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

☒ Bacteria and Pathogen ☒ Chloride ☐ Lake and Pond Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 2 Requirements

☒ Completed Phase I of system mapping

☒ Developed a written catchment investigation procedure and added the procedure to the SWMP

☒ Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP

☒ Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes

☒ Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP

☒ Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP

☒ Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The Town has developed written procedures to require the submission of as-built drawings and ensure the long-term operation and maintenance of stormwater BMPs, which are being incorporated into the Town's municipal code on stormwater management, which will be adopted in Year 3. A draft of the procedures is available, but has not yet been incorporated into the SWMP. The updated municipal code covering stormwater management will be incorporated into the SWMP once it is approved. While referenced in the SWMP, the detailed written catchment investigation procedures were incorporated into the Town's IDDE Plan, not the actual SWMP. The IDDE Plan and the SWMP are currently two separate documents. A written

SWPPP was developed for the Town's DPW Facility, and the Town had previously developed a SWPPP for the Transfer Station under the MSGP. However, these are both separate standalone documents and the complete documents were not incorporated into the written SWMP, although again, they are referenced in this document.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☐ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ◉ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ○ The updated SSO inventory can be found at the following website:
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☐ Provided training to employees involved in IDDE program within the reporting period
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

While the Town began its employee IDDE training program during Permit Year 1 and had plans to continue the program during Year 2, the training was delayed in response to public health and safety guidelines related to COVID-19. The Town will resume conducting this annual training in the near future.

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

Annual Requirements

*Public Education and Outreach**

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

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

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

Chloride Impairment

Annual Requirements

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

During Permit Year 1, the Town developed a Chloride Reduction Plan for Policy-Porcupine Brook, which has an approved TMDL for chloride, as required by the MS4 Permit. This Plan also encompasses Policy Brook and the unnamed tributary to Harris Brook, which require, but do not currently have approved TMDLs for chloride impairments.

Phosphorus Impairment

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Although Captain Pond currently has a TMDL for phosphorus, the TMDL was not approved prior to the

permit effective date and therefore the Town is not subject to the requirements of Appendix F under the Permit. Appendix H requires the Town to track and estimate the amount of phosphorus removed by structural BMPs installed as a result of the retrofit inventory conducted as a part of the Phosphorus Source Identification Report for Captain Pond, which is due in Permit Year 4. As dictated by the permit, at least one structural BMP must be installed by the end of Permit Year 6. Appendix H does not require permittees to estimate the amount of phosphorus removed by existing structural BMPs-- that pertains to permittees discharging to a waterbody with an existing TMDL for phosphorus where a municipality wants to obtain credit for phosphorus removed as part of a comprehensive Phosphorus Control Plan. The structural BMP requirement above is therefore not applicable to Salem. However, once the Town begins installation of structural BMPs as identified as part of their Phosphorus Source Identification Report, the Town will track and estimate the phosphorus removed by the BMP consistent with Attachment 3 to Appendix F, including reporting on BMP type, total area treated, design storage volume, and the estimated phosphorus removed in mass per year.

Solids, Oil and Grease (Hydrocarbons), or Metals Impairment(s)

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

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

Chloride TMDL

☒ Completed a Chloride Reduction Plan that includes specific actions designated to achieve chloride reduction on municipal roads and facilities, and on private facilities that drain to the MS4 or complete an Alternative Chloride Reduction Plan

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

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

The Town has continued to work to confirm outfall ownership and regulated status of outfalls. The list of regulated outfalls has been updated since the NOI was submitted to reflect this work and findings from fieldwork. The updated list of outfalls and receiving waters is included in the SWMP.

The 2018 New Hampshire list of impaired waters, or 303(d) list, was approved by EPA on February 25, 2020. The updated list of impaired waters includes the following changes that are relevant to Salem:

1) Captain Pond has been moved from Category 5 to Category 4A due to the development and approval of the "Total Maximum Daily Load for Phosphorus for Captain Pond, Salem NH" in September 2017.

2) Arlington Mill Reservoir was added to the 2018 list of impaired waters after cyanobacteria blooms occured in amounts and for a duration that interfered with the primary contact recreational use of the lake. Arlington Mill Reservoir is now listed as a Category 5-M waterbody.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 7

*Below, report on the educational messages completed **during this reporting period.** For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.*

BMP: Displays/Posters/Kiosks (4 Messages)

Message Description and Distribution Method:

In addition to maintaining general stormwater information at kiosks around Salem, the Town also posted the EPA pamphlet "Protecting Water Quality from Urban Runoff", the UNH fact sheet "Green Grass & Clean Water", a Salem-specific pet waste brochure, and a Salem-specific yard waste flyer to the Town's website during the reporting period. These materials are included in Appendix G of the SWMP and at the following location: https://www.townofsalemnh.org/engineering/pages/public-education-and-outreach. Brief, news bulletin style messages regarding lawn care/fertilizer use and leaf litter/yard waste handling were posted in the local newsletter (Town Hall Times) and on the Engineering Division's Facebook page. The Facebook posts reached 825 people (including 57 engagements) and 847 people (including 123 engagements) respectively.

Targeted Audience: Residents

Responsible Department/Parties: Engineering Division, DPW

Measurable Goal(s):

The Town ensured that the stormwater information was visible to residents and replaced/updated the materials both online and in kiosks as needed. The SWMP webpage was viewed 125 times during the reporting period.

Message Date(s): FY2020

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

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

If yes, describe why the change was made:

The Town decided to post information online as well as at kiosks since the internet is a cost-effective and efficient way to share information with a broad audience.

BMP: Brochures/Pamphlets

Message Description and Distribution Method:

The Town posted the EPA flyer "What you can do as a Developer" to its website, providing general information on stormwater management during construction, including required sediment and erosion control measures, to prospective developers and contractors. The flyer is available at this location: https://

www.townofsalemnh.org/engineering/pages/public-education-and-outreach

Targeted Audience: Developers/Contractors (construction)

Responsible Department/Parties: Engineering Division, Planning & Community Development

Measurable Goal(s):

This pamphlet was made available to a wide audience by posting it to the Town's website and sharing the location across social media platforms. The website was viewed 125 times during the reporting period.

Message Date(s): FY2020

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

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

If yes, describe why the change was made:

BMP:Website

Message Description and Distribution Method:

The Town continued to post a flyer from NHDES regarding proper storage and application of winter deicing material on its website at the following location: https://www.townofsalemnh.org/engineering/pages/public-education-and-outreach

Targeted Audience: Businesses, Institutions and Commercial Facilities; Industrial Facilities

Responsible Department/Parties: Engineering Division, DPW

Measurable Goal(s):

This message informs commercial property owners of the benefits of hiring a certified road salt applicator to handle deicing in their parking lots, including liability protection and reduced impact to receiving waters. The stormwater webpage was viewed 125 times during the reporting period.

Message Date(s): FY2020

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

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

If yes, describe why the change was made:

BMP:Website

Message Description and Distribution Method:

The Health Division maintains a comprehensive web page dedicated to septic system installation and maintenance. It provides information regarding how often septic systems should be inspected and pumped, the environmental impacts associated with septic system failures, and what materials should not be discharged

to the plumbing system as they can have a negative impact on septic systems. There is also a separate link to EPA's website - "Do Your Part, Be Septic Smart", which provides information on septic system maintenance.

Targeted Audience: Residents

Responsible Department/Parties: Engineering, Health Division

Measurable Goal(s):

This information is available to all residents with septic systems, not just those property owners located in catchments tributary to waterbodies impaired for bacteria. The information is available at this location: https://www.townofsalemnh.org/health-division/pages/septic-systems

Message Date(s): FY2020

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

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Town updated the SWMP to reflect progress made during Permit Years 1 and 2 and posted the updated document to its website at the link provided above. The SWMP was made available for public comment for a period of 30 days, but no comments were received. The Town will continue to keep the SWMP posted on its website for the duration of the permit term.

A presentation was also made at a Board of Selectmen Meeting on July 17, 2019, regarding the status of the Town's MS4 Permit compliance program. The Selectmen and other citizens present were informed of the permit requirements and how the Town intends to comply with the permit requirements including progress to date.

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

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

Salem continued to provide multiple opportunities for public involvement during the reporting period. The Town held its annual Household Hazardous Waste day on November 9, 2019, and collected 37,895 pounds of hazardous material that may have otherwise been disposed of improperly. Materials collected include pesticides, aerosols, antifreeze, engine oil, paint, and various kinds of batteries. The disposal manifest for the hazardous materials collected is included in the SWMP.

The Municipal Services Department hosted and participated in a community-wide roadside litter clean-up event between April 13 and April 21, 2020. As part of the clean-up, 3.26 tons of paper, cans, bottles, batteries, glass, cardboard, tires, hypodermic needles, car parts, and construction materials were collected and disposed of properly from 56 streets.

The Town also continued its mandatory recycling program and continued to maintain a public works hotline on the Town's website to respond to work order requests. There were 1,832 tons of recycling collected during the reporting period.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Below, check all that apply.

The following elements of the Phase I map have been completed:

☒ Outfalls and receiving waters
☒ Open channel conveyances
☒ Interconnections
☒ Municipally-owned stormwater treatment structures
☒ Waterbodies identified by name and indication of all use impairments
☒ Initial catchment delineations

Describe any additional progress you made on your map during this reporting period or provide additional status information regarding your map:

The Town is working to review record plans and documents on file to refine/update the inventory of municipally-owned stormwater treatment structures. The Engineering Division and GIS Department continue to work together to incorporate new and updated infrastructure data into the stormwater GIS database.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

○ The outfall screening data is attached to the email submission
◉ The outfall screening data can be found at the following website:

The Town did not perform any dry weather screening of outfalls and interconnections during

Permit Year 2. Prior outfall screening and sampling results can be found on the Town's website at the following location: https://www.townofsalemnh.org/engineering/pages/stormwater-management-program-swmp. The Town resumed dry weather outfall/ interconnection screening and sampling in July 2020, and this work is currently ongoing. Screening and sampling results will be included in the Town's Year 3 Annual Report. The percentage of total outfalls screened as identified below does not reflect outfalls screened and sampled since the end of Permit Year 2.

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

Number of outfalls screened: 0

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

Percent of total outfalls screened: 13

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ◉ The catchment investigation data can be found at the following website:

Dry and wet weather catchment investigations were not conducted during the reporting period. Catchment investigation data for catchments investigated in prior years has been posted to the Town's website at the following location: https://www.townofsalemnh.org/engineering/pages/stormwater-management-program-swmp. The Town will resume catchment investigations during Permit Year 3. The Town's System Vulnerability Factor matrix has been attached in the e-mail included with this annual report submission.

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 0

*Below, report on the percent of catchments investigated **to date.***

Percent of total catchments investigated: 1.5

Optional: Provide any additional information for clarity regarding the catchment investigations below:

The Town developed catchment investigation procedures as part of their IDDE plan during Permit Year 1. Once dry weather screening and sampling has been completed, the Town will reprioritize the regulated catchment areas and resume catchment investigations in accordance with permit requirements in Permit Year 3.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

N/A

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed **since the effective date of the permit (July 1, 2018)**.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

No employee training was conducted during the reporting period. The Town conducted a training on the IDDE program and Good Housekeeping/ Pollution Prevention at the end of Permit Year 1, and had plans to conduct the training again in June 2020. However, the impacts of COVID-19 caused the training to be postponed to Permit Year 3. The required training will be conducted by June 30, 2021.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period**.*

Number of site plan reviews completed: 336

Number of inspections completed: 574

Number of enforcement actions taken: 0

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

The Town received 336 submissions for review in accordance with the Site Plan and Subdivision regulations. The Town partners with a third-party consultant for conducting construction site inspections. Inspectors conducted 574 inspections of active construction sites during the reporting period.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance or Regulatory Mechanism

Below, select the option that describes your ordinance or regulatory mechanism progress.

- ○ Bylaw, ordinance, or regulations are updated and adopted consistent with permit requirements
- ◉ Bylaw, ordinance, or regulations are updated consistent with permit requirements but are not yet adopted
- ○ Bylaw, ordinance, or regulations have not been updated or adopted

As-built Drawings

Describe the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites:

The Town has drafted comprehensive updates to Chapter 417, Stormwater Management, of the Town's municipal code. These updates include requirements pertaining to the submission of as-built drawings and long-term operation and maintenance upon completion of construction projects. These updates were scheduled to be presented to the Board of Selectmen for adoption during Permit Year 2, but due to the impacts of COVID-19 and the permit modifications proposed by EPA, the Town decided to postpone their adoption to Year 3. The Town will work to get this language adopted by June 30, 2021.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

The Town will complete the required street design and parking lot assessment by the end of Year 4 as required by the permit.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

The Town will complete the required green infrastructure report by the end of Year 4 as required by the permit.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

The Town is working to compile an inventory of its properties that could be modified or retrofitted with BMPs. This inventory will be complete by the end of Year 4 as required by the Permit.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 809

Number of catch basins cleaned: 803

Total volume or mass of material removed from all catch basins: 750 cubic yards

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

Total number of catch basins: 5,427

If applicable:

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

The Town is still working to collect the necessary data to develop their Catch Basin Cleaning Optimization Plan. However, if a catch basin sump is more than 50% full during two consecutive routine inspections/ cleaning events, the Town will document the finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contributing sources.

Street Sweeping

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

- ○ Number of miles cleaned: 518
- ◉ Volume of material removed: 500 cubic yards
- ○ Weight of material removed: [Select Units]

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

- ☒ Parks and open spaces

☒ Buildings and facilities
☒ Vehicles and equipment

The following O&M procedures for permittee-owned properties have been completed:

☒ Parks and open spaces
☒ Buildings and facilities
☒ Vehicles and equipment

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 0

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

A SWPPP was finalized for Salem's DPW facility located at 21 Cross St during Permit Year 2. Recommendations were made as part of the SWPPP that the Town is working to address in accordance with the timelines identified in the SWPPP. However, no corrective actions were taken at this facility during Permit Year 2. Site inspections were not documented during Permit Year 2 as the SWPPP and associated inspection report form were not finalized until near the end of this reporting period. The Town will begin implementation of the SWPPP and conduct inspections on the required schedule beginning in Permit Year 3.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

◉ Not applicable
○ The results from additional reports or studies are attached to the email submission
○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Impacts due to COVID-19 response are noted above in applicable MCMs/sections of this annual report.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Inspect all outfalls/ interconnections (excluding Problem and Excluded outfalls) for the presence of dry weather flow
- Complete follow-up ranking as dry weather screening becomes available

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected

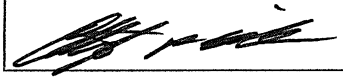
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

Provide any additional details on activities planned for permit year 3 below:

Part V: Certification of Small MS4 Annual Report 2020

40 CFR 144.32(d) Certification

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

Name:	Christopher A. Dillon	Title:	Town Manager
Signature:		Date:	9/23/2020

[Signatory may be a duly authorized representative]

Year 3 Annual Report
New Hampshire Small MS4 General Permit
Reporting Period: July 1, 2020-June 30, 2021

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2020 and June 30, 2021 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Salem, NH

EPA NPDES Permit Number: NHR041031

Primary MS4 Program Manager Contact Information

Name: Roy E. Sorenson, PE Title: Director of Municipal Services

Street Address Line 1: 21 Cross Street

Street Address Line 2:

City: Salem State: NH Zip Code: 03079

Email: rsorenson@salemnh.gov Phone Number: (603) 890-2150

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofsalemnh.org/engineering/pages/stormwater-management-program-swmp

Date SWMP was Last Updated: June 2021

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☐ Bacteria/Pathogens ☒ Chloride ☐ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

☒ Bacteria and Pathogen ☒ Chloride ☐ Lake and Pond Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 3 Requirements

☒ Inspected and screened all outfalls/interconnections (excluding Problem and Excluded outfalls)

☒ Updated outfall/interconnection priority ranking based on the information collected during the dry weather inspections as necessary

☐ Post-construction bylaw, ordinance, or other regulatory mechanism was updated and adopted consistent with permit requirements

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The Town has drafted updates to the existing municipal code which governs stormwater management to comply with the post-construction stormwater runoff control requirements of the permit. The impacts of COVID-19 have slowed the adoption process, and due to the Town's commitment to adopting and implementing a comprehensive stormwater management regulatory framework, it has taken longer than anticipated to ensure that municipal departments involved in review/approval of proposed construction projects are in agreement on the language to be incorporated that will not only meet permit requirements, but the Town's stormwater management needs going forward. The Town intends to hold the required public hearings and discuss these regulatory updates with the Board of Selectmen before the end of the calendar year 2021. The Town is working to get these regulatory updates adopted and incorporated into the municipal codes as soon as possible.

Annual Requirements

☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements

☒ Kept records relating to the permit available for 5 years and made available to the public

☐ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented

- ○ This is not applicable because we do not have sanitary sewer
- ◉ This is not applicable because we did not find any new SSOs
- ○ The updated SSO inventory is attached to the email submission
- ○ The updated SSO inventory can be found at the following website:

☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters

☐ Provided training to employees involved in IDDE program within the reporting period

☒ All curbed roadways were swept at least once within the reporting period

☒ Updated system map due in year 2 as necessary

☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities

☒ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt

☒ Updated inventory of all permittee owned facilities as necessary

☒ O&M programs for all permittee owned facilities have been completed and updated as necessary

☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs

☒ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

No employee training was conducted during the reporting period related to the Town's IDDE program or Good Housekeeping/ Pollution Prevention. The impacts of COVID-19 resulted in the postponement of any in-person training.

The Town stores a majority of their salt within their salt shed. Some sand/salt mix for town use and use by residential property owners is also stored outside in bins on site. These bins are covered via tarps. As part of a feasibility study being conducted at the DPW Facility, the Town is evaluating more permanent long-term storage options for this limited sand/salt mix that is available on site.

The Town inspected stormwater treatment structures known to be under town jurisdiction. The Town is still actively working to reconcile ownership of structural BMPs, and therefore there may be additional BMPs in the future where the responsibility for annual inspection falls under the Town's umbrella as opposed to a private entity.

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

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

Chloride Impairment

Annual Requirements

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

During Permit Year 1, the Town developed a Chloride Reduction Plan for Policy-Porcupine Brook, which has an approved TMDL for chloride, as required by the MS4 Permit. This Plan was modified during Permit Year 3 to include Policy Brook and the unnamed tributary to Harris Brook, which require, but do not currently have, approved TMDLs for chloride.

Phosphorus Impairment

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

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

Although Captain Pond currently has a TMDL for phosphorus, the TMDL was not approved prior to the permit effective date and therefore the Town is not subject to the requirements of Appendix F under the current permit. Appendix H requires the Town to track and estimate the amount of phosphorus removed by structural BMPs installed as a result of the retrofit inventory conducted as part of the Phosphorus Source Identification Report for Captain Pond, which must be completed by the end of Permit Year 4. As required by the permit, at least one structural BMP must be installed by the end of Permit Year 6. Appendix H does not require permittees to estimate the amount of phosphorus removed by existing structural BMPs-- that is only a requirement for permittees that discharge to a waterbody with an existing TMDL for phosphorus where a municipality wants to obtain credit for phosphorus removed as part of a comprehensive Phosphorus Control Plan, and is therefore not applicable to Salem. However, once the Town begins installation of structural BMPs as identified as part of their Phosphorus Source Identification Report, the Town will track and estimate the phosphorus removed by the BMP consistent with Attachment 3 to Appendix F, including reporting on BMP type, total area treated, design storage volume, and the estimated phosphorus removed in mass per year.

As part of the proposed regulatory updates related to post-construction stormwater management, the Town of Salem will be tracking phosphorus removal attributable to structural BMPs on development projects. This effort will ensure that phosphorus reduction requirements are being met for new development and redevelopment, and will be beneficial to the Town in compliance with the TMDL for Captain Pond.

Solids, Oil and Grease (Hydrocarbons), or Metals Impairment(s)

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

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

Chloride TMDL

☒ Implemented Chloride Reduction Plan or Alternative Chloride Reduction Plan

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

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (●) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

The list of outfalls/interconnections and their receiving waters was updated during Permit Year 3 as part of the completed dry-weather outfall/interconnection screening and sampling effort. The updated list of receiving waters and outfalls is included in Section 1 of the Town's SWMP.

The 2018 New Hampshire list of impaired waters, or 303(d) list, was approved by EPA on February 25, 2020. The updated list of impaired waters includes the following changes that are relevant to Salem:

1) Captain Pond has been moved from designation as a Category 5 receiving water to a Category 4A due to the development and approval of the "Total Maximum Daily Load for Phosphorus for Captain Pond, Salem NH" in September 2017.

2) Arlington Mill Reservoir was added to the 2018 list of impaired waters after cyanobacteria blooms occurred in amounts and for a duration that interfered with the primary contract recreational use of the lake. Arlington Mill Reservoir is now listed as a Category 5-M water body.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 5

*Below, report on the educational messages completed **during this reporting period.** For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.*

BMP: Brochure/Factsheet

Message Description and Distribution Method:

During Permit Year 3, the Town developed a flyer focusing on stormwater pollution control for industrial facilities. The flyer was posted to the Town website.

Targeted Audience: Industrial facilities

Responsible Department/Parties: Engineering Division

Measurable Goal(s):

The flyer was mailed, along with a cover letter, to the list of 10 industrial facilities within MS4 boundaries. The flyer was also posted to the Town's stormwater public education web page. The web page was viewed 54 times during the reporting period.

Message Date(s): FY2021

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

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

If yes, describe why the change was made:

BMP: Displays/Posters/Kiosks (4 Messages)

Message Description and Distribution Method:

In addition to maintaining general stormwater information at kiosks around Salem, the Town also posted the EPA pamphlet "Protecting Water Quality from Urban Runoff", the UNH fact sheet "Green Grass & Clean Water", a Salem-specific pet waste brochure, and a Salem-specific yard waste flyer to the Town's website during the reporting period. These materials are included in Appendix G of the SWMP and at the following location: https://www.townofsalemnh.org/engineering/pages/public-education-and-outreach

Targeted Audience: Residents, Businesses, Institutions and Commercial Facilities

Responsible Department/Parties: Engineering Division

Measurable Goal(s):

The Town ensured that the stormwater information was visible to residents and replaced/updated the materials both online and in kiosks as needed. The stormwater public education web page was viewed 54 times during the reporting period. The yard waste/leaf litter flyer was posted through the Town's Facebook page on October 14, 2020 and reached 782 people, with 19 engagements. The grass clippings and fertilizer flyer was posted through the Town's Facebook page on June 15, 2021 and reached 820 people, with 15 engagements.

Message Date(s): FY2021

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

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

If yes, describe why the change was made:

The Town decided to post information online as well as at kiosks since the internet is a cost-effective and efficient way to share information with a broad audience.

BMP:Brochures/Pamphlets

Message Description and Distribution Method:

The Town posted the EPA flyer "What you can do as a Developer" to its website, providing general information on stormwater management during construction, including required sediment and erosion control measures, to prospective developers and contractors. The flyer is available at this location: https://www.townofsalemnh.org/engineering/pages/public-education-and-outreach

Targeted Audience: Developers/Contractors (construction)

Responsible Department/Parties: Engineering Division, Planning & Community Development

Measurable Goal(s):

This pamphlet was made available to a wide audience by posting it to the Town's stormwater public education web page. The web page was viewed 54 times during the reporting period.

Message Date(s): FY2021

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

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

If yes, describe why the change was made:

BMP: Website

Message Description and Distribution Method:

The Health Division maintains a comprehensive web page dedicated to septic system installation and maintenance. It provides information regarding how often septic systems should be inspected and pumped, the environmental impacts associated with septic system failures, and what materials should not be discharged to the plumbing system as they can have a negative impact on septic systems. There is also a separate link to

EPA's webpage - "Do Your Part, Be Septic Smart", which provides information on septic system maintenance.

Targeted Audience: Residents

Responsible Department/Parties: Engineering, Health Division

Measurable Goal(s):

This information is available to all residents with septic systems, not just those property owners located in the catchments tributary to water bodies impaired for bacteria. The information is available at this location: https://www.townofsalemnh.org/health-division/pages/septic-systems

Message Date(s): FY2021

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

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

If yes, describe why the change was made:

BMP:Brochures/Factsheets

Message Description and Distribution Method:

The Town has posted five separate flyers/brochures from the NHDES regarding winter maintenance best management practices regarding anti-icing, calibration, prewetting, storage and maintenance, and salt application and tracking.

Targeted Audience: Businesses, Institutions and Commercial Facilities, Industrial Facilities

Responsible Department/Parties: Engineering Division, DPW

Measurable Goal(s):

The materials are all posted to the Town's stormwater public education web page. The web page was viewed 54 times during the reporting period.

Message Date(s): FY2021

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

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Town updated the SWMP to reflect progress made during Permit Year 3 and posted the updated document to its website at the link provided on the first page of this report. The Town plans to continue to keep its SWMP posted on its website. The Town also posts their Annual Reports to EPA on the Town website. The Town makes their SWMP available at Town Hall and at the DPW Facility.

On January 25, 2021, a presentation was made to the Select Board, which was open to the public, discussing implementation of the Town's Stormwater Management Program.

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

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

Salem continued to provide multiple opportunities for public involvement during the reporting period. The Town held its annual Household Hazardous Waste day on October 31, 2020, and collected 38,725 pounds of hazardous material that may have otherwise been disposed of improperly. Materials collected include pesticides, aerosols, antifreeze, engine oil, paint, and various kinds of batteries. The disposal manifest for the hazardous materials collected is included in the SWMP.

The Municipal Services Department hosted and participated in a community-wide roadside litter clean-up event between March 29 and April 8, 2021. As part of the clean-up, 2.06 tons of paper, cans, bottles, batteries, glass, cardboard, tires, hypodermic needles, car parts, and construction materials were collected and disposed of properly from 41 streets.

The Town also continued its mandatory recycling program and 2283.6 tons of recycling was collected during the reporting period. The Town continued to maintain a public works hotline on the Town's website to respond to work order requests.

Rain barrels were made available for residents to purchase and 37 rain barrels were sold to 29 individuals/ households during the reporting period.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

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

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

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Optional: Provide additional status information regarding your map:

During the reporting period, the Town was able to refine their outfall and interconnection inventory as a result of dry weather outfall/interconnection screening efforts. The Town will continue to update their MS4 system mapping as catchment investigations are conducted during Permit Year 4.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- ○ No outfalls were inspected
- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

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

Number of outfalls screened: 570

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

Percent of outfalls screened: 100

Optional: Provide additional information regarding your outfall/interconnection screening:

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ No catchment investigations were conducted
- ○ The catchment investigation data is attached to the email submission
- ◉ The catchment investigation data can be found at the following website:

Catchment investigation data for catchments investigated in prior years has been posted to the Town's website at the following location: https://www.townofsalemnh.org/engineering/pages/stormwater-management-program-swmp. The Town will resume catchment investigations during Permit Year 4. The Town's System Vulnerability Factor matrix has been attached to the e-mail included with this annual report submission.

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 0

Below, report on the percent of catchments investigated ***to date.***

Percent of total catchments investigated: 1.5

Optional: Provide any additional information for clarity regarding the catchment investigations below:

The Town developed catchment investigation procedures as part of their IDDE plan during Permit Year 1. The Town will resume catchment investigations in accordance with permit requirements in Permit Year 4.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- (•) No illicit discharges were found
- ( ) The illicit discharge removal report is attached to the email submission
- ( ) The illicit discharge removal report can be found at the following website:

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed ***during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed ***since the effective date of the permit (July 1, 2018)****.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

No in-house employee training was conducted during the reporting period. The Town had plans to conduct training on the IDDE program and Good Housekeeping/ Pollution Prevention by June 30, 2021. However, the impacts of COVID-19 caused the training to be postponed.
Individual employees (Municipal Services Department) attended various virtual training workshops and conferences focused on stormwater management and erosion & sedimentation control during the reporting period.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed ***during this reporting period****.*

Number of site plan reviews completed: 383

Number of inspections completed: 570

Number of enforcement actions taken: 0

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

If violations or potential violations are identified during a construction site inspection, the item(s) is verbally discussed with the site contractor and addressed immediately. In the event that an item is not addressed immediately (while the inspector is still on-site), then it is noted in the inspection report and checked during the next inspection.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

As-built Drawings

Below, report on the number of as-built drawings received ***during this reporting period****.*

Number of as-built drawings received: 31

Optional: Enter any additional information relevant to the submission of as-built drawings:

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

The Town will complete the required street design and parking lot assessment by the end of Year 4, as required by the permit.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

The Town will complete the required green infrastructure report by the end of Year 4, as required by the permit.

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 2,200

Number of catch basins cleaned: 2,200

Total volume or mass of material removed from all catch basins: 720 cubic yards

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

Total number of catch basins: 4,948

If applicable:

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

The Town is still working to collect the necessary data to develop a Catch Basin Optimization Plan. If a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events, the Town will document the finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contribution sources.

Street Sweeping

*Report on the number of miles swept **during this reporting period** below.*

Number of miles cleaned: 431

*Report either the volume or weight of street sweeping materials collected **during this reporting period** below.*

- (•) Volume of material removed: 450 cubic yards
- ( ) Weight of material removed: [Select Units]

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 4

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

Four site inspections were completed during the reporting period. Two site inspections were conducted at the DPW Facility and two were conducted at the Transfer Station. Due to miscommunications in scheduling and staff turnover, inspections were not conducted for the first two quarters of the reporting period. There were minimal corrective actions taken at these facilities due to the lack of funding available for large scale site improvements. The Town has partnered with a local engineering consultant to conduct a site needs assessment and feasibility study for improvements at the DPW Facility. The Town is examining more permanent long-term storage options for materials (i.e. sand/salt mix) and more sustainable vehicle washing operations among other site and operations improvements.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- (•) Not applicable
- ( ) The results from additional reports or studies are attached to the email submission
- ( ) The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Impacts due to COVID-19 response are noted above in applicable MCMs/sections of this annual report.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 4 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Develop a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover
- Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist
- Identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)

Provide any additional details on activities planned for permit year 4 below:

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

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

Name: Christopher A Dillon Title: Town Manager

Signature: Date: 9/24/21

[Signatory may be a duly authorized representative]