

Stormwater Management Plan (SWMP) Appendices

EPA NPDES Permit Number: NHR043000

PREPARED FOR



New Hampshire Department of Transportation
PO Box 483, 7 Hazen Drive
Concord, NH 03302

PREPARED BY



2 Bedford Farms Drive, Suite 200
Bedford, NH 03011

June 2019

Blank Page

Appendices

- A. Stormwater Committee Charter
- B. NOI and EPA NPDES Authorization Letter
- C. NHDOT List of Receiving Waters
- D. Department ESA Review Process Memo
- E. Section 106 Programmatic Agreement
- F. Driveway Access Permit Application
- G. Written Illicit Discharge Detection and Elimination (IDDE) Plan
- H. IDDE Inspection Results and Data (placeholder)
- I. BOE Manual and Organizational Chart
- J. DRAFT Operations and Maintenance (O&M) Plan
- K. Salt Management Plan
- L. Employee Training Work Instructions
- M. Roadway/ROW Maintenance Work Instructions
- N. Material Handling Work Instructions
- O. Vehicle Maintenance Work Instructions
- P. Annual Report Template (To be provided by EPA)
- Q. Stormwater BMP Inspection Manual

Appendix A

Stormwater Committee Charter

NH Department of Transportation Stormwater Committee Charter

PURPOSE

The purpose of the New Hampshire Department of Transportation (NHDOT) Stormwater Committee is to ensure Departmental compliance with the EPA National Pollutant Discharge Elimination System (NPDES) Small Municipal Separate Storm Sewer System (MS4) Permit and NHDES Alteration of Terrain.

RESPONSIBILITIES

Bring together Department resources, personnel, and systems to develop and document a program to ensure compliance with the stormwater provisions.

DELIVERABLES

1. MS4 Stormwater Management Program (SWMP) – Completed by June 20, 2019
2. MS4 Annual Report – Annually, completed on September 30th
3. MS4 Notice of Intent – Completed by September 30, 2018
4. Various reports and plans specified within the permits

AUTHORITY

The Committee derives authority from the NHDOT Deputy Commissioner.

MEETINGS

The Committee will meet at the discretion of the Chairperson. In the event that the Chairperson is not available meetings will be scheduled at the discretion of the Vice Chairperson. Meeting notes and documentation of any decisions or direction from the committee will be maintained. A simple majority of members will constitute a quorum and is required for meeting.

COMMITTEE CHAIRPERSON

The Chairperson for the Committee will be Mark Hemmerlein and Vice Chairperson will be Russ St. Pierre. The responsibilities of the Chairpersons include, but are not limited to:

1. Ensure that all deliverables are produced on schedule.
2. Ensure that the Committee is productive and on-task.

3. Keep stakeholders informed of important decisions, needs and directions.
4. Propose times and locations for the Committee to meet.
5. Determine agenda items to be addressed at Committee meetings.
6. Facilitate the process for making recommendations and decisions by the Committee.

In the event that the Chairperson is not available for an extended period of time the responsibilities become those of the Vice Chairperson.

STANDING MEMBERS

The Committee will consist of six (6) regular members.

Standing Members:

- Mark Hemmerlein, Water Quality Program Manager
- Michael Servetas, Assistant Director of Operations
- William Oldenburg, Assistant Director of Project Development
- Roger Appleton, Highway Maintenance
- Danna LaCasse, Turnpikes
- Russell St. Pierre, Bureau of Environment

MEMBER EXPECTATIONS

Committee members are expected to attend meetings and to come prepared to those meetings. Members will have assignments that require independent or collaborative work between meetings.

DECISION MAKING

Committee decision making will focus on consensus. If consensus cannot be reached on a particular issue, it will be elevated to the authorizing Workgroup.

Approved:



Christopher M. Waszczuk, Deputy Commissioner

8/22/2018

Date

Appendix B

NOI and EPA NPDES Authorization Letter



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

VIA EMAIL

March 18, 2019

Victor F. Sheehan
Commissioner

And;

Mark Hemmerlein
Water Quality Program Manager
7 Hazen Drive
Concord, NH 03301
Mark.Hemmerlein@dot.nh.gov

Re: National Pollutant Discharge Elimination System (NPDES) Permit ID: NHR043001, New Hampshire Department of Transportation

Dear Mark Hemmerlein:

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

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

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

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

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

Sincerely,

A handwritten signature in blue ink that reads "Thelma Murphy". The signature is written in a cursive style with a long, sweeping flourish at the end of the name.

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

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

Part I: General Information

General Information

Name of Municipality or Organization: State:
 EPA NPDES Permit Number (if applicable):

Primary MS4 Program Manager Contact Information

Name: Title:
 Street Address Line 1:
 Street Address Line 2:
 City: State: Zip Code:
 Email: Phone Number:
 Fax Number:

Other Information

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

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? 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 D

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? If 100% of 2003 requirements not met, enter an
 (Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit) estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

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

Regulatory Authorities (if covered under the 2003 permit)

Illicit Discharge Detection and Elimination (IDDE) Authority Adopted? Yes Effective Date or Estimated Date of Adoption (MM/DD/YY):
 (Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)

Construction/Erosion and Sediment Control (ESC) Authority Adopted? Yes Effective Date or Estimated Date of Adoption (MM/DD/YY):
 (Part II, III, IV or V, Subpart B.4.(a.) of 2003 permit)

Post-Construction Stormwater Management Adopted? Yes Effective Date or Estimated Date of Adoption (MM/DD/YY):
 (Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)

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	Nitrogen	Phosphorous	Bacteria	Chloride	Soilds, metals and oil and grease	Other pollutant(s) causing impairments
NHEST600030806-01-01 SQUAMSCOTT RIVER SOUTH	6	x				x	Acenaphthene Acenaphthylene Aluminum Anthracene Arsenic Benzo[a]anthracene Chlorophyll-a Chrysene (C1-C4) Dibenz[a_h]anthracene Dioxin (including 2_3_7_8-TCDD) Dissolved oxygen saturation Fluoranthene Fluorene Mercury

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

							Nickel Nitrogen (Total) Oxygen_ Dissolved Phenanthrene Polychlorinated biphenyls Pyrene trans-Nonachlor
NHEST600030903-01-04 BELLAMY RIVER SOUTH	2						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Mercury Polychlorinated biphenyls
NHEST600030904-01 WINNICUT RIVER	2						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Mercury Polychlorinated biphenyls
NHEST600030904-06-18 LOWER LITTLE BAY	2						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Light Attenuation Coefficient Mercury Polychlorinated biphenyls
NHEST600031001-01-03 UPPER PISCATAQUA RIVER-NH-SOUTH	6						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Light Attenuation Coefficient Mercury Polychlorinated biphenyls
NHEST600031001-02-01 LOWER PISCATAQUA RIVER - NORTH	3						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Mercury Polychlorinated biphenyls
NHEST600031001-02-02 LOWER PISCATAQUA RIVER - SOUTH	1						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Mercury Polychlorinated biphenyls

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

NHEST600031001-03 UPPER SAGAMORE CREEK	3					X	Acenaphthylene Aluminum Arsenic Benzo[a]anthracene Chrysene (C1-C4) Dibenz[a_h]anthracene Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Fluoranthene Mercury Nickel Phenanthrene Polychlorinated biphenyls Pyrene trans-Nonachlor
NHEST600031001-04 LOWER SAGAMORE CREEK	1						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Mercury Polychlorinated biphenyls
NHEST600031001-05 BACK CHANNEL	6						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Light Attenuation Coefficient Mercury Polychlorinated biphenyls
NHEST600031001-10 NORTH MILL POND	1						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHEST600031001-11 UPPER PORTSMOUTH HARBOR-NH	1						Dioxin (including 2_3_7_8-TCDD) Estuarine Bioassessments Light Attenuation Coefficient Mercury Polychlorinated biphenyls
NHEST600031002-03 CHAPEL BROOK	2						Dioxin (including 2_3_7_8-TCDD)

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

							Mercury Polychlorinated biphenyls
NHEST600031002-05 PARSONS CREEK	1						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHEST600031003-01 HAMPTON FALLS RIVER	3						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHEST600031003-02 TAYLOR RIVER	3						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHEST600031004-03-03 TIDE MILL CREEK	2						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHEST600031004-10 LITTLE RIVER	2						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHIMP600030405-04 SALMON FALLS RIVER - BAXTER MILL DAM POND	1						pH
NHIMP600030406-04 SALMON FALLS RIVER - SOUTH BERWICK DAM	1						Chlorophyll-a pH
NHIMP600030709-03 LAMPREY RIVER - MACALLEN DAM	2						pH
NHIMP600030803-03 EXETER RIVER	3						pH
NHIMP600030806-04 MILL BROOK POND	1						
NHIMP600030902-02 LONGMARSH BROOK - LONSINGER DAM	1						
NHIMP600030902-04 OYSTER RIVER - MILL POND DAM	2						Chlorophyll-a Dissolved oxygen saturation Oxygen_ Dissolved pH
NHIMP600030902-06 BEARDS CREEK	3						Dissolved oxygen saturation Oxygen_ Dissolved
NHIMP600030903-02 BELLAMY RIVER - SAWYERS MILL	4						Chlorophyll-a

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

DAM POND							pH
NHIMP600031003-01 HAMPTON FALLS RIVER III	5						
NHIMP600031003-03 HAMPTON FALLS RIVER I	2						
NHIMP600031003-08 KENNEY BROOK	3						
NHIMP700040402-04 NASHUA RIVER - NASHUA CANAL	2						
NHIMP700060503-11 SUNCOOK RIVER - WEBSTER MILL	5						
NHIMP700060503-12 SUNCOOK RIVER - PEMBROKE DAM	1						
NHIMP700060802-04 MERRIMACK RIVER - AMOSKEAG DAM	1						
NHIMP700060804-02 DUMPLING BROOK	2						
NHIMP700060902-12 SOUHEGAN RIVER	3						
NHIMP700060903-16 STONY BROOK	2						
NHIMP700060903-17 STONY BROOK	2						
NHIMP700060904-08 SOUHEGAN RIVER - PINE VALLEY MILL	2						
NHIMP700061102-01 HOG HILL BROOK	1						
NHIMP700061203-05 BEACON HILL ESTATES DET POND 1	1						
NHIMP700061203-08 ROSLEE DAM	1						
NHIMP700061203-10 BEAVER BROOK	1						
NHIMP700061203-12 UNNAMED BROOK	2						
NHIMP700061206-01 MERRILL BROOK - ICE POND DAM	1						
NHIMP700061401-03 FOOTE BROOK - PRIVATE SWIMMING POOL	2						
NHLAK600030404-01-01 MILTON POND	3						pH
NHLAK600030608-01 FRESH CREEK POND	2						Dissolved oxygen saturation pH
NHLAK600030708-01 PISCASSIC ICE POND	1						
NHLAK600031002-01 EEL POND	1				x		Dissolved oxygen saturation Oxygen_Dissolved
NHLAK600031003-02 TAYLOR RIVER REFUGE POND	1					x	Anthracene Arsenic Barium

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

							Benzo[k]fluoranthene DDD DDE Dissolved oxygen saturation Indeno[1_2_3-cd]pyrene Mercury Nickel Oxygen_ Dissolved
NHLAK700060802-04 GOLDFISH POND	7						
NHLAK700060802-06 UNNAMED POND	2						
NHLAK700060803-02 STEVENS POND	1				x		
NHLAK700061001-03 STUMP POND	2						
NHLAK700061001-04-01 HARRIS POND	1					x	Cyanobacteria hepatotoxic microcys
NHLAK700061001-04-02 BOWERS POND	2					x	
NHLAK700061102-05 HARRIS POND	1						
NHLAK700061206-01 AYERS POND	1						
NHLAK700061403-12 BARTLETT MILL POND	1						
NHOCN000000000-02-12 ATLANTIC OCEAN - NORTH BEACH	5						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHOCN000000000-02-18 ATLANTIC OCEAN	18						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHOCN000000000-11 ATLANTIC OCEAN - RYE HARBOR	1						Dioxin (including 2_3_7_8-TCDD) Mercury Polychlorinated biphenyls
NHRIV600030405-01 SALMON FALLS RIVER	2						
NHRIV600030405-04 LYMAN BROOK	1						
NHRIV600030405-08 HEATH BROOK	5						
NHRIV600030602-03 AXE HANDLE BROOK - HOWARD BROOK	5						pH
NHRIV600030603-06 COCHECO RIVER	3					x	Aluminum pH

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

NHRIV600030603-08 COCHECO RIVER	2						Benthic-Macroinvertebrate Bioasses pH
NHRIV600030603-11 HURD BROOK	3						pH
NHRIV600030603-20 UNNAMED BROOK	5						
NHRIV600030603-21 UNNAMED BROOK	4						
NHRIV600030607-10 ISINGLASS RIVER	7						Dissolved oxygen saturation pH
NHRIV600030607-12 UNNAMED TRIBUTARY - TO COCHECO RIVER	3						
NHRIV600030607-13 UNNAMED BROOK - TO COCHECO RIVER	6						
NHRIV600030607-14 COCHECO RIVER	2						
NHRIV600030608-02 BLACKWATER BROOK-CLARK BROOK	3						
NHRIV600030608-04 REYNERS BROOK	2						
NHRIV600030608-05 COCHECO RIVER	2						pH
NHRIV600030608-23 UNNAMED BROOK	1						
NHRIV600030703-04 DUDLEY BROOK - UNNAMED BROOK	1					x	Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030703-05 LAMPREY RIVER	2						pH
NHRIV600030703-06 UNNAMED BROOK - FROM GOVERNORS LAKE	1						
NHRIV600030703-09 LAMPREY RIVER	2						pH
NHRIV600030703-11 LAMPREY RIVER	4						Aluminum pH
NHRIV600030703-15 LAMPREY RIVER	7						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030703-30 UNNAMED BROOK	1						
NHRIV600030703-31 UNNAMED BROOK	1						
NHRIV600030708-02 PISCASSIC RIVER - UNNAMED BROOK	5						Dissolved oxygen saturation Oxygen_ Dissolved

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

							pH
NHRIV600030708-14 BROWN BROOK - TO PISCASSIC RIVER	1						Oxygen_ Dissolved pH
NHRIV600030803-05 EXETER RIVER	1			x			Benthic-Macroinvertebrate Bioasses Escherichia coli pH
NHRIV600030803-07 LITTLE RIVER - UNNAMED BROOK	1						Benthic-Macroinvertebrate Bioasses
NHRIV600030804-08 BLOODY BROOK - FROM COURMA LTD DAM	1						
NHRIV600030804-09 LITTLE RIVER - UNNAMED BROOK	1						
NHRIV600030805-02 EXETER RIVER	2						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030806-05 ROCKY HILL BROOK	1						
NHRIV600030806-11 MILL BROOK	1						
NHRIV600030806-12 JEWELL HILL BROOK	1						
NHRIV600030806-17 UNNAMED BROOK	1						
NHRIV600030806-19 UNNAMED BROOK	1						
NHRIV600030806-20 UNNAMED BROOK	2						
NHRIV600030901-01 WINNICUT RIVER - UNNAMED BROOK - CORNELIUS	4						Benthic-Macroinvertebrate Bioasses Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030901-02 WINNICUT RIVER - BARTON BROOK - MARSH BROOK	1						Oxygen_ Dissolved
NHRIV600030901-03 HAINES BROOK	1						
NHRIV600030901-04 HAINES BROOK - UNNAMED BROOKS	2						
NHRIV600030901-06 NORTON BROOK	1						Oxygen_ Dissolved pH
NHRIV600030901-07 WINNICUT RIVER - UNNAMED BROOK	7						Dissolved oxygen saturation Oxygen_ Dissolved pH

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

NHRIV600030902-08 HAMEL BROOK - LONGMARSH BROOK	2						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030902-11 LITTLEHOLE CREEK	2						Dissolved oxygen saturation Oxygen_ Dissolved
NHRIV600030903-08 BELLAMY RIVER - KELLY BROOK - KNOX MARSH BR	6						Aluminum Benthic-Macroinvertebrate Bioasses pH
NHRIV600030903-11 VARNEY BROOK - CANNEY BROOK	4						
NHRIV600030904-06 PICKERING BROOK	1				x	x	Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600030904-13 SHAW BROOK	1						
NHRIV600031001-02 UNNAMED BROOK - TO PISCATAQUA RIVER	1						
NHRIV600031001-04 LOWER HODGSON BROOK	4				x		Benthic-Macroinvertebrate Bioasses Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600031001-05 UPPER HODGSON BROOK	1				X		Benthic-Macroinvertebrate Bioasses Dissolved oxygen saturation Manganese Oxygen_ Dissolved pH
NHRIV600031001-06 GRAFTON DITCH	4					x	Aluminum Arsenic Chromium (total) Manganese
NHRIV600031001-07 PAULS BROOK - PEASE AIR FORCE BASE	1				x		Benthic-Macroinvertebrate Bioasses DDD Oxygen_ Dissolved
NHRIV600031001-09 BORTHWICK AVE TRIBUTARY	3				x	x	Dissolved oxygen saturation Oxygen_ Dissolved

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

							pH
NHRIV600031002-01 BERRYS BROOK	1						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV600031002-11 WITCH CREEK	1						
NHRIV600031003-06 TAYLOR RIVER - ASH BROOK	1						
NHRIV600031003-07 OLD RIVER - TO CAR BARN POND	8						
NHRIV600031003-12 UNNAMED BROOK	4						
NHRIV600031003-14 UNNAMED BROOK	1						
NHRIV600031004-01 LITTLE RIVER - UNNAMED BROOK	1						
NHRIV600031004-07 BROWNS RIVER	1						
NHRIV600031004-10 CAINS BROOK - UNNAMED BROOK	6						pH
NHRIV600031004-11 CAINS BROOK	1						pH
NHRIV600031004-21 UNNAMED BROOK - TO CAINS MILL POND	1						
NHRIV700040402-08 NASHUA RIVER	5						
NHRIV700060302-19 MEETINGHOUSE BROOK	3						
NHRIV700060302-35 UNNAMED BROOK	2						
NHRIV700060503-25 SUNCOOK RIVER	1						
NHRIV700060607-21 DAN LITTLE BROOK	1						
NHRIV700060607-22 PISCATAQUOG RIVER	3						pH
NHRIV700060607-36 UNNAMED BROOK	1						
NHRIV700060701-06 MAPLE FALLS BROOK - UNNAMED BROOK	2						
NHRIV700060701-07 UNNAMED BROOK - TO CLARK POND	1						
NHRIV700060702-02 UNNAMED BROOKS - TO MASSABESIC LAKE	8						
NHRIV700060702-03 NEAT BROOK - UNNAMED BROOK - TO MASSABESIC	4						
NHRIV700060702-04 UNNAMED BROOKS - TO MASSABESIC LAKE	3						

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

NHRIV700060702-09 UNNAMED BROOK	4						
NHRIV700060703-05 COHAS BROOK - LONG POND BROOK	14						Benthic-Macroinvertebrate Bioasses pH
NHRIV700060703-08 COHAS BROOK	16						pH
NHRIV700060801-05-02 BLACK BROOK	1						Benthic-Macroinvertebrate Bioasses Mercury pH
NHRIV700060802-02 BROWN BROOK	2						pH
NHRIV700060802-04 BRICKYARD BROOK	3						
NHRIV700060802-06 UNNAMED BROOK - TO MERRIMACK RIVER	3						
NHRIV700060802-07 PETERS BROOK	3						Aluminum pH
NHRIV700060802-08 DALTON BROOK	6						pH
NHRIV700060802-09 MESSER BROOK	1						pH
NHRIV700060802-10 MILESTONE BROOK - UNNAMED BROOK	3						
NHRIV700060802-11 UNNAMED BROOK	8						
NHRIV700060802-12 UNNAMED BROOK - TO GOLDFISH POND	4						
NHRIV700060802-14-02 MERRIMACK RIVER	7						Aluminum Dissolved oxygen saturation pH
NHRIV700060802-22 UNNAMED BROOK	2						
NHRIV700060802-23 UNNAMED BROOK	3						
NHRIV700060802-29 UNNAMED BROOK	12						
NHRIV700060802-30 UNNAMED BROOK	2						
NHRIV700060803-03 BOWMAN BROOK	14						
NHRIV700060803-05 BOWMAN BROOK	3						
NHRIV700060803-07 HUMPHREY BROOK - UNNAMED BROOK	2						
NHRIV700060803-11 UNNAMED BROOKS - TO PATTEN	1						

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

BROOK							
NHRIV700060803-12 PATTEN BROOK	4						Aluminum
NHRIV700060803-13 UNNAMED TRIBUTARY - TO MERRIMACK RIVER	3						
NHRIV700060803-14-02 MERRIMACK RIVER	52						Aluminum pH
NHRIV700060803-17 UNNAMED BROOK	1						
NHRIV700060804-01 SEBBINS BROOK - POINTER CLUB BROOK	8						
NHRIV700060804-02 DUMPLING BROOK - TO FISH POND	1						
NHRIV700060804-04 LITTLE COHAS BROOK	4						
NHRIV700060804-09 UNNAMED BROOK - THRU LEACH ICE POND TO MERRIMACK RIVER	1						
NHRIV700060804-11 MERRIMACK RIVER	1						
NHRIV700060903-16-01 STONY BROOK	7						
NHRIV700060903-17 STONY BROOK	2						
NHRIV700060904-13 SOUHEGAN RIVER - STONY BROOK	4						
NHRIV700060904-14 SOUHEGAN RIVER	15						
NHRIV700060904-17 UNNAMED BROOK	2						
NHRIV700060905-18 RIDDLE BROOK	12						Oxygen_ Dissolved pH
NHRIV700060905-19 BABOOSIC BROOK - RIDDLE BROOK	3						Benthic-Macroinvertebrate Bioasses Oxygen_ Dissolved
NHRIV700060906-03 BEAVER BROOK	4						
NHRIV700060906-05 HARTSHORN BROOK	1						
NHRIV700060906-08 GREAT BROOK	1						pH
NHRIV700060906-12 GREAT BROOK - OX BROOK	12						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV700060906-15 MEDLYN-WOODS BROOK - UNNAMED BROOK	2						
NHRIV700060906-18 SOUHEGAN RIVER	2						Aluminum

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

							Oxygen_ Dissolved pH
NHRIV700061001-08 UNNAMED BROOK - TO BOWER POND	1						
NHRIV700061001-09 BOIRE FIELD BROOK - TO PENNICHUCK BROOK	3						Oxygen_ Dissolved pH
NHRIV700061002-02 NATICOOK BROOK	1						
NHRIV700061002-06 NESENKEAG BROOK - UNNAMED BROOK	1						
NHRIV700061002-08 CHASE BROOK - UNNAMED BROOK	1						
NHRIV700061002-11 UNNAMED BROOK - TO MERRIMACK RIVER	1						
NHRIV700061002-21 UNNAMED BROOK	1						
NHRIV700061002-26 NESENKEAG BROOK - UNNAMED BROOK	2						Oxygen_ Dissolved pH
NHRIV700061101-06 UNNAMED BROOK - FROM WASH POND UPPER DAM	1						
NHRIV700061101-08 UNNAMED BROOKS - FROM ISLAND POND TO TAYLOR	2						
NHRIV700061102-02 UNNAMED BROOK - FROM JOHNSON POND TO UNNAMED	1						
NHRIV700061102-11 UNNAMED BROOK - TO MITCHELL POND	2						
NHRIV700061102-13 FLATROCK BROOK	1						
NHRIV700061102-18 POLICY BROOK - PORCUPINE BROOK	19					x	Arsenic Benthic-Macroinvertebrate Bioasses pH
NHRIV700061102-20 SOUTHWEST TRIB. TO CANOBIE LAKE	1						
NHRIV700061102-21 UNNAMED BROOK - TO HARRIS BROOK	12					x	
NHRIV700061102-23 UNNAMED BROOK TO WESTERN EMBAYMENT	3						
NHRIV700061201-05 SALMON BROOK - HASSELLS BROOK -	6						

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

OLD MAIDS							
NHRIV700061203-07 SALMON BROOK	2						
NHRIV700061203-09 BEAVER BROOK	1				x		Benthic-Macroinvertebrate Bioasses pH
NHRIV700061203-11 BEAVER BROOK	4				x		
NHRIV700061203-16 BEAVER BROOK	3						pH
NHRIV700061203-20 BEAVER BROOK	3						
NHRIV700061203-21 BEAVER BROOK	2						pH
NHRIV700061203-23 BROOK TO WHEELER POND	3						
NHRIV700061203-24 WHEELER POND BROOK	3						
NHRIV700061204-01 DINSMORE BROOK	4						
NHRIV700061204-02 GOLDEN BROOK	5						
NHRIV700061204-05 WEIGHT STATION BROOK	6						
NHRIV700061204-06 CONNIES BROOK	1						
NHRIV700061204-07 UNNAMED BROOK	1						
NHRIV700061204-13 UNNAMED BROOK	1						
NHRIV700061204-14 UNNAMED BROOK	1						
NHRIV700061205-01 BEAVER BROOK - TONY'S BROOK	2						Benthic-Macroinvertebrate Bioasses
NHRIV700061205-03 NEW MEADOW BROOK	2						
NHRIV700061205-06 GUMPAS POND BROOK	2						
NHRIV700061206-04 MERRILL BROOK - UNNAMED BROOK	2						pH
NHRIV700061206-16 SPIT BROOK - UNNAMED BROOK	3						
NHRIV700061206-22 MUSQUASH BROOK - LAWRENCE BROOK	3						
NHRIV700061206-23 MUSQUASH BROOK - LIMIT BROOK	5						
NHRIV700061206-24 MERRIMACK RIVER	3						Aluminum Chlorophyll-a pH
NHRIV700061401-04 KELLY BROOK - SEAVER BROOK	8						Benthic-Macroinvertebrate Bioasses Dissolved oxygen saturation Oxygen_ Dissolved pH

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

NHRIV700061401-05 UNNAMED BROOK - TO BLUNTS POND	1						
NHRIV700061401-06 FOOTE BROOK	1						
NHRIV700061401-07 FOOTE BROOK	1						
NHRIV700061403-17 POWWOW RIVER - UNNAMED BROOK - GRASSY BROOK	1						Dissolved oxygen saturation Oxygen_ Dissolved pH
NHRIV700061403-33 UNNAMED BROOK	1						
NHRIV700061403-40 UNNAMED BROOK	1						
NHRIV700061404-01 EAST MEADOW RIVER - UNNAMED BROOK	1						
NHRIV700061404-02 SNOWS BROOK - UNNAMED BROOK	1						
UNNAMED WETLANDS	1166						

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).

MCM 1: Public Education and Outreach

BMP Media/Category	BMP Description	Target Audience	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
Outreach Programs (2.3.2.1)	Stormwater Team Display, On the Move newsletter, Pet Waste signs	General Public (6.1)	Stormwater Committee	Events, locations, and posting	Ongoing
Outreach Programs (2.3.2.1)	Manuals, Training, Subject Matter Experts	Employees (6.1)	Stormwater Committee	Manuals and Events,	Ongoing
Outreach Programs (2.3.2.1)	Specifications, Contracts, NHDOT oversight	Contractors (6.1)	Stormwater Committee	Compliance with Contracts	Ongoing

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Category	BMP Description	Responsible Department/Parties	Beginning Year of BMP Implementation
Public Review (2.3.3.1)	Stormwater Management Program will be posted on the Department’s website for review	Stormwater Committee	2019
Public Participation (2.3.3.2)	Collect public comment on Stormwater Programs and Projects with in the Urbanized Area	Stormwater Committee	Ongoing

Notice of Intent (NOI) for coverage under Small MS4 General PermitPart III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal
SSO inventory (2.3.4.4)	Develop SSO inventory in accordance with permit conditions	N/A	The Department does not operate sanitary sewers
Storm sewer system map (2.3.4.5)	Create map	Stormwater Committee	Complete by 2028
Written IDDE program development (2.3.4.6)	Create written IDDE program	Stormwater Committee	Complete by 2019
Assessment and Priority Ranking of Outfalls and Interconnections (2.3.4.7)	Conduct in accordance with permit conditions	Stormwater Committee	a. Ranking: complete by 2020 b. Dry weather screening and sampling: complete by 2022
Catchment Investigations (2.3.4.8)	Conduct in accordance with outfall screening procedure	Stormwater Committee	Written procedures: complete by 2021 Complete all investigation by 2028
Training (2.3.4.11)	Train employees on IDDE implementation	Stormwater Committee	Annually by 2022

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 Category	BMP Description	Responsible Department/Parties	Measurable Goal
Construction Site Stormwater Runoff Control Program (2.3.5.3)	Complete written procedures of site inspections and enforcement procedures	Stormwater Committee	Complete by 2019

Part III: Stormwater Management Program Summary (continued)

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

BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal
Post-construction stormwater runoff Program (2.3.6.a)	Implement procedures	Stormwater Committee	Implement by 2020
As-built plans for on-site stormwater control (2.3.6.b)	Document procedures in the SWMP	Stormwater Committee	Implement by 2020
Inventory and priority ranking of existing infrastructure (2.3.6.e)	Develop an inventory	Stormwater Committee	Complete by 2022

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 Category	BMP Description	Responsible Department/Parties	Measurable Goal
O&M procedures (2.3.7.1)	Create written O&M procedures	Stormwater Committee	Complete and Implement by 2020
Stormwater Pollution Prevention Plan (SWPPP) (2.3.7.2)	Document procedures in the SWMP	Stormwater Committee	Complete and Implement by 2020

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

Applicable TMDLs	Action Description	Responsible Department/Parties
I-93 Corridor: Beaver Brook in Derry & Londonderry (Chloride) I-93 Corridor: Dinsmore Brook in Windham (Chloride) I-93 Corridor: North Tributary to Canobie Lake in Windham (Chloride) I-93 Corridor: Policy-Porcupine Brook in Salem & Windham (Chloride)	Adhere to requirements in Part I.1 of Appendix F	Stormwater Committee
58 Bacteria Impaired Waters (Bacteria) New Hampshire Statewide (Bacteria) Little Harbor (Bacteria) Hampton/Seabrook Harbor (Bacteria)	Adhere to requirements in Part II.1 of Appendix F	Stormwater Committee
Country Pond (Phosphorus) Dorrs Pond (Phosphorus) Hoods Pond (Phosphorus) Horseshoe Pond (Phosphorus) Nutt Pond (Phosphorus) Pine Island Pond (Phosphorus) Stevens Pond (Phosphorus)	Adhere to requirements in Part III.1 of Appendix F	Stormwater Committee

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

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties
Nitrogen	NHEST600030806-01-01 SQUAMSCOTT RIVER SOUTH	Adhere to requirements in part I of Appendix H	Stormwater Committee
Phosphorus	None	Adhere to requirements in part II of Appendix H	Stormwater Committee
E. Coli Enterococcus Fecal Coliform	NHRIV600030803-05 EXETER RIVER	Adhere to requirements in part III of Appendix H	Stormwater Committee
Chloride	NHLAK600031002-01 EEL POND NHLAK700060803-02 STEVENS POND NHRIV600030904-06 PICKERING BROOK NHRIV600031001-04 LOWER HODGSON BROOK NHRIV600031001-05 UPPER HODGSON BROOK NHRIV600031001-07 PAULS BROOK - PEASE AIR FORCE BASE NHRIV600031001-09 BORTHWICK AVE TRIBUTARY NHRIV700061102-21 UNNAMED BROOK - TO HARRIS BROOK NHRIV700061203-09 BEAVER BROOK NHRIV700061203-11 BEAVER BROOK	Adhere to requirements in part IV of Appendix H	Stormwater Committee
Sedimentation/Siltation Turbidity Cadmium Copper Iron Lead Zinc Benzo(a)Pyrene	NHEST600030806-01-01 SQUAMSCOTT RIVER SOUTH NHEST600031001-03 UPPER SAGAMORE CREEK NHLAK600031003-02 TAYLOR RIVER REFUGE POND NHLAK700061001-04-01 HARRIS POND NHLAK700061001-04-02 BOWERS POND NHRIV600030608-06 COCHECO RIVER NHRIV600030703-04 DUDLEY BROOK - UNNAMED BROOK NHRIV600030904-06 PICKERING BROOK NHRIV600031001-06 GRAFTON DITCH NHRIV600031001-09 BORTHWICK AVE TRIBUTARY NHRIV700061102-18 POLICY BROOK - PORCUPINE BROOK	Adhere to requirements in part V of Appendix H	Stormwater Committee

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

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.

1) Under the authority of the Deputy Commissioner, the NHDOT Stormwater Committee meets on a monthly basis and includes representation from around the Department that is involved with MS4 compliance. As outlined in its charter; "The purpose of the New Hampshire Department of Transportation (NHDOT) Stormwater Committee is to ensure compliance with the EPA National Pollutant Discharge System MS4 permit and NHDES Alteration of Terrain regulations.

Notice of Intent (NOI) for coverage under Small MS4 General PermitPart 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: Title:

Signature:



Date

09/17/2018

NOI Submission

Please submit the form electronically via email 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.

Send an email with attachments to: stormwater.reports@epa.gov

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

Appendix C

NHDOT List of Receiving Waters

Assessment Unit ID	Assessment Unit Name	Primary Town	Outfall Count	Impairment
NHEST600030806-01-01	SQUAMSCOTT RIVER SOUTH	Stratham	6	Aluminum; Chlorophyll-a; Dissolved oxygen saturation; Enterococcus; Nitrogen; PAH's/ Oil & Grease;
NHEST600030806-01-02	SQUAMSCOTT RIVER NORTH	Stratham	1	Chlorophyll-a; Dissolved oxygen saturation; Enterococcus; Nitrogen;
NHEST600030903-01-01	BELLAMY RIVER NORTH	Dover	1	
NHEST600030903-01-04	BELLAMY RIVER SOUTH	Dover	4	
NHEST600030904-01	WINNICUT RIVER	Greenland	2	
NHEST600030904-06-15	LOWER LITTLE BAY GENERAL SULLIVAN BRIDGE	Newington	1	
NHEST600030904-06-18	LOWER LITTLE BAY	Newington	2	
NHEST600031001-01-03	UPPER PISCATAQUA RIVER-NH-SOUTH	Dover	6	
NHEST600031001-02-01	LOWER PISCATAQUA RIVER - NORTH	Newington	7	
NHEST600031001-02-02	LOWER PISCATAQUA RIVER - SOUTH	Portsmouth	1	Enterococcus;
NHEST600031001-03	UPPER SAGAMORE CREEK	Portsmouth	6	Aluminum; Enterococcus; PAH's/ Oil & Grease;
NHEST600031001-04	LOWER SAGAMORE CREEK	Portsmouth	1	Enterococcus;
NHEST600031001-05	BACK CHANNEL	Portsmouth	7	
NHEST600031001-10	NORTH MILL POND	Portsmouth	20	Enterococcus;
NHEST600031001-11	UPPER PORTSMOUTH HARBOR-NH	Portsmouth	1	
NHEST600031002-03	CHAPEL BROOK	North Hampton	2	
NHEST600031002-05	PARSONS CREEK	Rye	2	Enterococcus;
NHEST600031003-01	HAMPTON FALLS RIVER	Hampton Falls	3	
NHEST600031003-02	TAYLOR RIVER	Hampton	3	Sedimentation/Siltation;
NHEST600031004-03-03	TIDE MILL CREEK	Hampton	2	
NHEST600031004-09-08	HAMPTON RIVER MARINA SZ	Hampton	5	Enterococcus;
NHEST600031004-10	LITTLE RIVER	North Hampton	2	Enterococcus;
NHIMP600030406-04	SALMON FALLS RIVER - SOUTH BERWICK DAM	Rollinsford	1	Chlorophyll-a; Escherichia coli; Non-Native Aquatic Plants;
NHIMP600030603-01	COCHECO RIVER - CITY DAM 1	Rochester	3	Dissolved oxygen saturation; Non-Native Aquatic Plants;
NHIMP600030709-03	LAMPREY RIVER - MACALLEN DAM	Durham	3	
NHIMP600030803-03	EXETER RIVER	Fremont	3	
NHIMP600030806-04	MILL BROOK POND	Stratham	1	
NHIMP600030902-02	LONGMARSH BROOK - LONSINGER DAM	Durham	1	
NHIMP600030902-04	OYSTER RIVER - MILL POND DAM	Durham	2	Chlorophyll-a; Dissolved oxygen saturation; Escherichia coli;
NHIMP600030902-06	BEARDS CREEK	Durham	3	Dissolved oxygen saturation; Escherichia coli;
NHIMP600030903-02	BELLAMY RIVER - SAWYERS MILL DAM POND	Dover	4	Chlorophyll-a; Escherichia coli;
NHIMP600031003-01	HAMPTON FALLS RIVER III	Hampton Falls	5	
NHIMP600031003-03	HAMPTON FALLS RIVER I	Hampton Falls	2	
NHIMP600031003-08	KENNEY BROOK	Hampton Falls	3	
NHIMP700060503-11	SUNCOOK RIVER - WEBSTER MILL	Allenstown	5	
NHIMP700060503-12	SUNCOOK RIVER - PEMBROKE DAM	Pembroke	1	
NHIMP700060802-02	MERRIMACK RIVER - HOOKSETT HYDRO POND	Hooksett	1	
NHIMP700060802-04	MERRIMACK RIVER - AMOSKEAG DAM	Manchester	4	Escherichia coli;
NHIMP700060804-02	DUMPLING BROOK	Merrimack	2	
NHIMP700060902-12	SOUHEGAN RIVER	Wilton	3	
NHIMP700060903-16	STONY BROOK	Wilton	2	
NHIMP700060903-17	STONY BROOK	Wilton	3	
NHIMP700060904-08	SOUHEGAN RIVER - PINE VALLEY MILL	Wilton	1	Escherichia coli;
NHIMP700061102-01	HOG HILL BROOK	Atkinson	1	
NHIMP700061203-05	BEACON HILL ESTATES DET POND 1	Derry	1	
NHIMP700061203-08	ROSLER DAM	Londonderry	1	
NHIMP700061203-10	BEAVER BROOK	Londonderry	1	
NHIMP700061203-12	WHEELER POND	Londonderry	2	
NHIMP700061206-01	MERRILL BROOK - ICE POND DAM	Hudson	1	
NHIMP700061206-07	SPIT BROOK	Nashua	2	
NHIMP700061401-03	FOOTE BROOK - PRIVATE SWIMMING POOL	Atkinson	2	
NHLAK600030404-01-01	MILTON POND	Milton	5	
NHLAK600030608-01	FRESH CREEK POND	Dover	2	Dissolved oxygen saturation; Escherichia coli;
NHLAK600030708-01	PISCASSIC ICE POND	Newfields	1	
NHLAK600031002-01	EEL POND	Rye	1	Dissolved oxygen saturation; Chloride;
NHLAK600031003-02	TAYLOR RIVER REFUGE POND	Hampton	1	Dissolved oxygen saturation; PAH's/ Oil & Grease;
NHLAK700060802-04	GOLDFISH POND	Hooksett	7	
NHLAK700060802-06	UNNAMED POND	Hooksett	2	
NHLAK700060803-02	STEVENS POND	Manchester	10	Chloride; Chlorophyll-a; Dissolved oxygen saturation;

Assessment Unit ID	Assessment Unit Name	Primary Town	Outfall Count	Impairment
NHLAK700061001-03	STUMP POND	Amherst	2	
NHLAK700061001-04-01	HARRIS POND	Nashua	1	Iron; Cyanobacteria hepatoxic microcystins;
NHLAK700061001-04-02	BOWERS POND	Merrimack	2	Iron;
NHLAK700061102-02	CANOBIE LAKE	Windham	1	
NHLAK700061102-05	HARRIS POND	Pelham	1	
NHLAK700061102-09-01	SHADOW LAKE	Windham	2	
NHLAK700061203-02-01	BEAVER LAKE	Derry	1	
NHLAK700061204-01-01	COBBETTS POND	Windham	2	Chlorophyll-a; Cyanobacteria hepatoxic microcystins; Phosphorus; Non-Native Aquatic Plants;
NHLAK700061206-01	AYERS POND	Hudson	1	
NHLAK700061403-12	BARTLETT MILL POND	Kingston	1	
NHOCN000000000-02-06	ATLANTIC OCEAN - SAWYER BEACH	Rye	1	
NHOCN000000000-02-10	ATLANTIC OCEAN - HAMPTON BEACH STATE PARK BEACH	Hampton	1	
NHOCN000000000-02-12	ATLANTIC OCEAN - NORTH BEACH	Hampton	7	
NHOCN000000000-02-18	ATLANTIC OCEAN	Ocean	15	
NHOCN000000000-11	ATLANTIC OCEAN - RYE HARBOR	Rye	1	
NHRIV600030405-01	SALMON FALLS RIVER	Milton	2	
NHRIV600030405-04	LYMAN BROOK	Milton	1	
NHRIV600030405-08	HEATH BROOK	Rochester	7	
NHRIV600030602-03	AXE HANDLE BROOK - HOWARD BROOK	Rochester	7	
NHRIV600030603-06	COCHECO RIVER	Rochester	3	Aluminum; Escherichia coli;
NHRIV600030603-08	COCHECO RIVER	Rochester	2	Benthic Macroinvertebrate Assessments; Escherichia coli;
NHRIV600030603-10	WILLOW BROOK	Rochester	2	Benthic Macroinvertebrate Assessments; Dissolved oxygen saturation; Escherichia coli;
NHRIV600030603-11	HURD BROOK	Rochester	7	
NHRIV600030603-20	UNNAMED BROOK	Rochester	6	
NHRIV600030603-21	UNNAMED BROOK	Rochester	5	
NHRIV600030607-10	ISINGLASS RIVER	Rochester	7	Dissolved oxygen saturation; Escherichia coli;
NHRIV600030607-12	UNNAMED TRIBUTARY - TO COCHECO RIVER	Rochester	3	
NHRIV600030607-13	UNNAMED BROOK - TO COCHECO RIVER	Rochester	6	
NHRIV600030607-14	COCHECO RIVER	Rochester	2	
NHRIV600030608-02	BLACKWATER BROOK-CLARK BROOK	Rochester	3	Escherichia coli;
NHRIV600030608-04	REYNERS BROOK	Dover	2	Escherichia coli;
NHRIV600030608-05	COCHECO RIVER	Dover	3	Escherichia coli;
NHRIV600030608-23	UNNAMED BROOK	Dover	1	
NHRIV600030703-05	LAMPREY RIVER	Raymond	2	
NHRIV600030703-06	UNNAMED BROOK - FROM GOVERNORS LAKE TO LAMPREY RIVER	Raymond	1	
NHRIV600030703-09	LAMPREY RIVER	Raymond	2	
NHRIV600030703-11	LAMPREY RIVER	Epping	4	Aluminum;
NHRIV600030703-15	LAMPREY RIVER	Epping	7	Dissolved oxygen saturation; Escherichia coli;
NHRIV600030703-20	RUM BROOK	Epping	1	
NHRIV600030703-30	UNNAMED BROOK	Raymond	1	
NHRIV600030703-31	UNNAMED BROOK	Raymond	1	
NHRIV600030708-02	PISCASSIC RIVER - UNNAMED BROOK	Epping	6	Dissolved oxygen saturation;
NHRIV600030708-14	BROWN BROOK - TO PISCASSIC RIVER	Fremont	1	
NHRIV600030709-13	MOONLIGHT BROOK	Newmarket	1	
NHRIV600030803-05	EXETER RIVER	Brentwood	1	Escherichia coli; Benthic Macroinvertebrate Assessments;
NHRIV600030803-07	LITTLE RIVER - UNNAMED BROOK	Kingston	1	Benthic Macroinvertebrate Assessments;
NHRIV600030804-08	BLOODY BROOK - FROM COURMA LTD DAM	Exeter	2	
NHRIV600030804-09	LITTLE RIVER - UNNAMED BROOK	Exeter	1	
NHRIV600030805-02	EXETER RIVER	Exeter	2	Dissolved oxygen saturation; Escherichia coli;
NHRIV600030806-04	PARKMAN BROOK	Stratham	2	Chloride; Escherichia coli;
NHRIV600030806-05	ROCKY HILL BROOK	Exeter	1	
NHRIV600030806-11	MILL BROOK	Stratham	1	
NHRIV600030806-12	JEWELL HILL BROOK	Stratham	2	
NHRIV600030806-19	UNNAMED BROOK	Exeter	2	
NHRIV600030806-20	UNNAMED BROOK	Stratham	2	
NHRIV600030901-01	WINNICUT RIVER - UNNAMED BROOK - CORNELIUS BROOK	North Hampton	5	Benthic Macroinvertebrate Assessments; Dissolved oxygen saturation;
NHRIV600030901-02	WINNICUT RIVER - BARTON BROOK - MARSH BROOK - THOMPSON BROOK	Greenland	1	Escherichia coli;
NHRIV600030901-03	HAINES BROOK	Greenland	1	Escherichia coli;
NHRIV600030901-04	HAINES BROOK - UNNAMED BROOKS	Greenland	2	
NHRIV600030901-06	NORTON BROOK	Greenland	1	Escherichia coli;
NHRIV600030901-07	WINNICUT RIVER - UNNAMED BROOK	North Hampton	9	Dissolved oxygen saturation;

Assessment Unit ID	Assessment Unit Name	Primary Town	Outfall Count	Impairment
NHRIV600030902-08	HAMEL BROOK - LONGMARSH BROOK	Durham	2	Dissolved oxygen saturation; Escherichia coli;
NHRIV600030902-11	LITTLEHOLE CREEK	Durham	3	Dissolved oxygen saturation; Escherichia coli;
NHRIV600030903-08	BELLAMY RIVER - KELLY BROOK - KNOX MARSH BROOK	Madbury	6	Aluminum; Benthic Macroinvertebrate Assessments; Escherichia coli;
NHRIV600030903-11	VARNEY BROOK - CANNEY BROOK	Dover	4	Escherichia coli;
NHRIV600030904-06	PICKERING BROOK	Portsmouth	3	Chloride; Dissolved oxygen saturation; Escherichia coli;
NHRIV600030904-13	SHAW BROOK	Greenland	1	Escherichia coli;
NHRIV600031001-01	PICKERING BROOK - FLAGSTONE BROOK	Newington	1	Aluminum;
NHRIV600031001-02	UNNAMED BROOK - TO PISCATAQUA RIVER	Portsmouth	3	
NHRIV600031001-04	LOWER HODGSON BROOK	Portsmouth	9	Benthic Macroinvertebrate Assessments; Chloride; Dissolved oxygen saturation; Escherichia coli;
NHRIV600031001-05	UPPER HODGSON BROOK	Portsmouth	9	Benthic Macroinvertebrate Assessments; Chloride; Dissolved oxygen saturation; Escherichia coli;
NHRIV600031001-06	GRAFTON DITCH	Portsmouth	4	Aluminum;
NHRIV600031001-07	PAULS BROOK - PEASE AIR FORCE BASE	Newington	1	Escherichia coli; Benthic Macroinvertebrate Assessments; Chloride;
NHRIV600031001-09	BORTHWICK AVE TRIBUTARY	Portsmouth	6	Iron; Chloride; Dissolved oxygen saturation; Escherichia coli;
NHRIV600031001-19	UNNAMED BROOK	Newington	6	
NHRIV600031002-01	BERRYS BROOK	Portsmouth	1	Dissolved oxygen saturation; Escherichia coli;
NHRIV600031002-11	WITCH CREEK	Rye	2	
NHRIV600031003-06	TAYLOR RIVER - ASH BROOK	Hampton	1	
NHRIV600031003-07	OLD RIVER - TO CAR BARN POND	Hampton	7	
NHRIV600031003-12	KENNEY BROOK	Hampton Falls	4	
NHRIV600031003-14	UNNAMED BROOK	Hampton	1	
NHRIV600031004-01	LITTLE RIVER - UNNAMED BROOK	North Hampton	3	
NHRIV600031004-06	TIDE MILL CREEK	Hampton	1	
NHRIV600031004-07	BROWNS RIVER	Seabrook	5	
NHRIV600031004-08	FARM BROOK	Seabrook	2	
NHRIV600031004-10	CAINS BROOK - UNNAMED BROOK	Seabrook	6	Escherichia coli;
NHRIV600031004-11	CAINS BROOK	Seabrook	1	
NHRIV600031004-17	MARYS BROOK	Seabrook	1	
NHRIV600031004-21	UNNAMED BROOK - TO CAINS MILL POND	Seabrook	7	Escherichia coli;
NHRIV700040402-05	NASHUA RIVER	Hollis	2	Dissolved oxygen saturation; Non-Native Aquatic Plants;
NHRIV700040402-06	BARTEMUS BROOK	Hollis	1	
NHRIV700040402-08	NASHUA RIVER	Nashua	5	Escherichia coli; Non-Native Aquatic Plants;
NHRIV700060302-19	MEETINGHOUSE BROOK	Pembroke	5	
NHRIV700060302-35	UNNAMED BROOK	Bow	2	
NHRIV700060503-24	SUNCOOK RIVER	Allenstown	1	
NHRIV700060607-21	DAN LITTLE BROOK	Goffstown	1	
NHRIV700060607-22	PISCATAQUOG RIVER	Manchester	2	Escherichia coli;
NHRIV700060607-36	UNNAMED BROOK	Goffstown	1	
NHRIV700060701-06	MAPLE FALLS BROOK - UNNAMED BROOK	Auburn	2	
NHRIV700060701-07	UNNAMED BROOK - TO CLARK POND	Candia	3	
NHRIV700060702-02	UNNAMED BROOKS - TO MASSABESIC LAKE	Auburn	9	
NHRIV700060702-03	NEAT BROOK - UNNAMED BROOK - TO MASSABESIC LAKE	Hooksett	6	
NHRIV700060702-04	UNNAMED BROOKS - TO MASSABESIC LAKE	Manchester	5	
NHRIV700060702-09	UNNAMED BROOK	Manchester	4	
NHRIV700060703-05	COHAS BROOK - LONG POND BROOK	Manchester	15	Benthic Macroinvertebrate Assessments; Escherichia coli;
NHRIV700060703-06	UNNAMED BROOK - TO COHAS BROOK	Manchester	1	
NHRIV700060703-08	COHAS BROOK	Manchester	21	
NHRIV700060801-05-02	BLACK BROOK	Manchester	1	Benthic Macroinvertebrate Assessments;
NHRIV700060802-02	BROWN BROOK	Hooksett	2	
NHRIV700060802-04	BRICKYARD BROOK	Hooksett	3	
NHRIV700060802-06	UNNAMED BROOK - TO MERRIMACK RIVER	Hooksett	4	
NHRIV700060802-07	PETERS BROOK	Hooksett	4	Aluminum;
NHRIV700060802-08	DALTON BROOK	Hooksett	16	
NHRIV700060802-09	MESSER BROOK	Hooksett	5	Escherichia coli;
NHRIV700060802-10	MILESTONE BROOK - UNNAMED BROOK	Manchester	5	
NHRIV700060802-11	UNNAMED BROOK	Hooksett	10	
NHRIV700060802-12	UNNAMED BROOK - TO GOLDFISH POND	Hooksett	4	
NHRIV700060802-13	DORRS POND INLET BROOK	Manchester	1	Chloride;
NHRIV700060802-14-02	MERRIMACK RIVER	Hooksett	15	Aluminum; Escherichia coli; Dissolved oxygen saturation;
NHRIV700060802-22	UNNAMED BROOK	Bow	2	
NHRIV700060802-23	UNNAMED BROOK	Hooksett	3	
NHRIV700060802-29	UNNAMED BROOK	Hooksett	12	

Assessment Unit ID	Assessment Unit Name	Primary Town	Outfall Count	Impairment
NHRIV700060802-30	UNNAMED BROOK	Manchester	4	
NHRIV700060803-03	BOWMAN BROOK	Bedford	19	
NHRIV700060803-05	BOWMAN BROOK	Bedford	4	
NHRIV700060803-06	UNNAMED BROOK - THRU NEW ST JOHN'S CEMETARY	Bedford	1	
NHRIV700060803-07	HUMPHREY BROOK - UNNAMED BROOK	Manchester	8	
NHRIV700060803-11	UNNAMED BROOKS - TO PATTEN BROOK	Bedford	1	
NHRIV700060803-12	PATTEN BROOK	Bedford	8	Aluminum; Escherichia coli;
NHRIV700060803-13	UNNAMED TRIBUTARY - TO MERRIMACK RIVER	Bedford	4	
NHRIV700060803-14-02	MERRIMACK RIVER	Manchester	69	Aluminum; Escherichia coli;
NHRIV700060803-15	HUMPHREY BROOK	Manchester	2	Chloride;
NHRIV700060804-01	SEBBINS BROOK - POINTER CLUB BROOK	Bedford	10	
NHRIV700060804-02	DUMPLING BROOK - TO FISH POND	Merrimack	1	
NHRIV700060804-04	LITTLE COHAS BROOK	Londonderry	9	
NHRIV700060804-09	UNNAMED BROOK - THRU LEACH ICE POND TO MERRIMACK RIVER	Litchfield	1	
NHRIV700060804-12	SOUTH PERIMETER BROOK	Londonderry	1	Chloride; Iron;
NHRIV700060903-16-01	STONY BROOK	Wilton	7	
NHRIV700060903-17	STONY BROOK	Wilton	2	
NHRIV700060904-13	SOUHEGAN RIVER - STONY BROOK	Wilton	5	Escherichia coli;
NHRIV700060904-14	SOUHEGAN RIVER	Milford	16	Escherichia coli;
NHRIV700060904-17	UNNAMED BROOK	Milford	2	
NHRIV700060905-18	RIDDLE BROOK	Bedford	12	Escherichia coli;
NHRIV700060905-19	BABOOSIC BROOK - RIDDLE BROOK	Merrimack	3	Benthic Macroinvertebrate Assessments;
NHRIV700060906-03	BEAVER BROOK	Amherst	4	
NHRIV700060906-05	HARTSHORN BROOK	Milford	1	
NHRIV700060906-08	GREAT BROOK	Milford	1	
NHRIV700060906-12	GREAT BROOK - OX BROOK	Milford	12	Escherichia coli; Dissolved oxygen saturation;
NHRIV700060906-15	MEDLYN-WOODS BROOK - UNNAMED BROOK	Milford	2	
NHRIV700060906-18	SOUHEGAN RIVER	Merrimack	2	Aluminum; Escherichia coli;
NHRIV700061001-02	WITCHES BROOK	Hollis	2	Escherichia coli;
NHRIV700061001-07	PENNICHUCK BROOK - WITCHES BROOK	Merrimack	2	Escherichia coli; Dissolved oxygen saturation;
NHRIV700061001-08	UNNAMED BROOK - TO BOWER POND	Merrimack	1	
NHRIV700061001-09	BOIRE FIELD BROOK - TO PENNICHUCK BROOK	Nashua	3	
NHRIV700061002-02	NATICOOK BROOK	Merrimack	2	
NHRIV700061002-06	NESENKEAG BROOK - UNNAMED BROOK	Litchfield	1	
NHRIV700061002-08	CHASE BROOK - UNNAMED BROOK	Litchfield	1	
NHRIV700061002-11	UNNAMED BROOK - TO MERRIMACK RIVER	Hudson	3	
NHRIV700061002-13	MERRIMACK RIVER	Merrimack	1	Escherichia coli;
NHRIV700061002-14	MERRIMACK RIVER	Nashua	1	Escherichia coli;
NHRIV700061002-21	UNNAMED BROOK	Hudson	1	
NHRIV700061002-26	NESENKEAG BROOK - UNNAMED BROOK	Londonderry	3	
NHRIV700061101-06	UNNAMED BROOK - FROM WASH POND UPPER DAM TO WASH POND LOWER DAM	Hampstead	2	
NHRIV700061101-07	UNNAMED BROOK - FROM WASH POND LOWER DAM TO ISLAND POND	Hampstead	1	
NHRIV700061101-08	UNNAMED BROOKS - FROM ISLAND POND TO TAYLOR RESERVOIR	Derry	2	
NHRIV700061102-02	UNNAMED BROOK - FROM JOHNSON POND TO UNNAMED POND	Hampstead	1	
NHRIV700061102-11	UNNAMED BROOK - TO MITCHELL POND	Windham	2	
NHRIV700061102-13	FLATROCK BROOK	Windham	2	
NHRIV700061102-18	POLICY BROOK - PORCUPINE BROOK	Salem	24	Benthic Macroinvertebrate Assessments; Chloride; Iron;
NHRIV700061102-20	SOUTHWEST TRIB. TO CANOBIE LAKE	Windham	1	
NHRIV700061102-21	UNNAMED BROOK - TO HARRIS BROOK	Salem	12	Chloride;
NHRIV700061102-22	SEARLES SCHOOL BROOK	Windham	3	
NHRIV700061102-23	UNNAMED BROOK TO WESTERN EMBAYMENT	Windham	5	Chloride;
NHRIV700061102-32	HITTYTITY BROOK - UNNAMED BROOK	Salem	1	
NHRIV700061201-05	SALMON BROOK - HASSELLS BROOK - OLD MAIDS BROOK - HALE BROOK	Nashua	6	Escherichia coli;
NHRIV700061203-04	SALMON BROOK - COLD BROOK	Derry	1	
NHRIV700061203-06	MANTER BROOK	Derry	2	
NHRIV700061203-07	SALMON BROOK	Derry	1	
NHRIV700061203-08	CAT O BROOK NORTH	Derry	1	
NHRIV700061203-09	BEAVER BROOK	Derry	4	Benthic Macroinvertebrate Assessments; Escherichia coli; Chloride;
NHRIV700061203-11	BEAVER BROOK	Derry	6	Chloride;
NHRIV700061203-16	BEAVER BROOK	Londonderry	4	Chloride; Iron;

Assessment Unit ID	Assessment Unit Name	Primary Town	Outfall Count	Impairment
NHRIV700061203-20	BEAVER BROOK	Londonderry	3	
NHRIV700061203-21	BEAVER BROOK	Windham	2	
NHRIV700061203-23	BROOK TO WHEELER POND	Londonderry	6	
NHRIV700061203-24	WHEELER POND BROOK	Derry	3	
NHRIV700061204-01	DINSMORE BROOK	Windham	5	Chloride;
NHRIV700061204-02	GOLDEN BROOK	Windham	8	
NHRIV700061204-03	GOLDEN BROOK	Windham	1	
NHRIV700061204-05	WEIGHT STATION BROOK	Windham	6	
NHRIV700061204-06	CONNIES BROOK	Windham	2	
NHRIV700061204-07	UNNAMED BROOK	Windham	1	
NHRIV700061204-12	UNNAMED BROOK - TO COBBETTS POND	Windham	1	
NHRIV700061204-13	UNNAMED BROOK	Windham	1	
NHRIV700061204-14	UNNAMED BROOK	Windham	1	
NHRIV700061205-01	BEAVER BROOK - TONY'S BROOK	Pelham	2	Benthic Macroinvertebrate Assessments; Escherichia coli;
NHRIV700061205-03	NEW MEADOW BROOK	Pelham	3	
NHRIV700061205-06	GUMPAS POND BROOK	Pelham	3	
NHRIV700061205-13	BEAVER BROOK - UNNAMED BROOK	Pelham	1	
NHRIV700061206-04	MERRILL BROOK - UNNAMED BROOK	Hudson	3	
NHRIV700061206-13	UNNAMED BROOK - TO MERRIMACK RIVER	Hudson	6	
NHRIV700061206-16	SPLIT BROOK - UNNAMED BROOK	Nashua	3	
NHRIV700061206-22	MUSQUASH BROOK - LAWRENCE BROOK	Hudson	3	
NHRIV700061206-23	MUSQUASH BROOK - LIMIT BROOK	Hudson	5	
NHRIV700061206-24	MERRIMACK RIVER	Nashua	3	Aluminum; Escherichia coli; Chlorophyll-a
NHRIV700061401-04	KELLY BROOK - SEAVER BROOK	Plaistow	10	Benthic Macroinvertebrate Assessments; Escherichia coli; Dissolved oxygen saturation;
NHRIV700061401-05	UNNAMED BROOK - TO BLUNTS POND	Atkinson	1	
NHRIV700061401-06	FOOTE BROOK	Atkinson	1	
NHRIV700061401-07	FOOTE BROOK	Plaistow	4	
NHRIV700061403-17	POWWOW RIVER - UNNAMED BROOK - GRASSY BROOK	South Hampton	1	Dissolved oxygen saturation;
NHRIV700061403-33	UNNAMED BROOK	Newton	1	
NHRIV700061403-40	UNNAMED BROOK	Kingston	1	
NHRIV700061404-01	EAST MEADOW RIVER - UNNAMED BROOK	Newton	1	
NHRIV700061404-02	SNOWS BROOK - UNNAMED BROOK	Plaistow	2	
N/A	UNNAMED WETLAND	Various	1613	
Regulated Outfall Total			2642	

Appendix D

Department ESA Review Process Memo

To: NHDOT MS4 Program Files / SWMP

Date: May 16, 2018

Prepared by: Rebecca Martin, DOT
Bill Arcieri, VHB

Project #: 2017 MS4 Stormwater Permit- Eligibility

Re: Endangered Species Act: Program Review for Site Disturbance Related to Stormwater Infrastructure Maintenance, Upgrades and Modifications and may have potential to affect federally-listed species

Purpose: To describe the Department’s review and consultation process for stormwater discharge related activities in accordance with the NH 2017 Municipal Separate Storm Sewer System General Permit that may have the potential to affect federally-listed critical habitat, threatened or endangered plant or animal species. Projects that are designed in accordance with the Department’s standard project development process and projects that require coverage in accordance with the Construction General Permit (impact more than 1 acre), will be reviewed for compliance with the Endangered Species Act through the Department’s established environmental review process.

Activities of Concern: All activities that involve excavation or disturbance of natural vegetation outside the existing roadway footprint (i.e., fill embankment), currently maintained or mowed areas or otherwise more than 10 feet from the edge of pavement to install, upgrade, repair or expand stormwater infrastructure for MS4 Permit compliance and are within the designated MS4 regulated area (defined below). Activities covered by the process and described in this document are those that are not otherwise reviewed under the Department’s standard permitting or NEPA review process. In addition, construction activities involving more than 1 acre of disturbance would receive a similar, separate review under EPA’s Construction General Permit. Examples of stormwater related activities that would typically involve less than 1 acre of disturbance and would not fall within the Department’s project development process include the following:

- Construction of new stormwater BMPs or new storm drain outlets in naturally-vegetated areas;
- Modification/expansion of existing stormwater infrastructures structures in naturally-vegetated areas.

Designated MS4 Regulated Area, Regulated Towns (or portions thereof) and Federally-Listed Species

District	Regulated Towns (or portions thereof)	Federally-Listed Species ¹		
		Plants	Mammals	Birds
4	Lyndeborough, Wilton	Small-whorled Pogonia (forested areas)	Northern long-eared Bat (statewide)	none
5	Allenstown, Amherst, Auburn, Bow, Bedford, Candia Chester, Derry, Goffstown, Hollis, Hudson, Litchfield, Londonderry, Manchester, Merrimack, Milford, Mount Vernon, Nashua, Pelham, Pembroke, Raymond, Salem, Windham	Small-whorled Pogonia (forested areas)	Northern long-eared Bat (statewide)	none
6	Atkinson, Barrington, Brentwood, Danville, Dover, Durham, East Kingston, Epping, Exeter, Fremont, Greenland, Hampstead, Hampton, Hampton Falls, Kingston, Lee, Madbury, Milton, New Castle, Newfields, Newington, Newmarket, Newton, North Hampton, Plaistow, Portsmouth, Rochester, Rollinsford, Rye, Sandown, Seabrook, Somersworth, Stratham	Small-whorled Pogonia (forested areas)	Northern long-eared Bat (statewide)	Piping Plover (Hampton/Seabrook) Red Knot ² (migratory only- coastal towns) Roseate Tern (coastal towns)

Notes: ¹Species listing based on U.S. Fish and Wildlife correspondence dated April 13, 2018 concerning NH MS4 Permit (see attached). Species listing is subject to change over time. Red Knot birds are generally migratory only and Roseate Tern are generally only observed as nesting pairs on the Isles of Shoals.

Roles and Responsibilities:

The District Engineer shall contact Rebecca Martin in the BOE at 271-6781 or Rebecca.Martin@dot.nh.gov for any proposed stormwater treatment related activity that will either involve excavation, disturb existing vegetated areas outside of currently maintained/mowed areas, or impact areas more than 10 feet from the edge of pavement to coordinate a review of potential impacts to critical habitat, threatened species or endangered species.

Review Process: The Bureau of Environment (BOE) will coordinate with the activity sponsor to conduct an U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) review to determine if any federally-listed species or critical habitats are located in the proposed activity area and will assess whether the proposed activity has potential to affect the species included in the species list based on the size, type and duration of the activity and the potential proximity and type of habitat used by the listed species. If the activity is determined to have no potential to affect critical habitat, threatened or endangered species or their habitat, the review and no effect determination will be documented and kept on file.

<https://www.fws.gov/midwest/endangered/section7/s7process/step3.html>

The USFWS Technical Assistance Website describes that if there is no suitable habitat present and/or species or critical habitat will not be exposed directly or indirectly to the proposed action or any resulting environmental changes the appropriate conclusion is "no effect" and no further consultation is required.

EPA has made a 'no effect' determination for all of the Department's good housekeeping measures required to maintain existing infrastructure (e.g. street sweeping, catch basin clean outs). This will include most of the Department's actions required by or covered under the MS4 permit." (see attached email dated April 13, 2018 directed to Rebecca Martin).

If the activity is determined to have the potential to affect critical habitat, threatened or endangered species or their habitat, consultation with the USFWS is required in accordance with Section 7 of the Endangered Species Act. For projects determined to have potential to affect, but that are not likely to adversely affect any critical habitat or threatened or endangered species, consultation with USFWS may be completed informally. For projects that are considered likely to adversely affect critical habitat or threatened or endangered species, formal consultation will be required. All appropriate conservation measures will be incorporated into the activity as determined during consultation.

The IPaC review does not provide information on listed species under the National Marine Fisheries Service (NMFS) jurisdiction. According to Appendix C of the 2017 MS4 Permit: "EPA has determined that discharges from MS4s are not likely to adversely affect listed species or critical habitat under the jurisdiction of the National Marine Fisheries Service. EPA has initiated informal consultation with the National Marine Fisheries Service on behalf of all permittees and no further action is required by permittees in order to fulfill ESA requirements of this permit related to species under the jurisdiction of NMFS". In addition, Suzanne Warner of EPA Region 1 stated via email, "EPA has talked to NMFS for the entire area covered by the MS4 permit; no further coordination from the permittee, like DOT is necessary" (see attached email dated April 13, 2018 directed to Rebecca Martin).

With this new review process in place to address future stormwater related activities, the Department will be eligible for MS4 Permit coverage under the conditions listed in Criteria C of Appendix C since the Department agrees Do you agree that if plans for future activities including installation of structural BMPs not identified in the NOI, the Department will conduct an endangered species screening for the proposed site and contact the USFWS if it is determined that the new activity "may affect" or is "not likely to adversely affect" listed species or critical habitat under the jurisdiction of the USFWS.

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

Appendix E

Section 106 Programmatic Agreement

**PROGRAMMATIC AGREEMENT AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE NEW HAMPSHIRE STATE HISTORIC PRESERVATION OFFICE,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND
THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
REGARDING THE FEDERAL AID HIGHWAY PROGRAM IN NEW HAMPSHIRE**

WHEREAS, the Federal Highway Administration (FHWA), under the authority of 23 U.S.C. 101 et seq., implements the Federal-aid Highway Program (Program) in the state of New Hampshire (NH) by funding and approving state and locally sponsored transportation projects that are administered by the NH Department of Transportation (NHDOT); and

WHEREAS, the NH FHWA Division Administrator is the "Agency Official" responsible for ensuring that the Program in the state of NH complies with Section 106 of the National Historic Preservation Act (NHPA)(54 U.S.C. 306108), as amended, and codified in its implementing regulations, 36 CFR Part 800, as amended (August 5, 2004); and

WHEREAS, NHDOT administers Federal-aid projects throughout the State of NH as authorized by Title 23 U.S.C 302; and

WHEREAS, the responsibilities of the NH State Historic Preservation Officer (SHPO) under Section 106 of the NHPA and 36 CFR Part 800 are to advise, assist, review, and consult with Federal agencies as they carry out their historic preservation responsibilities and to respond to Federal agencies' requests within a specified period of time; and

WHEREAS, FHWA has determined that Program transportation projects, hereafter referred to as "projects," may have an effect upon properties included in, or eligible for inclusion in, the National Register of Historic Places (National Register), hereafter referred to as "historic properties," and has consulted with the SHPO and the Advisory Council on Historic Preservation (ACHP) pursuant to Section 800.14(b) of the regulations implementing Section 106 of the NHPA; and

WHEREAS, Program projects meet the definition of "undertaking" for the purpose of compliance with Section 106 of the NHPA; and

WHEREAS, FHWA has consulted with Federally-recognized Indian Tribes (Tribes) with ancestral lands in New Hampshire about this Agreement, has requested their comments, and has taken any comments received into account. These Tribes include the Mashantucket Pequot Tribal Nation, the Mohegan Tribe of Indians of Connecticut, the Narragansett Indian Tribe, the Passamaquoddy Tribe, and the Penobscot Nation; and

WHEREAS, any project involving tribal lands as defined in 36 CFR 800.16(x), or any project that may affect a property identified by a federally recognized Native American Tribe as possessing traditional religious and cultural significance, shall not be governed by this Agreement, but shall be reviewed by FHWA in accordance with 36 CFR Part 800; and

WHEREAS, FHWA and NHDOT are committed to the design of transportation systems that: (1) achieve a safe and efficient function in the State of NH; (2) avoid, minimize, and mitigate adverse effects on historic properties; and (3) respond to the needs of NH's citizens and communities, including strategies that enhance the preservation of historic properties; and

WHEREAS, the NHDOT Bureau of Environment (NHDOT-BOE) employs a staff of cultural resource specialists and consultants who meet the *Secretary of the Interior's Professional Qualification Standards* (SOI's Standards: https://www.nps.gov/history/local-law/arch_stnds_9.htm), and who are eligible for listing with the NH Division of Historical Resources as professionally qualified in the fields of archaeology and architectural history, to carry out its cultural resource programs and responsibilities; and

WHEREAS, pursuant to the consultation conducted under 36 CFR 800.14(b), the signatories have developed this Programmatic Agreement (Agreement) in order to establish an efficient and effective program alternative for taking into account the effects of the Program on historic properties in NH and for affording the ACHP a reasonable opportunity to comment on projects covered by this Agreement; and

WHEREAS, FHWA has notified the public, Federal and State agencies, and Regional Planning Commissions in New Hampshire about this Agreement, has requested their comments, and has taken any comments received into account; and

WHEREAS, NHDOT has participated in the consultation and has been invited to be a signatory party to this Agreement; and

WHEREAS, this Agreement shall supersede the previous programmatic agreement among the FHWA, SHPO, ACHP, and NHDOT dated November 26, 2014; and

WHEREAS, this Agreement sets forth the process by which FHWA, with the assistance of NHDOT-BOE, will meet its responsibilities under Section 106 and the implementing regulations set forth in 36 CFR Part 800. For purposes of this Agreement, the definitions for terms appearing in 36 CFR 800.16(a) through (y) inclusive shall be employed whenever applicable; and

WHEREAS, FHWA provides financial assistance to the state for Local Public Agency (LPA) transportation projects; and

WHEREAS, *The Stewardship and Oversight Agreement on Project Assumption and*

Program Oversight by and Between Federal Highway Administration, New Hampshire Division and the State of New Hampshire Department of Transportation (May 14, 2015) (Stewardship & Oversight Agreement) states that, “The NHDOT is responsible and accountable for LPA compliance with all applicable Federal laws and requirements;” and

WHEREAS, FHWA, with NHDOT’s assistance, shall ensure that Section 106 requirements for LPA projects are met in accordance with the applicable provisions of this Agreement; and

WHEREAS, cooperating federal agencies who recognize FHWA as the lead federal agency for an undertaking may fulfill their obligations under Section 106 according to 36 CFR 800.2(a)(2), provided that FHWA and NHDOT follow the requirements of this Agreement and the cooperating federal agency’s undertaking does not have the potential to cause effects to historic properties beyond those considered by FHWA and NHDOT; and

WHEREAS, FHWA, ACHP, NHDOT, and SHPO aspire to engage in meaningful, long term planning for the protection of historic and archaeological properties and, toward that end, desire to: (1) seek and explore procedural efficiencies; (2) devote a larger percentage of time and energies identifying relevant problems threatening historic and archaeological properties; (3) create innovative programs to address those problems; (4) develop transportation survey methodologies and appropriate training opportunities; and (5) develop a plan to maximize efficiencies when evaluating potential historic properties during emergency response procedures; and

WHEREAS, NHDOT and SHPO agree that NHDOT may use provisions of this Agreement to address the applicable requirements of NH RSA 227-C:9 in the location, identification, evaluation and management of historic resources, as applicable for projects not funded by the Program, but that are funded with State funds:

NOW, THEREFORE, FHWA, the SHPO, the ACHP, and NHDOT agree that the Program in NH shall be carried out in accordance with the following stipulations in order to take into account the effects of the Program on historic properties in NH and that these stipulations shall govern compliance of the Program with Section 106 of the NHPA until this Agreement expires or is terminated.

To aid the signatories of this PA, the stipulations and appendices are organized in the following order:

- I. Purpose, Applicability and Scope
- II. Definitions
- III. Professional Qualifications Standards
- IV. Responsibilities

- V. Consultation with Tribes
- VI. Participation of Other Consulting Parties and the Public
- VII. Project Review
- VIII. Emergency Situations
- IX. Post-Review and Unanticipated Discoveries
- X. Identification and Treatment of Human Remains
- XI. Monitoring and Reporting
- XII. Dispute Resolution
- XIII. Amendment
- XIV. Termination
- XV. Confidentiality
- XVI. Transition
- XVII. Duration of Agreement`

Appendix A: Activities with No Potential to Cause Effects

Appendix B: Activities with Minimal Potential to Cause Effects

Appendix C: Definitions for key terms used in this Agreement

Appendix D: NHDOT Bureau of Bridge Maintenance EHS Procedure – 01, Title:
Washing and Sealing of Bridges

Appendix E: Organizations/agencies that should be considered when inviting consulting parties during the public involvement process

STIPULATIONS

The FHWA, with the assistance of NHDOT, shall ensure that the following measures are carried out:

I. PURPOSE, APPLICABILITY AND SCOPE

- A. The objective of this Agreement is to make more efficient the methods by which FHWA and NHDOT review individual projects processed under Section 106 that may affect historic properties and to establish the process by which FHWA carries out its Section 106 responsibilities.
- B. This Agreement sets forth the process by which FHWA, with the assistance of NHDOT, will meet its responsibilities pursuant to Section 106 and 110 of the NHPA (54 U.S.C. 306102 and 306108).
- C. Through this Agreement, FHWA authorizes NHDOT to initiate and, in many cases, conclude consultation with the SHPO and other consulting parties for purposes of compliance with Section 106 of the NHPA.

- D. This Agreement establishes the basis for review of projects carried out under the Program.
- E. The FHWA retains the responsibility to consult with Tribes as required under 36 CFR Part 800, as amended. The NHDOT may assist FHWA if individual Tribes agree to alternate procedures.
- F. This Agreement shall not apply to projects that occur on or affect tribal lands as they are defined in 36 CFR 800.16(x). For such projects, FHWA shall follow the procedures in 36 CFR Part 800.
- G. At any time, NHDOT-BOE can choose to process a project by following the procedures in 36 CFR Part 800 rather than by following the procedures in this Agreement. For reasons such as known controversy, SHPO, ACHP, or FHWA may also request that NHDOT-BOE process a project by following the procedures in 36 CFR Part 800.

II. DEFINITIONS

Terms used in this Agreement are defined in Appendix C of this Agreement.

III. PROFESSIONAL QUALIFICATIONS STANDARDS

NHDOT-BOE shall employ, at a minimum, an archaeologist and an architectural historian to direct consultants who conduct Section 106 work, and to provide review and quality control on all Section 106 work. NHDOT-BOE Cultural Resources Program staff and all consultants who conduct Section 106 compliance work shall meet the *Secretary of the Interior's Professional Qualifications Standards*. In the event of a temporary absence of the archaeologist or the architectural historian, NHDOT-BOE, FHWA, and SHPO shall closely coordinate to determine requirements needed to continue to meet the stipulations of this Agreement. In the event of a prolonged absence of the archaeologist or the architectural historian, or should NHDOT no longer employ either the archaeologist or the architectural historian, all active projects previously covered by this Agreement shall follow the Section 106 review process outlined in 36 CFR Part 800. For the purposes of this Agreement, a prolonged absence is defined as a period of no more than six (6) months. However, nothing in this stipulation may be interpreted to preclude FHWA or NHDOT or any agent or contractor thereof from using the services of persons who do not meet these qualifications standards, providing their activities are conducted under the supervision of a person who does meet the standards.

IV. RESPONSIBILITIES

The following section identifies the responsibilities of FHWA, the SHPO, and of NHDOT in complying with the terms of this Agreement.

A. FHWA Responsibilities

1. Consistent with the requirements of 36 CFR 800.2(a), FHWA remains legally responsible for ensuring that the terms of this Agreement are carried out and for all findings and determinations made pursuant to this Agreement by NHDOT under the authority of FHWA. At any point in the Section 106 process, FHWA may inquire as to the status of any project carried out under the authority of this Agreement and may participate directly in any project at its discretion.
2. FHWA retains the responsibility for government-to-government consultation with Tribes as defined in 36 CFR 800.16(m). FHWA may ask NHDOT to assist in consultation if the individual Tribes agree to alternate procedures.
3. FHWA shall be responsible for resolving disputes and objections pursuant to Stipulations XII of this Agreement.
4. FHWA shall take the lead in any consultation with the ACHP for projects with active ACHP participation (36 CFR 800.6(b)(2)), and those involving the Secretary of the Interior.
5. FHWA shall be responsible for resolving adverse effects pursuant to 36 CFR 800.6.

B. NHDOT Responsibilities

NHDOT, using staff and/or consultants meeting the *Secretary of the Interior's Professional Qualifications Standards*, will independently perform the work and consultation described in 36 CFR 800.3 – 36 CFR 800.5 (including any succeeding revisions to the regulations) on behalf of FHWA. Assignment of these responsibilities is based on adequate and appropriate performance by NHDOT, as evaluated by FHWA pursuant to Stipulation XI.B of this Agreement. These responsibilities include carrying out the following requirements:

1. 36 CFR 800.3(a) - Determine whether a project is a type of activity that has the potential to cause effects on historic properties.
2. 36 CFR 800.3(b) - Coordinate with other reviews.
3. 36 CFR 800.3(c) and (d) - Determine whether a project may occur on or has the potential to affect historic properties on tribal lands.
4. 36 CFR 800.3(e) - Solicit public comment and involvement.
5. 36 CFR 800.3(f) - Identify additional consulting parties who should be invited to participate in the projects covered by this Agreement.

6. 36 CFR 800.4(a) - In consultation with the SHPO, determine and document the scope of identification efforts and level of effort, including the project's area of potential effects (APE).
7. 36 CFR 800.4(b) - In consultation with the SHPO, identify properties within the APE included in or eligible for listing in the National Register of Historic Places.
8. 36 CFR 800.4 (c) – In consultation with the SHPO, evaluate historic significance of properties within the APE.
9. 36 CFR 800.4(d) – Make findings of No Historic Properties Affected.
10. 36 CFR 800.5(a) and (b) – In consultation with the SHPO, determine whether historic properties may be affected by a project by applying the criteria of adverse effect, and make findings of No Adverse Effect.
11. Provide FHWA copies of all correspondence sent out on its behalf (e.g. letters to SHPO or Tribes).
12. Complete project reviews pursuant to Stipulation VII of this Agreement.

The NHDOT-BOE shall have sufficient financial resources and administrative support to efficiently, and adequately operate under this Agreement, and maintain databases and other tools necessary to implement the stipulations of this Agreement. Should the NHDOT-BOE, through its Cultural Resources Program, not be able to execute its internal review for a project qualifying for use of this Agreement as outlined under Stipulation IV.B, that project shall undergo the Section 106 review process outlined in 36 CFR 800.3-800.6.

C. SHPO Responsibilities

The SHPO reflects the interests of the State and its citizens in the preservation of their cultural heritage. In accordance with Section 101(b)(3) of the NHPA, 36 CFR Part 800, and this Agreement, the SHPO will advise and assist FHWA in carrying out its Section 106 responsibilities, and cooperate with NHDOT to ensure that historic properties are taken into consideration in the implementation of this Agreement.

V. CONSULTATION WITH TRIBES

- A. FHWA shall take the lead in identifying and establishing consultation with Native American Tribes consistent with the requirements of 36 CFR 800.2(c)(2) and 36 CFR 800.3(c)-(f). To assist FHWA, NHDOT may provide general coordination information to Tribes but FHWA shall retain ultimate responsibility for complying with all federal

requirements pertaining to government-to-government consultation with Tribes.

- B. In accordance with 36 CFR 800.3(f)(2), any Tribes that might attach religious and cultural significance to historic properties in the APE shall be identified by NHDOT and invited by FHWA to be consulting parties.
- C. FHWA and NHDOT shall ensure that consultation with Tribes is initiated early in the project planning process to identify cultural, confidentiality, or other concerns and to allow adequate time for consideration.
- D. FHWA and NHDOT shall ensure that consultation continues with Tribes throughout the Section 106 review process prescribed by this Agreement whenever such Tribes express a concern about a project or about historic properties that may be affected by a project.
- E. FHWA may ask NHDOT to assist in consultation if the individual Tribes agree.

VI. PARTICIPATION OF OTHER CONSULTING PARTIES AND THE PUBLIC

A. Additional Consulting Parties

Consulting parties shall be identified in writing by NHDOT in consultation with the SHPO pursuant to 36 CFR 800.3(c-f). Participation of the consulting parties in projects covered under this Agreement shall be governed by 36 CFR 800.3(f)(3). Written requests by individuals, organizations, and agencies to become consulting parties will be evaluated on a case-by-case basis by NHDOT and FHWA in consultation with the SHPO. Individuals and organizations with a demonstrated interest in a project shall be invited by NHDOT in consultation with FHWA to participate in the Section 106 process.

B. Public Involvement

- 1. Public involvement in planning and implementing projects covered by this Agreement shall be governed by FHWA's and NHDOT's environmental procedures. Procedures for involving the public shall include, at a minimum, the following:
 - a. Sending contact letters, as appropriate, to local historic commissions, other governmental entities with jurisdiction, regional planning commissions, and other potential consulting parties in accordance with 36 CFR 800.2(c), 800.3(f), and 800.4(d);
 - b. Coordinating directly with abutting property owners through meetings, letters, electronic communication, and telephone communication;
 - c. On site meetings with concerned property owners, and/or;

- d. Presenting findings and soliciting input at public officials meetings, public informational meetings, and/or public hearings, as appropriate.

Appendix E includes a list of organizations/agencies that should be considered when inviting consulting parties during the public involvement process.

2. Public involvement and the release of information hereunder shall be consistent with 36 CFR 800.2(d), 800.3(e), and 800.11(c)(1 and 3).
3. The NHDOT shall continue to seek and consider the views of the public in a manner that reflects the nature and complexity of the project and its effects on historic properties, and the likely interest of the public in the effects on historic properties, to remain consistent with the intent of 36 CFR Part 800, as amended.
4. For those actions that do not routinely require public review and comment (e.g., projects with no potential to cause effects consistent with 36 CFR 8003.(a)(1)), appropriate public involvement should be based on the specifics of the situation and commensurate with the type and location of historic properties, and the project's potential impacts on them.
5. The NHDOT shall make FHWA and SHPO aware of any and all public controversy as it relates to the historic properties potentially affected by the proposed project, including, but not limited to, properties of religious and/or cultural significance to any Tribe.

VII. PROJECT REVIEW

This stipulation outlines the approach to cultural resources review for all projects in the Program, and provides a streamlined approach to Section 106 compliance for certain projects limited to activities with a known history of resulting in findings of no potential to cause effects, and no historic properties affected. For all projects undertaken pursuant to this Agreement, the following requirements shall be observed.

- A. Through this Agreement, FHWA and NHDOT establish two (2) categories of activities:
 1. "Appendix A Activities:" activities with No Appreciable Potential to Cause Effects (To be applicable for processing under Appendix A, a project shall be limited to any combination of the activities listed in Appendix A of this Agreement); and
 2. "Appendix B Activities:" activities with Minimal Potential to Cause Effects (To be applicable for processing under Appendix B, a project shall be limited to any combination of the activities listed in Appendix B of this Agreement, with or without the inclusion of activities listed in Appendix A).

Projects processed under Appendix A or Appendix B require different levels of review, and each has a demonstrated history of typically resulting in Section 106 findings of “No Potential to Cause Effects,” or “No Historic Properties Affected,” as defined in 36 CFR 800.3(a)(1), and 36 CFR 800.4(d)(1). Review shall follow the procedures outlined in Stipulation VII.B and VII.C below, as appropriate. Projects that do not conform to Appendices A or B shall follow the procedures in 36 CFR Part 800 and in Stipulation VII.D of this Agreement.

B. Projects with No Appreciable Potential to Cause Effects (projects with activities limited to those listed in Appendix A)

1. Certain projects have no potential to affect historic properties, whether or not there may be historic properties in the project area. The signatories to this Agreement agree that the activities listed in Appendix A, by their nature typically have “No Potential to Cause Effects” (36 CFR 800.3(a)(1)).
2. The NHDOT may add additional activities to the list in Appendix A upon written notice to, and concurrence from, all parties to this Agreement, and the Agreement will not need to be amended.
3. For all projects with activities limited to those listed in Appendix A, the project sponsor shall submit a hard copy of a completed Appendix A Certification Form to the NHDOT-BOE Cultural Resources Program for review. The NHDOT-BOE Cultural Resources Program shall evaluate whether a project is solely limited to the activities listed in Appendix A, and shall make a finding that the project has either No Potential to Cause Effects, or does not conform to Appendix A. The NHDOT-BOE Cultural Resources Program shall provide the finding to the project sponsor and maintain such documentation in its files. The NHDOT-BOE Cultural Resources Program shall notify FHWA and SHPO of its use of the documentation on specific projects in an annual report to the signatories of this Agreement, as specified in Stipulation XI.

C. Projects with Minimal Potential to Cause Effects (projects with activities limited to those listed in Appendix B)

1. Certain projects have minimal potential to affect historic properties. The signatories to this Agreement agree that the activities listed in Appendix B, by their nature typically result in findings of “No Historic Properties Affected” (36 CFR 800.4(d)(1)).
2. The NHDOT may add additional activities to the list in Appendix B upon written notice to, and concurrence from, all parties to this Agreement, and the Agreement

will not need to be amended.

3. For all projects with activities limited to those listed in Appendix B, the NHDOT-BOE Cultural Resources Program shall ensure that a multidisciplinary approach is employed to initiate consultation, and identify and evaluate historic properties that may be affected, in accordance with the procedural requirements of 36 CFR 800.2, 36 CFR 800.3 and 36 CFR 800.4.
 - a. The project sponsor shall initiate the Section 106 process in accordance with the regulations at 36 CFR 800.3, including establishing whether there is an undertaking, coordinating with other reviews, planning to involve the public, and identifying and inviting other consulting parties, as appropriate.
 - b. The project sponsor shall coordinate with the public in accordance with Stipulation VI of this Agreement. Appendix E provides a list of typical organizations to consider as consulting parties.
 - c. The NHDOT-BOE Cultural Resources Program shall determine whether archaeological or aboveground surveys are needed, utilizing rationale that include, but are not limited to, the following:
 - i. The potential for the project to directly or indirectly impact the integrity of a potential historic property;
 - ii. Compromises to the physical integrity of a property more than 50 years old that could render it ineligible for the National Register;
 - iii. The degree of recent development and overall change within the APE;
 - iv. The density of potential historic properties in the area of the project;
 - v. Modifications to the project that can be made to avoid impacts to potential historic properties;
 - vi. The potential archaeological sensitivity within the APE; and
 - vii. Information from consulting parties and others with knowledge of, or concerns with, historic properties within the APE.
 - d. The NHDOT-BOE Cultural Resources Program shall assess potential impacts, including archaeological and aboveground sensitivity potential, to determine whether a project qualifies for processing under Appendix B. The project sponsor shall submit to the NHDOT-BOE Cultural Resources Program information required for the NHDOT-BOE Cultural Resources Program to

complete its assessment, including an Appendix B Certification Form, topographical maps, photographs, design plans, as-built plans (if available), and two (2) original “*Request for Project Review by the New Hampshire Division of Historical Resources for Transportation Projects*” forms (Transportation RPR). The NHDOT-BOE Cultural Resources Program may waive the requirement for submittal of a Transportation RPR for projects where NHDOT is the project sponsor.

- e. For all work that is proposed within a designated or potential historic district, the NHDOT-BOE Cultural Resources Program will review the activities to determine whether they have the potential to alter, either directly or indirectly, the characteristics that qualify, or may qualify, the historic district for listing in the National Register. The NHDOT-BOE Cultural Resources Program will gather additional information, as necessary for the review on the historic district, including, but not limited to, the National Register of Historic Places, SHPO records, town websites, as well as municipal master plans, and other municipal records, as appropriate. Designated districts will be noted on the Appendix B Certification Form/RPR. Potential districts shall be treated as eligible resources. To determine whether the activities have an effect on an historic district(s), the NHDOT Cultural Resources Program will consider the characteristics that qualify, or may qualify, the historic district for the National Register following guidance in National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation*.
- f. The NHDOT-BOE Cultural Resources Program shall ensure that the project sponsor undertakes archaeological and/or aboveground surveys, as warranted, for any property within the APE that may be affected by a project, and that may be eligible for listing in the National Register of Historic Places, as outlined below, and in accordance with Stipulation III of this Agreement.
 - i. Archaeological Phase IA surveys shall be conducted by the NHDOT-BOE qualified professional archaeologist, or qualified professional consulting archaeologist(s).
 - ii. Studies beyond Phase IA archaeological reviews, as recommended by the NHDOT Archaeological Standards and Guidelines, and the determination of National Register eligibility of archaeological sites shall follow Stipulation VII.D of this Agreement.
 - iii. Aboveground reviews shall be conducted by the NHDOT-BOE qualified professional architectural historian, or qualified professional consulting architectural historian(s).

- iv. As warranted, individual inventory or area forms shall be prepared in accordance with SHPO guidelines for properties within the APE in order to determine National Register eligibility.

Project sponsors may address multiple steps simultaneously.

4. Eligibility Findings

The NHDOT-BOE Cultural Resources Program shall conduct National Register of Historic Places eligibility findings in accordance with Stipulation VII.D.1 of this Agreement, and 36 CFR 800.4.

5. Effects Findings

For projects with activities that are limited to those listed in Appendix B, with or without the inclusion of any activities listed in Appendix A, the NHDOT-BOE Cultural Resources Program shall make a finding that the project results in No Potential to Cause Effects, or No Historic Properties Affected, as appropriate, on the Appendix B Certification Form, and maintain documentation in its files. The NHDOT-BOE Cultural Resources Program shall notify FHWA, and the SHPO of its use of the documentation on specific projects in an annual report to the signatories of this Agreement, as specified in Stipulation XI.

If a NHDOT-BOE Cultural Resources Program review under Stipulation VII.C determines that a project may affect (either adversely or not adversely) National Register-listed or eligible properties, or is not only limited to any one, or combination of, the activities listed in Appendix B, and thereby does not qualify for processing under Appendix B, with or without the inclusion of any activities listed in Appendix A, the NHDOT-BOE Cultural Resources Program shall utilize the Appendix B Certification Form to notify the project sponsor in writing that the project does not qualify for processing under Appendix B, and that the project will be reviewed in accordance with Stipulation VII.D of this Agreement, as appropriate.

All documents submitted by the NHDOT-BOE Cultural Resources Program to SHPO for review under this Agreement shall include the SHPO Review and Compliance number, if known, as well as a statement that the information is being submitted pursuant to a review under this Agreement.

Stipulation VII.D shall be followed for all projects for which adverse effects to historic properties cannot be avoided.

D. Projects Not Covered by Appendix A or Appendix B

For any project that either does not qualify for processing under Appendices A or B, or that includes within the APE, National Register-listed or eligible properties that the NHDOT-BOE Cultural Resources Program, in consultation with the SHPO, determines may be affected (either adversely or not adversely) by the project, as defined by criteria set forth in 36 CFR 800.5(a) and outlined in Stipulation IV.B of this Agreement, the NHDOT-BOE Cultural Resources Program shall review the project in accordance with this Stipulation.

1. Eligibility Findings

- a. NHDOT-BOE Cultural Resources Program staff shall apply the National Register Evaluation Criteria in consultation with the SHPO and other consulting parties, as appropriate, to assess the need for any additional investigation and determine National Register eligibility in accordance with 36 CFR 800.4, and Stipulation IV.B.
- b. If the APE may contain properties of traditional cultural and religious significance to Native American Tribes, or identified properties within the APE may be of interest to Tribes, consultation under this Agreement will cease, and FHWA will initiate consultation with appropriate Tribes pursuant to 36 CFR 800.2(c)(2), and Stipulation V of this Agreement.

2. Effects Findings

NHDOT will apply the Criteria of Adverse Effect to any historic properties, in consultation with the SHPO, and other consulting parties, as appropriate, in accordance with 36 CFR 800.5.

a. No Historic Properties Affected

For any project for which the NHDOT-BOE Cultural Resources Program finds, in consultation with the SHPO, that either there are no historic properties present in the APE, or there are historic properties present but the project will have no effect upon them, the NHDOT-BOE Cultural Resources Program shall make a finding of no historic properties affected pursuant to 36 CFR 800.4(d)(1).

b. No Adverse Effect

For any project for which the NHDOT-BOE Cultural Resources Program finds, in consultation with the SHPO, that the effects do not meet the criteria

of adverse effects outlined in 36 CFR 800.5(a)(1), or if the project is modified or conditions are imposed to avoid adverse effects, the NHDOT-BOE Cultural Resources Program shall make a finding of no adverse effect pursuant to 36 CFR 800.5(b).

The NHDOT shall include the following documentation in the project file:

- i. Any records on consultation;
- ii. Any records on efforts to identify historic properties;
- iii. Any findings of eligibility;
- iv. Any findings of effect; and
- v. Any records on resolving adverse effects.

c. Adverse Effect

For any project for which adverse effects to historic properties cannot be avoided, the NHDOT-BOE Cultural Resources Program will notify FHWA, and FHWA will take the Section 106 compliance lead, and notify the ACHP of the adverse effect and consult with the SHPO and other consulting parties in order to resolve adverse effects and conclude the Section 106 process in accordance with 36 CFR 800.6.

E. Changes to the Scope of a Project

Changes, or anticipated changes, to the design and/or scope of a project shall be coordinated with the NHDOT-BOE Cultural Resources Program. The NHDOT-BOE Cultural Resources Program staff shall be provided with sufficient information and time to allow for a complete reassessment of the modified project. As appropriate, the NHDOT-BOE Cultural Resources Program shall evaluate the revised project and alert the project sponsor as to whether:

1. The project continues to qualify for processing under Appendix A or Appendix B, as applicable,
2. Additional or revised certification forms are required for a complete and thorough reassessment, and/or
3. The project will be processed under Stipulation VII.D of this Agreement.

VIII. EMERGENCY SITUATIONS

For the purposes of this Agreement, emergencies are defined as occurrences that require emergency highway system and facility repairs that are necessary to 1) protect the life, safety, or health of the public; 2) minimize the extent of damage to the highway system and facilities; 3) protect remaining highway facilities; or 4) restore safe roadway travel. The following stipulations apply to emergency situations:

- A. Repairs to address emergency situations as defined above can occur regardless of funding category, and regardless of declarations made by federal, state, or local agencies.
- B. If the emergency repair project could affect historic properties, NHDOT-BOE's Cultural Resources Program staff shall notify the SHPO, the FHWA, and Tribes prior to any work taking place. The SHPO and any Tribe that may attach religious and cultural significance to historic properties likely to be affected will have 72 hours to respond.
- C. For projects where the repair must be made within the first 30 days of the occurrence of the event that caused the emergency or the declaration of the emergency by an appropriate authority, the processing of environmental documentation will happen concurrently or after the fact. In these cases, NHDOT will comply with the procedures in Stipulation VII of this Agreement to the extent possible, but the reviews will likely be conducted after the emergency work is completed.
- D. For projects taking longer than 30 days for repair, NHDOT will comply with the procedures in Stipulation VII.
- E. Written notification of an emergency action shall be provided to the SHPO. The notice shall be clearly and prominently marked as an emergency notification, and shall include an explanation of how the action meets the requirements for emergency as defined herein. The notice shall also include a brief description of the eligibility and/or significance of the resource(s) involved, the nature, effect, and anticipated effect of the emergency action on the resource(s), dated photograph(s) if available, and the anticipated time frame available for comment.

IX. POST-REVIEW AND UNANTICIPATED DISCOVERIES

- A. Planning for Subsequent Discoveries

When NHDOT's reasonable and good faith identification efforts indicate that historic properties are likely to be discovered during implementation of a project, NHDOT shall include in any environmental document, contract, and specifications a plan for discovery of such properties. Implementation of the plan as originally proposed, or modified as necessary owing to the nature and extent of the properties discovered, will be in

accordance with 36 CFR 800.4-6

B. Unanticipated Discoveries Without Prior Planning

1. If previously unidentified archaeological or historic properties, or unanticipated effects, are discovered after NHDOT has completed its review under this Agreement, that portion of the project will stop immediately.
2. No further construction in the area of discovery will proceed until the requirements of 36 CFR 800.13 have been satisfied, including consultation with Tribes that may attach traditional cultural and religious significance to the discovered property.
3. NHDOT will consult with SHPO and Tribes, as appropriate, to record, document, and evaluate National Register eligibility of the property and the project's effect on the property, and to design a plan for avoiding, minimizing, or mitigating adverse effects on the eligible property.
4. If neither the SHPO nor a Tribe files an objection within 72 hours of NHDOT's plan for addressing the discovery, NHDOT may carry out the requirements of 36 CFR 800.13 on behalf of FHWA, and the ACHP does not need to be notified.

X. IDENTIFICATION AND TREATMENT OF HUMAN REMAINS

In the event that human remains are identified prior to, or during construction, that portion of the project shall stop immediately, and the area shall be protected and the project sponsor shall immediately notify the county medical examiner pursuant to NH RSA 227-C:8-a. If the remains are determined to be the responsibility of the State Archaeologist, the project sponsor will develop a treatment plan in consultation with NHDOT-BOE Cultural Resources Program, FHWA and the SHPO. Any human remains discovered on non-federal lands shall be guided by NH RSA 227-C:8-a through 8-g. If it is determined that the human remains are associated with Native American occupation, FHWA and NHDOT shall immediately consult with any federally recognized Native American Tribe or Tribes that may ascribe traditional cultural and religious significance to the remains. Native American human remains discovered on federal or tribal lands shall be treated in accordance with the Native American Graves Protection and Repatriation Act (P.L. 101-106). If the human remains are determined not to be associated with Native American occupation, the provisions of NH RSA 227-C:8-e through 8g shall govern.

XI. MONITORING AND REPORTING

- A. NHDOT-BOE, FHWA, and SHPO shall meet annually after the date this Agreement takes effect to evaluate the agencies' joint functioning under this Agreement, and identify

actions needed to advance long-term planning goals. Prior to any such meetings, the ACHP shall be notified and may participate at its discretion. Prior to the annual evaluations NHDOT-BOE shall submit a report of the current activities under this Agreement to FHWA, SHPO, and ACHP. This report shall include, but is not limited to:

1. A table identifying all projects processed under this Agreement, specifying project names, state and federal numbers, towns, any other pertinent information, and all findings pursuant to 36 CFR Part 800 that were processed by NHDOT-BOE for the year under review, and
 2. A narrative description summarizing accomplishments, trends, concerns, resource needs, recommendations, etc., regarding any aspect of this Agreement.
- B. FHWA shall undertake a program review of the provisions of this Agreement no more than every five (5) years after the date of execution of this Agreement to ensure that the Agreement is working as intended. The monitoring effort shall consist of a review of project records and interviews of staff at NHDOT, SHPO, as well as interviews with other consulting parties.

XII. DISPUTE RESOLUTION

- A. Should any signatory party object in writing to FHWA regarding the manner in which the terms of this Agreement are carried out, FHWA will immediately notify the other signatory parties of the objection and proceed to consult with the objecting party to resolve the objection. FHWA will honor the request of any signatory party to participate in the consultation and will take any comments provided by such parties into account. The FHWA shall establish a reasonable time frame for such consultations.
- B. If the SHPO or another consulting party objects to a NHDOT eligibility finding pursuant to 36 CFR 800.4(c) and Stipulation IV.B of this Agreement, NHDOT will work to resolve the objection through consultation. If NHDOT is able to resolve the objection, the disputed action will proceed in accordance with the terms of the resolution. If NHDOT is unable to resolve the objection, the objection will be referred to FHWA who will follow the requirements of 36 CFR 800.4(c)(2) and 36 CFR Part 63 to resolve the objection.
- C. If the SHPO or another consulting party objects to a NHDOT effect finding pursuant to 36 CFR 800.5 and Stipulation IV.B of this Agreement, NHDOT will work to resolve the objection through consultation. If NHDOT is able to resolve the objection, the disputed action will proceed in accordance with the terms of such resolution. If NHDOT is unable to resolve the objection, the objection will be referred to FHWA who will follow the requirements of 36 CFR 800.5(c)(2) to resolve the objection.

- D. FHWA shall provide all other signatory parties to this Agreement with a written copy of its final decision regarding any objection addressed pursuant to this stipulation.
- E. FHWA may authorize any action subject to objection under this stipulation to proceed, provided the objection has been resolved in accordance with the terms of this stipulation.
- F. At any time during implementation of the terms of this Agreement, should any member of the public raise an objection in writing pertaining to such implementation to any signatory party to this Agreement, that signatory party shall immediately notify FHWA. FHWA shall immediately notify the other signatory parties in writing of the objection. Any signatory party may choose to comment on the objection to FHWA. FHWA shall establish a reasonable time frame for this comment period. FHWA shall consider the objection, and in reaching its decision, FHWA will take all comments from the other parties into account. Within 15 days following closure of the comment period, FHWA will render a decision regarding the objection and respond to the objecting party. FHWA will promptly notify the other parties of its decision in writing, including a copy of the response to the objecting party. FHWA's decision regarding resolution of the objection will be final. Following the issuance of its final decision, FHWA may authorize the action subject to dispute hereunder to proceed in accordance with the terms of that decision.

XIII. AMENDMENT

- A. Any signatory party to this Agreement may at any time propose amendments, whereupon all signatory parties shall consult to consider such amendment. This Agreement may be amended only upon written concurrence of all signatory parties.
- B. Each attachment to this Agreement may be individually amended through consultation of the signatory parties without requiring amendment of the Agreement, unless the signatory parties through such consultation decide otherwise.

XIV. TERMINATION

- A. Any signatory party may terminate this agreement. If this Agreement is not amended as provided for in Stipulation XIII, or if any signatory party proposes termination of this Agreement for other reasons, the party proposing termination shall notify the other signatory parties in writing, explain the reasons for proposing termination, and consult with the other parties for no more than 30 days to seek alternatives to termination.
- B. Should such consultation result in an agreement on an alternative to termination, the signatory parties shall proceed in accordance with that agreement.
- C. Should such consultation fail, the signatory party proposing termination may terminate

this Agreement by promptly notifying the other parties in writing.

- D. Should this Agreement be terminated, FHWA would carry out the requirements of 36 CFR Part 800 for individual projects.
- E. Beginning with the date of termination, FHWA shall ensure that until and unless a new Agreement is executed for the actions covered by this Agreement, such projects shall be reviewed individually in accordance with 36 CFR Part 800.

XV. CONFIDENTIALITY

All parties to this Agreement acknowledge that information about historic properties, potential historic properties, or properties considered historic for purposes of this Agreement are, or may be, subject to the provisions of Section 304 of the NHPA. Section 304 allows FHWA to withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if NHDOT or SHPO recommends to FHWA that disclosure may 1) cause a significant invasion of privacy; 2) risk harm to the historic resource; or 3) impede the use of a traditional religious site by practitioners. Having so acknowledged, all parties to this Agreement will ensure that all actions and documentation prescribed by this Agreement are, where necessary, consistent with the requirements of Section 304 of the NHPA.

XVI. TRANSITION

This Agreement shall become effective upon the date of its execution by all parties. Any projects where the Section 106 process has started prior to the signing of this document may follow the process outlined in 36 CFR Part 800, the earlier Programmatic Agreement signed on November 26, 2014, or this Programmatic Agreement, as appropriate.

XVII. DURATION OF AGREEMENT

This Agreement shall remain in effect for a period of five (5) years after the date it takes effect, unless it is terminated prior to that time pursuant to Stipulation XIV of this Agreement. This Agreement shall be reviewed by all parties on an annual basis for modification or termination in accordance with Stipulation XI. If no changes are proposed and no party objects within the first five (5) year term, the term of the Agreement shall be extended automatically for another five (5) years without re-execution.

SIGNATURES

Execution and implementation of this agreement evidences that FHWA has delegated certain Section 106 responsibilities to NHDOT, and has afforded ACHP a reasonable opportunity to comment on the Program and its individual projects in NH; that FHWA has taken into account the effects of the Program and its individual projects on historic properties, and that FHWA has complied with Section 106 of the NHPA and 36 CFR Part 800 for the Program and its individual projects.


The parties hereby acknowledge and reaffirm their commitment to perform all duties set forth in this Agreement.

This Agreement may be executed in counterparts, with a separate page for each signatory. The FHWA shall ensure that each party is provided with a copy of the fully executed Agreement.

(This page left blank for printing purposes)

Programmatic Agreement Regarding Transportation Projects in New Hampshire

Federal Highway Administration, New Hampshire Division

By: 
Patrick A. Bauer
Division Administrator

8-8-18
(date)

(This page left blank for printing purposes)

Programmatic Agreement Regarding Transportation Projects in New Hampshire

New Hampshire Division of Historical Resources

By: Elizabeth H. Muzzey
Elizabeth H. Muzzey
State Historic Preservation Officer

8/6/18
(date)

(This page left blank for printing purposes)

Programmatic Agreement Regarding Transportation Projects in New Hampshire

Advisory Council on Historic Preservation

By: John M. Fowler
John M. Fowler
Executive Director

8/24/18
(date)

(This page left blank for printing purposes)

Programmatic Agreement Regarding Transportation Projects in New Hampshire

New Hampshire Department of Transportation

By: Victoria F. Sheehan
Victoria F. Sheehan
Commissioner

8/7/18
(date)

(This page left blank for printing purposes)

APPENDIX A

ACTIVITIES WITH NO POTENTIAL TO CAUSE EFFECTS TO HISTORIC PROPERTIES, AND APPENDIX A CERTIFICATION FORM

NHDOT-BOE, SHPO, and FHWA have jointly concurred that, based on their past experience, the following activities typically have no appreciable potential to cause effects to properties eligible for, or listed in, the National Register of Historic Places, pursuant to 36 CFR 800.3.

In accordance with Stipulation VII.B of this Agreement, the NHDOT-BOE Cultural Resources Program may determine that a project qualifies for processing under this appendix as one with no potential to cause effects.

To be applicable, a project shall be limited to any combination of the activities specified below.

Projects qualifying for processing under this appendix shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with Stipulation VII.B of this Agreement. In addition, these projects shall occur within the existing right-of-way. Easements needed for work shall either be temporary or for the purpose of perpetuating existing conditions, such as access or drainage.

1. Areas where the work is an in-kind replacement of modern facilities including driveway reconstruction, and re-installation of utilities.
2. Equipment and supply purchase and maintenance (vehicles, computers, brochures, etc.).
3. Pavement marking/stripping.
4. Crack sealing.
5. Pavement grinding, rehabilitation and resurfacing, including driveway aprons, provided there are no impacts below the roadway select materials.
6. Shoulder leveling and reconstruction, provided leveling material does not extend beyond 24" from the existing edge of pavement.
7. Installation of speed bumps, and speed tables.
8. Signal timing/program upgrades, with no ground disturbance.
9. Sign replacement when they are replaced in the same area.
10. Upgrades to lighting technology (i.e. fluorescent bulbs to LED bulbs).
11. Application of herbicide.
12. Planting of wildflowers.
13. Mowing and brush removal (does not include tree removal).
14. Bridge maintenance and repair on bridges less than 50 years old.

15. Bridge painting (regardless of the age of the bridge provided that the paint color is not changing).
16. Bridge washing and sealing when conducted in accordance with NHDOT EHS Procedure – 01 (Appendix D).
17. Culvert and catch basin clean out.
18. Maintenance of sound walls.
19. Improvements to existing maintenance facilities, rest areas, weigh stations and park-and-rides less than 50 years old, provided there is no expansion of the facility and no additional lighting.
20. Installation of median barriers when conducted within the New Hampshire interstate system (excluding the Franconia Notch State Parkway).
21. Installation of new roadway signs when conducted within the New Hampshire interstate system (excluding the Franconia Notch State Parkway).
22. Installation of new and replacement guardrail when conducted within the New Hampshire interstate system (excluding the Franconia Notch State Parkway).
23. Grading to re-establish slopes, seeding and the removal of accumulated sediment from ditches and other drainage features.
24. Rock scaling and/or blasting.
25. Street sweeping.
26. Routine maintenance of manmade stormwater treatment features and related infrastructure.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix A Certification – Activities with No Potential to Cause Effects

Date Reviewed: (Desktop or Field Review Date)	Click here to enter a date.	Approved by:	_____
			NHDOT Cultural Resources Staff
Project Name:	Click here to enter text.	Approval date:	
State Number:	Click here to enter text.	FHWA Number:	Click here to enter text.
Environmental Contact:	Click here to enter text.	DOT	
Email Address:	Click here to enter text.	Project Manager:	Click here to enter text.
Project Description:	Click here to enter text.		

Please select any combination of the following activities:

<input type="checkbox"/>	Areas where the work is an in-kind replacement of modern facilities including driveway reconstruction, and re-installation of utilities.
<input type="checkbox"/>	Equipment and supply purchase and maintenance (vehicles, computers, brochures, etc.).
<input type="checkbox"/>	Pavement marking/stripping.
<input type="checkbox"/>	Crack sealing.
<input type="checkbox"/>	Pavement grinding, rehabilitation and resurfacing, provided there are no impacts below the roadway select materials.
<input type="checkbox"/>	Shoulder leveling and reconstruction, provided leveling material does not extend beyond 24" from the existing edge of pavement.
<input type="checkbox"/>	Installation of speed bumps, and speed tables.
<input type="checkbox"/>	Signal timing/program upgrades, with no ground disturbance.
<input type="checkbox"/>	Sign replacement when they are replaced in the same area.
<input type="checkbox"/>	Upgrades to lighting technology (i.e. fluorescent bulbs to LED bulbs).
<input type="checkbox"/>	Application of herbicide.
<input type="checkbox"/>	Planting of wildflowers.
<input type="checkbox"/>	Mowing and brush removal (does not include tree removal).
<input type="checkbox"/>	Bridge maintenance and repair on bridges less than 50 years old.
<input type="checkbox"/>	Bridge painting (provided that the bridge is less than 50 years old, and the paint color is not changing).
<input type="checkbox"/>	Bridge washing and sealing when conducted in accordance with NHDOT EHS Procedure – 01 (Appendix D).
<input type="checkbox"/>	Routine roadway maintenance, including culvert and catch basin clean out, and as street sweeping.
<input type="checkbox"/>	Maintenance of sound walls.
<input type="checkbox"/>	Improvements to existing maintenance facilities, rest areas, weigh stations and park-and-rides less than 50 years old, provided there is no expansion of the facility and no additional lighting.
<input type="checkbox"/>	Installation of new or replacement guardrail, and/or median barriers within the New Hampshire interstate system (excluding the Franconia Notch State Parkway).
<input type="checkbox"/>	Installation of new roadway signs, within the New Hampshire interstate system (excluding the Franconia Notch State Parkway).
<input type="checkbox"/>	Grading to re-establish slopes, seeding and the removal of accumulated sediment from ditches and other drainage features.
<input type="checkbox"/>	Routine maintenance of stormwater treatment features and related infrastructure

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix A Certification – Activities with No Potential to Cause Effects

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption that a project is limited to the activities listed in Appendix A until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT Bureau of Environment Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*.

All projects shall occur within the existing right-of-way. Easements needed for work shall either be temporary or for the purpose of perpetuating existing conditions, such as access or drainage. If any portion of the undertaking is not entirely limited to any one or a combination of the types specified in Appendix A, please continue discussions with NHDOT Cultural Resources staff.

Should project plans change, please inform the NHDOT Cultural Resources Program staff in accordance with Stipulation VII.E of the Programmatic Agreement.

This No Potential to Cause Effects project determination is your Section 106 finding, as defined in the Programmatic Agreement. No further coordination is necessary.

APPENDIX B

ACTIVITIES WITH MINIMAL POTENTIAL TO CAUSE EFFECTS, AND APPENDIX B CERTIFICATION FORM

NHDOT-BOE, SHPO, and FHWA have jointly concurred that, based on their past experience, the following activities typically result in findings of “No Potential to Cause Effects” (36 CFR 800.3), or “No Historic Properties Affected” (36 CFR 800.4(d)(1)).

In accordance with Stipulation VII.C of this Agreement, the NHDOT-BOE Cultural Resources Program may determine that a project qualifies for processing under this appendix as one with minimal potential to cause effects.

To be applicable, a project shall be limited to any of the activities specified below (with, or without the inclusion of any activities listed in Appendix A).

These activities shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with Stipulation VII.C of this Agreement.

Projects that are located within known or potential historic districts shall be reviewed in accordance with the procedures relative to work in historic districts outlined in Stipulation VII.C.3.c.

Highway and Roadway Improvements

1. Modernization and general highway maintenance **that may require additional highway right-of-way or easement**, including:
 - a. Sidewalk reconstruction.
 - b. Crosswalk installation/replacement.
 - c. Lighting replacement.
 - d. Ditching, provided excavation does not exceed 24” and is not located within 25’ of a cemetery.
 - e. Median barrier installation.
 - f. Installation of solar or alternative energy devices.
 - g. Placement of riprap and/or other erosion control measures to prevent erosion of waterway banks and bridge piers, provided no excavation is required.
 - h. Removal of trees, as part of roadway improvements.
 - i. Landscaping, including weeding, thinning, in-kind replacement of existing specimens, and shallow bed preparation in areas previously landscaped within the existing right-of-way.

- j. Construction of wetland mitigation areas in previously disturbed areas of the roadway right-of-way.
 - k. Construction of turning lanes and pockets, auxiliary lanes (e.g. truck climbing, acceleration and deceleration lanes) and shoulder widening where only placement of fill material is involved, or within an area previously disturbed by vertical and horizontal construction activities.
2. Installation of rumble strips or rumble stripes.
 3. Installation or replacement of pole-mounted signs.
 4. Guardrail replacement.
 5. Rehabilitation or replacement of existing storm drains.

Bridge and Culvert Improvements

6. Bridge approach rail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension.
7. Culvert replacement (excluding stone box culverts), when the culvert is less than 60” in diameter and excavation for replacement is limited to previously disturbed areas.
8. Bridge deck preservation and replacement, as long as no character defining features are impacted.
9. Non-historic bridge and culvert maintenance, renovation, or total replacement, **that may require minor additional right-of-way or easement**, including:
 - a. Replacement or maintenance of non-historic bridges.
 - b. Installation of vandal fencing, vandal protection lighting and/or cameras, suicide fencing, and/or suicide netting.
 - c. Bridge painting.
10. Historic bridge maintenance activities within the limits of existing right-of-way, including:
 - a. Installation of load and height restriction barriers.
 - b. Concrete patching with compatible materials and concrete sealing.
 - c. Placement of riprap and channel work.
 - d. Maintenance of drainage features, including but not limited to scupper repair.
 - e. Replacing or repair of expansion joints and sealing deck joints.
 - f. In-kind railing and approach rail replacement or repair.
 - g. Electrical/mechanical upgrades.
 - h. Installing fire prevention systems on covered bridges.
 - i. In-kind repair or replacement of covered bridge roof material
 - j. Surface preparation and painting to preserve critical members in the salt zone.
 - k. Bridge painting.
 - l. Installation of culvert inverts or slip-lining

11. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions).

Bicycle and Pedestrian Improvements

12. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.
13. Installation of bicycle racks.
14. Recreational trail construction.
15. Recreational trail maintenance when done on existing alignment.
16. Construction of bicycle lanes, and shared use paths and facilities within the existing right-of-way.

Railroad Improvements

17. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, **provided no historic railroad features are impacted**, including, but not limited to:
 - a. Closure of existing railroad crossings.
 - b. Signal box upgrades.
 - c. Rail bed maintenance.
 - d. Lighting upgrades to modern standards provided.
18. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old).
19. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted.

Other Improvements

The following types of undertakings involve facility modernization and property acquisitions:

20. Installation of Intelligent Transportation Systems.
21. Acquisition or renewal of scenic, conservation or other habitat or land preservation easements where no construction activities will occur.

(This page left blank for printing purposes)

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: Click here to enter a date.
(Desktop or Field Review Date)

Project Name: Click here to enter text.

State Number: Click here to enter text.

FHWA Number: Click here to enter text.

Environmental Contact: Click here to enter text.

DOT

Email Address: Click here to enter text.

Project Manager: Click here to enter text.

Project Description: Click here to enter text.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
<input type="checkbox"/>	1. Modernization and general highway maintenance <u>that may require additional highway right-of-way or easement</u> , including: Choose an item. Choose an item.
<input type="checkbox"/>	2. Installation of rumble strips or rumble stripes
<input type="checkbox"/>	3. Installation or replacement of pole-mounted signs
<input type="checkbox"/>	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
<input type="checkbox"/>	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
<input type="checkbox"/>	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
<input type="checkbox"/>	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, <u>that may require minor additional right-of-way or easement</u> , including: Choose an item. Choose an item.
<input type="checkbox"/>	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
<input type="checkbox"/>	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
<input type="checkbox"/>	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
<input type="checkbox"/>	11. Installation of bicycle racks
<input type="checkbox"/>	12. Recreational trail construction
<input type="checkbox"/>	13. Recreational trail maintenance when done on existing alignment
<input type="checkbox"/>	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	
<input type="checkbox"/>	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, <u>provided no historic railroad features are impacted</u> , including, but not limited to: Choose an item. Choose an item.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

<input type="checkbox"/>	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
<input type="checkbox"/>	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
<input type="checkbox"/>	18. Installation of Intelligent Transportation Systems
<input type="checkbox"/>	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
<input type="checkbox"/>	20. Rehabilitation or replacement of existing storm drains.
<input type="checkbox"/>	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

Click here to enter text.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	Choose an item.	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	Click here to enter text.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

<input type="checkbox"/>	No Potential to Cause Effects	<input type="checkbox"/>	No Historic Properties Affected
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
<input type="checkbox"/>	This project does not comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.		
NHDOT comments:			
_____		_____	
NHDOT Cultural Resources Staff		Date	

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

APPENDIX C

DEFINITIONS FOR KEY TERMS USED IN THIS AGREEMENT

Aboveground resources means historic buildings, structures, sites, objects and districts that are included in, or eligible for inclusion in, the National Register of Historic Places.

Area of Potential Effects (APE) means the geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)).

Clean out means the removal of accumulated environmental material, such as leaf litter, sand, gravel, and woody debris, either by hand or machine, that does not require excavation into the existing surface of the ground.

Historic District means any resource that possesses a significant concentration, linkage or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Link to the guidance on the National Park Service website: <https://www.nps.gov/nr/publications/bulletins/nrb15/INDEX.htm>.

Historic property (also referred to as historic resource) means any Pre-Contact or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to a Native American tribe or Native Hawaiian organization and that meet the National Register criteria.

In-kind replacement means the substitution of a new structure for an existing structure in the same location and with like materials, so that there are no impacts to the environment beyond the footprint of the original structure, beyond those required for construction, and that cannot be returned to the pre-construction condition.

LPA means Local Public Agency.

Maintenance and repair means a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without significantly increasing the structural capacity).

Modern facility means a man-made structure or infrastructure that is less than 50 years old. It is assumed that roadways and their select materials are all modern facilities for the purposes of this Agreement.

No Historic Properties Affected means a finding that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in 36 CFR 800.16(i).

No Potential to Cause Effects means a finding that the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present.

Project Sponsor means the recipient of Program funds, including but not limited to NHDOT or a LPA; to develop, improve, and enhance New Hampshire's transportation network. The project sponsor is responsible for planning, programming, environmental investigation, design, right-of-way acquisition, construction (including inspection), and documentation management for projects. The project sponsor must ensure that staff, consultants, and contractors comply with applicable State and Federal laws, regulations, and procedures in developing and constructing a project.

Reconstruction means to rebuild an existing roadway system and its appurtenances with new materials in order to improve the function and condition of the system. Reconstruction may or may not require modifications to the size and configuration of the existing system.

Rehabilitation means structural enhancements with new materials in order to extend the service life of an existing roadway system and its appurtenances.

Replacement means substitution of a new structure for an existing structure, which may require a change in size, dimension, location, and configuration, in order to improve the function and condition of a roadway system.

Pavement resurfacing means any number of physical alterations to a roadway surface designed to enhance the condition of pavement in order to preserve a transportation system, and retard future deterioration. Resurfacing may or may not require slight additions of material to the edge of the new pavement in order to eliminate drop off pavement edges (i.e. shoulder leveling).

Qualified Professional is a person who meets the relevant standards outlined in the Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated] (http://www.nps.gov/history/local-law/arch_stnds_9.htm).

Select materials means the engineered layers of sand, gravel, and crushed gravel, or other sub-pavement materials, upon which pavement sits.

Transportation RPR is the document required by the State Historic Preservation Office in New Hampshire to initiate a review of an undertaking pursuant to Section 106 of the National Historic Preservation Act or NH RSA 227-C:9. A Transportation RPR, formally referred to as a *“Request for Project Review by the New Hampshire Division of Historical Resources for Transportation Projects,”* may be found by visiting the NH Division of Historical Resources website at: <http://www.nh.gov/nhdhr/review/rpr.htm>.

Undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including A) those carried out by or on behalf of the agency; B) those carried out with Federal financial assistance; C) those requiring a Federal permit, license, or approval; and D) those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency. {16 U.S.C. Section 470w(7) (1994)}

(This page left blank for printing purposes)

APPENDIX D

**NHDOT BUREAU OF BRIDGE MAINTENANCE EHS PROCEDURE – 01, TITLE: WASHING
AND SEALING OF BRIDGES**

(This page left blank for printing purposes)

Title: Washing and Sealing of Bridges

- 1.0 PURPOSE:** Washing and sealing of bridges are preventative maintenance methods performed by Bridge Maintenance on an annual basis in order to protect bridges against salt corrosion and surface spalling.
- 2.0 SCOPE:** To define proper procedures for washing and sealing operations so that no adverse affects on the environment, the health and safety of the traveling public and construction crews occurs.
- 3.0 RESPONSIBILITIES:**
- 3.1 Superintendents of Construction Crews**
- Ensure that employees who are involved in these procedures understand the application methods and are aware of the hazards associated with these methods.
 - Coordinate annual preventative maintenance schedule with the Maintenance and Construction Engineer and Senior Engineer in order to ensure the proper method(s) are applied.
 - Ensure that all product drums are stored, handled and transported in accordance with internal procedures, as well as any state, local or federal regulation(s).
 - Ensure that any full, partially used and empty product drums are properly stored and handled until such a time as to be picked up or transported back to the Franklin Yard.
- 3.2 Maintenance and Construction Engineer**
- Ensure that funding for materials, products and equipment is available.
 - Ensure that personal protective equipment, spill kit equipment, products and any other materials or accessories needed for these methods are in stock and available when needed.
- 3.3 Superintendent of Warehouse (Franklin Yard)**
- Ensure that warehouse employees understand the proper storage, handling and transporting requirements of all products under its control.
 - Ensure that warehouse employees are trained and use best management practices when handling and transporting products under its control to its destination place.
- 3.4 Safety & Environmental Coordinator**
- Develop, implement and train employees on procedures, job hazard analysis pertaining to washing and sealing operations.
 - Ensure that employees are medically cleared and fit tested for respirator use.
 - Train and educate employees on the proper storage, handling and transporting of materials and/or products associated with these procedures.
 - Train and educate employees on proper cleanup and disposal methods if materials and/or products are released into the surface and/or waterway.

Title: Washing and Sealing of Bridges

4.0 RECORDS:

- 4.1 Request for Waiver(s) of NH Code of Administrative Rules Chapter Env-A 4200 AIM dated May 2008 and June 2008.
- 4.2 MSDS (Material Safety Data Sheets) Silane-Siloxane a/k/a Vexcon (product and manufacturer will vary from year to year).
- 4.3 JHA (Job Hazard Analysis) for Washing and Sealing Procedures.
- 4.4 Best Management Practice for handling and transporting regulated substances or materials.

5.0 PROCEDURE:

5.1 Washing Bridges

- 5.1.1 Prior to washing, crews will sweep sand, debris and sediment contaminants. Arrangements for a Bobcat or other equipment can be scheduled to assist with this task.
- 5.1.2 Crews will work with Highway Maintenance sheds and encourage them to assist with bridge cleaning.
- 5.1.3 Sweepings will be removed by hand using shovels, wheelbarrows or bobcat buckets and placed off the roadway shoulder. Large amounts of sweepings will be spread out along roadway shoulder.
 - Sweepings will not be swept into open deck drains or over the edge of the bridge.
- 5.1.4 Water hose nozzles will be aimed in such a manner that overspray into surface waters is kept to a minimum (water pressure out of nozzle will be no greater than 50psi).
- 5.1.5 Water will be aimed along the curb line to wash any accumulated sand/salt buildup normally following the downward slope of the bridge.
- 5.1.6 To the extent practicable, residual wash water will be diverted to upland areas (i.e. over embankments into vegetated areas or into catch basins) so that sediments may settle out prior to reaching the waterway.
- 5.1.7 Wash water will be diverted as much as possible around open deck drains that discharge directly into open water.
- 5.1.8 Washing of bridges will continue to be scheduled on structures over waterways during the springtime to coincide with high-flow periods or during other high-flow periods following storm events.
 - Interference with step 5.1.8 washing operations may occur due to bridge repair priorities, amount of setup preparation and equipment needed elsewhere.
- 5.1.9 Any debris or wet sweepings left after washing procedures will be removed by hand using shovels, wheelbarrows or bobcat buckets and placed off shoulder of roadway.

5.2 Sealing Bridges

- 5.2.1 Products will be used in accordance with any applicable local, state or federal regulations as they pertain to surface water quality or best management practice

Title: Washing and Sealing of Bridges

- regulations of the Department or asserted by the Department of Environmental Services.
- 5.2.2 The products used for sealing bridges are based on the age of the bridge and /or concrete structures.
- Silane-Siloxane a/k/a Vexon (product and manufacturer will vary from year to year) is applied to new concrete structures and is used on construction where silane has previously been applied.
- 5.2.3 Prior to applying silane-siloxane products, employees will be educated, trained and aware of the hazards associated with this procedure to include, but not limited to:
- 5.2.3.1 MSDS's (Material Safety Data Sheets) on products being used.
 - 5.2.3.2 Health and Safety Hazards as they pertain to worker(s). Required personal protective equipment to be worn while applying these products.
 - 5.2.3.3 Environmental Hazards as they pertain to surface waters and/or spill release response corrective actions while applying these products.
 - 5.2.3.4 Proper equipment needed for applying these products while over or adjacent to surface waters.
 - 5.2.3.5 Proper disposal methods of contaminated materials and/or equipment.
- 5.2.4 Silane-siloxane products will be applied to the following bridge structures:
- 5.2.4.1 To all new concrete construction.
 - 5.2.4.2 To all existing concrete elements subject to deicing chemicals and sand buildup.
 - Abutments – adjacent structures of bridges.
 - Wings or curtain walls – side structure of bridges.
 - Curbs and/or Sidewalks – typically associated with guardrail overhang.
 - Not applied to vertical surfaces over water.
- 5.2.5 Silane-siloxane is typically applied using a two and a half gallon hand pump sprayer allowing workers to control the amount of pressure to the wand prior to releasing material.
- 5.2.6 The material can be applied by using a gasoline powered pump which feeds directly from a 55 gallon drum to a hose and nozzle designed for low pressure (less than or equal to 20psi).
- 5.2.7 All equipment used to perform this application will be checked to ensure that no equipment failure should pose a risk to the health and safety of the workers and/or material release into the environment. All equipment will be handled, stored and cared for properly in order to maintain good working condition.
- 5.2.8 Each crew will be equipped with chemical skimming booms and chemical absorbent mat pads for emergency response should a spill release occur.
- 5.2.9 Each crew will be equipped with a metal container with a tight fitting lid in order to properly store and transport contaminated or used rags while sealing.
- 5.2.10 A deflector shield will be used while applying silane-siloxane to the horizontal surface of the bridge curbs. This shield is used during the application process to

Title: Washing and Sealing of Bridges

Revision #: 2

Revised Date: 4/13/2011

JLMC Approved: 4-27-09

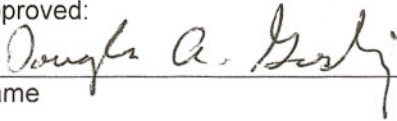
prevent any overspray or splashed material from going over the edge of the structure.

- 5.2.11 Spray application is preferred, however roller application can be used as another precautionary method to avoid dripping material off the edge of the bridge into the water.
- 5.2.12 The vertical outside surfaces of bridges will not be treated over any surface water.
 - This will directly reduce the chance of material from dripping off the edge of the bridge and into the water.
- 5.2.13 No sealing operations will be performed during windy conditions (above 10mph). No sealing operations will be performed if rainfall is imminent.
 - Product requires 24 hours of clean, dry conditions before, and 3-5 hours after application.
- 5.2.14 The management of leftover materials from sealing operations are as follows:
 - 5.2.14.1 All silane-siloxane drums (full, partially full or empty) must be transported back to the Franklin Yard.
 - 5.2.14.2 Franklin-Crew 13 will consolidate what is left inside each drum, crush and recycle the drums.
 - 5.2.14.3 When each crew has completed sealing, they need to ensure that the used rags are disposed of properly.
 - Used rags are allowed to lie or hang flat to dry.
 - After rags are completely dry, they can be disposed of with regular trash.

6.0 REFERENCES:

- 6.1 NH Code of Administrative Rules Env-A 4200
- 6.2 40 CFR EPA (Environmental Protection Agency)
- 6.3 NH Department of Environmental Services
 - Surface Water Quality Bureau
 - Hazardous Waste Management Division
 - Air Resource Division
- 6.4 AASHTO (American Association & State Highway Transportation Officials) Specifications

REVISION AND APPROVAL HISTORY:

Approved:  Name	4/14/11 Date	REVISION #: 2	DATE: 4-13-2011
Title: Bureau Administrator		SUPERSEDES EDITION: Original	Original dated: 8/29/2008

APPENDIX E

ORGANIZATIONS/AGENCIES THAT SHOULD BE CONSIDERED WHEN INVITING CONSULTING PARTIES DURING THE PUBLIC INVOLVEMENT PROCESS

The following are ideas for organizations/entities that should/could be invited to be Consulting Parties if project proponents' research finds they are applicable in the areas of their undertakings. The list is not comprehensive and not all may be applicable for every undertaking, but it can give a starting place for compiling a list for undertakings.

- Heritage Commissions
- Historic District Commissions
- Planning Commissions
- Conservation Commissions
- Agricultural Commissions
- Energy Commissions
- Historical Societies
- Native American organizations/tribes http://www.nh.gov/nhdhr/review/tribal_list.htm;
<http://www.nh.gov/nhdhr/review/thpo.htm>
- Local governments
- Property owners within the area of the undertaking
- Political representatives for the area of the undertaking
- Neighborhood associations
- Local, state, or national preservation groups, such as NH Preservation Alliance and National Trust for Historic Preservation
- Local, state, or national groups related to specific types of resources, such as historic bridges

(This page left blank for printing purposes)

Appendix F

Driveway Access Permit Application

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

District 1, 641 Main St, Lancaster, NH 03584
District 2, 8 Eastman Hill Road, Enfield, NH 03748
District 3, 2 Sawmill Rd, Gilford, NH 03249

District 4, 19 Base Hill Road, Swanzey, NH 03446
District 5, 16 East Point Drive, Bedford, NH 03110
District 6, PO Box 740, Durham, NH 03824

APPLICATION FOR DRIVEWAY PERMIT

Pursuant to the provisions of Revised Statutes Annotated, Chapter 236, Section 13 (printed on reverse of application) and amendments thereto, and Declaratory Ruling 2000-01, permission is requested to: (select one): Construct / Alter (Indicate quantity of) _____ driveway entrance(s) to my property on the (select): North / South / East / West side of NH Route _____ or Street/Road: _____ In the Town of _____ at a location which will meet the requirements for safety specified in said statutes.

The driveway entrance(s) requested is (are) for access to: _____ Residence, Industry, Business, Subdivision, Other

Describe nature and size of industry, business or subdivision: _____ Feet (select): North / South / East / West of Utility Pole Number: _____ Feet (select Feet or Miles): North / South / East / West of Road or Junction: _____

Town Tax Map # _____ and Lot # _____

As the landowner (or designated applicant) I agree to the following:

- 1. To construct driveway entrance(s) only for the bonafide purpose of securing access to private property such that the highway right-of-way is used for no purpose other than travel.
2. To construct driveway entrance(s) at permitted location(s).
3. To construct driveway entrance(s) in accordance with statutes, rules, standard drawings, and permit specifications as issued by the New Hampshire Department of Transportation.
4. To defend, indemnify and hold harmless the New Hampshire Department of Transportation and its duly appointed agents and employees against any action for personal injury and/or property damage sustained by reason of the exercise of this permit.
5. To furnish and install drainage structures that are necessary to maintain existing highway drainage and adequately handle increased runoff resulting from the land development and obtain all easements thereto.
6. I am the owner or a duly authorized agent of the owner of the parcel upon which the driveway will be constructed. I have provided accurate and complete title and subdivision information concerning the parcel to the Department. I understand that the Department is relying on this information in considering this application and that the Department does not perform independent title research or make judgments about title or access disputes.
• For new driveway(s), include copy of current deed and, if not the same, previous deed dated prior to July 1, 1971 of the parcel. If this parcel is part of a larger tract subdivided after July 1, 1971, then provide complete subdivision plans and deed history dating back to at least July 1, 1971.
• Attach sketch or plan showing existing and proposed driveway(s) and the adjacent highway indicating distance to town road, town line, or other readily identifiable feature or landmark and also to the nearest utility pole (including pole numbers)

Signature of Landowner (Applicant)

Mailing Address

Printed Name of Landowner

Town/City, State, Zip Code

Date:

Telephone Number(s)

Contact /Agent, if not Landowner:

FOR OFFICE USE ONLY:
GPS N = _____ GPS W = _____
Section: _____ Width: _____ Speed: _____
Right of Way: _____ Drainage: _____ SLD: _____
Conditions: _____
Permit Number Assigned: _____

§ 236:13 Driveways and Other Accesses to the Public Way. – I. It shall be unlawful to construct, or alter in any way that substantially affects the size or grade of, any driveway, entrance, exit, or approach within the limits of the right-of-way of any class I or class III highway or the state-maintained portion of a class II highway that does not conform to the terms and specifications of a written permit issued by the Commissioner of transportation.

II. Pursuant to this section, a written construction permit application must be obtained from and filed with the department of transportation by any abutter affected by the provisions of paragraph I. Before any construction or alteration work is commenced, said permit application shall have been reviewed, and a construction permit issued by said department. Said permit shall:

- (a) Describe the location of the driveway, entrance, exit, or approach. The location shall be selected to most adequately protect the safety of the traveling public.
- (b) Describe any drainage structures, traffic control devices, and channelization islands to be installed by the abutter.
- (c) Establish grades that adequately protect and promote highway drainage and permit a safe and controlled approach to the highway in all seasons of the year.
- (d) Include any other terms and specifications necessary for the safety of the traveling public.

III. For access to a proposed commercial or industrial enterprise, or to a subdivision, all of which for the purposes of this section shall be considered a single parcel of land, even though acquired by more than one conveyance or held nominally by more than one owner:

- (a) Said permit application shall be accompanied by engineering drawings showing information as set forth in paragraph II.
- (b) Unless all season safe sight distance of 400 feet in both directions along the highway can be obtained, the commissioner shall not permit more than one access to a single parcel of land, and this access shall be at that location which the commissioner determines to be safest. The commissioner shall not give final approval for use of any additional access until it has been proven to him that the 400-foot all season safe sight distance has been provided.
- (c) For the purposes of this section, all season safe sight distance is defined as a line which encounters no visual obstruction between 2 points, each at a height of 3 feet 9 inches above the pavement, and so located as to represent the critical line of sight between the operator of a vehicle using the access and the operator of a vehicle approaching from either direction.

IV. No construction permit shall allow:

- (a) A driveway, entrance, exit, or approach to be constructed more than 50 feet in width, except that a driveway, entrance, exit, or approach may be flared beyond a width of 50 feet at its junction with the highway to accommodate the turning radius of vehicles expected to use the particular driveway, entrance, exit or approach.
- (b) More than 2 driveways, entrances, exits or approaches from any one highway to any one parcel of land unless the frontage along that highway exceeds 500 feet.

V. The same powers concerning highways under their jurisdiction as are conferred upon the commissioner of transportation by paragraphs I, II, III and IV shall be conferred upon the planning board in cities and towns in which the planning board has been granted the power to regulate the subdivision of land as provided in RSA 674:35, and they shall adopt such regulations as are necessary to carry out the provisions of this section. Such regulations may delegate administrative duties, including actual issuance of permits, to a highway agent, board of selectmen, or other qualified official or body. Such regulations, or any permit issued under them, may contain provisions governing the breach, removal, and reconstruction of stone walls or fences within, or at the boundary of, the public right of way, and any landowner or landowner's agent altering a boundary in accordance with such provisions shall be deemed to be acting under a mutual agreement with the city or town pursuant to RSA 472:6, II (a).

VI. The commissioner of transportation or planning board shall retain continuing jurisdiction over the adequacy and safety of every existing driveway, entrance, exit, and approach to a highway, whether or not such access was constructed or installed pursuant to a permit under this section, and, unless the access is a public highway, the owners of property to which the access is appurtenant shall have continuing responsibility for the adequacy of the access and any grades, culverts, or other structures pertaining to such access, whether or not located within the public right of way. If any such access is or becomes a potential threat to the integrity of the highway or its surface, ditches, embankments, bridges, or other structures, or a hazard to the safety of the traveling public, by reason of siltation, flooding, erosion, frost action, vegetative growth, improper grade, or the failure of any culvert, traffic control device, drainage structure, or any other feature, the commissioner of transportation or planning board or their designee may issue an order to the landowner or other party responsible for such access to repair or remove such hazardous condition and to obtain any and all permits required therefor. The order shall describe the hazard, prescribe what corrective action or alteration in the location or configuration of such access shall be required, and set a reasonable time within which the action shall be completed. Such an order shall be sent by certified mail, and shall be enforceable to the same extent as a permit issued under this section. If the order is not complied with within the time prescribed, the commissioner or planning board or their designee may cause to be taken whatever action is necessary to protect the highway and the traveling public, and the owner or other responsible party shall be civilly liable to the state or municipality for its costs in taking such action.

§ 236:14 Penalty. – Any person who violates any provision of this subdivision or the rules and regulations made under authority thereof shall be guilty of a violation if a natural person, or guilty of a misdemeanor if any other person; and, in addition, shall be liable for the cost of restoration of the highway to a condition satisfactory to the person empowered to give such written permission.

Appendix G

Written Illicit Discharge Detection and Elimination (IDDE) Plan

Illicit Discharge Detection and Elimination (IDDE) Plan



June 2019

Revision 0

Table of Contents

Illicit Discharge Detection and Elimination Plan

1	Introduction.....	3
1.1	MS4 Program.....	3
1.2	Illicit Discharges	3
1.2.1	Allowable Non-Stormwater Discharges	4
1.2.2	Receiving Waters and Impairments	4
1.3	IDDE Program Goals, Framework, and Timeline.....	4
2	Driveway Access/Drainage Connection Policy.....	6
3	Stormwater System Mapping	7
3.1	Phase I Mapping.....	7
3.2	Phase II Mapping	8
3.3	Additional Recommended Mapping Elements	8
4	Assessment and Priority Ranking of Outfalls.....	9
4.1	Preliminary Outfall Catchment Delineations	9
4.2	Outfall / Interconnection Inventory and Initial Ranking	9
5	Dry Weather Outfall Screening and Sampling.....	11
5.1	Desktop Preparation for Field Investigation.....	11
5.1.1	Select Weather Stations to Monitor Precipitation.....	11
5.1.2	Develop GIS-based Checklist to Record Inspection Data.....	12
5.1.3	Identify Safe Vehicle Parking Locations / Outfall Access	12
5.1.4	Field Equipment and Training	13
5.1.5	Outfall Dry Weather Screening Field Investigations	14
5.1.6	Sample Collection and Analysis.....	14
5.1.7	Interpreting Outfall Sampling Results.....	17
5.2	Follow-up Ranking of Outfalls and Interconnections	17
6	Catchment Investigations	18
6.1	System Vulnerability Factors	18
6.2	Dry Weather Manhole Inspections.....	19
6.3	Wet Weather Outfall Sampling	20
6.4	Source Isolation and Confirmation	21
6.4.1	Sandbagging.....	21
6.4.2	Smoke Testing.....	21
6.4.3	Dye Testing.....	22
6.4.4	CCTV/Video Inspection.....	22
7	Illicit Discharge Removal.....	23
7.1	Confirmatory Outfall Screening	23

8 Ongoing Screening 23

9 Training 24

10 Progress Reporting 24

Tables

Table 1-1. IDDE Program Implementation Timeline..... 5

Table 1-1. IDDE Program Implementation Timeline

Table 4-1. Estimated No. of Outfalls within each Priority Category

Table 5-1. Field Attributes to be Included on Inspection Checklist Collected in the Field

Table 5-2. Field Equipment – Dry Weather Outfall Screening and Sampling

Table 5-3. Standard Dry Weather Sampling Parameters and Analysis Methods

Table 5-4. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives for Pollutants of Concern

Table 5-5. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Table 5-6. Benchmark Field Measurements for Select Parameters

Figures

Figure 1-1. IDDE Investigation Procedure Framework..... 5

1 Introduction

1.1 MS4 Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2017 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in New Hampshire, hereafter referred to as the "2017 New Hampshire MS4 Permit" or "MS4 Permit."

In addition to a Stormwater Management Plan (SWMP), the 2017 MS4 Permit requires the Department to implement an Illicit Discharge Detection Elimination (IDDE) Plan to systematically find and eliminate sources of non-stormwater discharges into its separate storm sewer system and implement procedures to prevent such discharges. This written IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, except for the allowable discharges pursuant to a NPDES permit (see Section 1.2.1 below) and discharges resulting from fire-fighting activities.

Illicit discharges can take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections to the storm drain system are generally more obvious, such as a flow from a floor drain or other piped connection from a building. Indirect illicit discharges may be more difficult to detect or address, such as a failing septic system that discharges untreated sewage to a ditch within the MS4 regulated area, or a sump pump that discharges contaminated water on an intermittent basis.

Some illicit discharges are intentional, such as a waste hauler or even recreational vehicle owner may illegally release the contents of hazardous or sanitary waste from an onboard holding tank into a catch basin or on a paved surface that drains into the Department's storm system and eventually into surface waters.

The dumping of solid waste into the storm drain system such as pet waste or yard waste can also be significant sources of pollutants including nutrients and bacteria. This material can be minimized through educational outreach in conjunction with having enough waste receptacles available and disposing collected materials on a regular basis.

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

1.2.1 Allowable Non-Stormwater Discharges

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

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

1.2.2 Receiving Waters and Impairments

Appendix C of the SWMP contains a list of receiving waters within the Urbanized Area that are listed as “impaired” according to the 2016 NH 303(d) List of Impaired Waters. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat. With respect to the IDDE Process, the Permit suggest that outfalls that drain to a **bacteria impaired water body or is included in the Statewide Bacteria Total Maximum Daily Load (TMDL) Report** be considered as **“High” priority** for dry weather screening as part of the IDDE program.

1.3 IDDE Program Goals, Framework, and Timeline

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

- Department policy to prohibit illicit discharges / connections
- Storm system mapping

- Inventory and ranking of outfalls
- Dry weather outfall screening
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening
- Employee training.

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

Figure 1-1. IDDE Investigation Procedure Framework

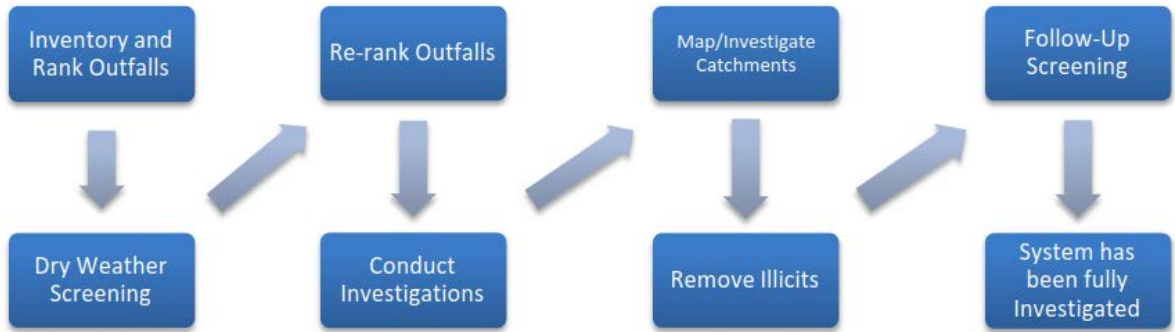


Table 1-1. IDDE Program Implementation Timeline

IDDE Program Requirement	Completion Date from Effective Date of Permit					
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years
Written IDDE Program Plan	X					
SSO Inventory	NA					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism				X		
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls					NA	
Catchment Investigations High and Low Priority Outfalls						X

Notes: NA = Not Applicable

2 Driveway Access/Drainage Connection Policy

The MS4 Stormwater General Permit requires, to the extent allowable under State law, that the permittee prohibit and enforce un-authorized non-storm water discharges into their system, through an ordinance or other regulatory mechanism available to the operator.

The Department is not a regulatory agency, and therefore does not have legal authority to establish or enforce ordinances. However, the Department has developed and updated its Driveway Access Permit Application and associated guidance documents to add specific language as part of any connection approval letter that explicitly states that illicit and non-stormwater discharges are prohibited from entering the State drainage system. Department policy references NH state law (RSA 236:13) making it unlawful for any person, firm or corporation to make any connection into a State road drainage system, or to drain or pump water onto the traveled surface of a State Highway without first obtaining written permission from the Commissioner of the State Department of Transportation via the issuance of a Driveway Access Permit Application (See Access Application in **Appendix F** of the SWMP).

3 Stormwater System Mapping

3.1 Phase I Mapping

The Department is in the process of completing the Phase I mapping requirements consistent with the Permit, although it is not required to be completed until two (2) years from the effective date of the permit (July 1, 2020). The Phase I mapping includes the following information:

- Outfalls and receiving waters (previously required by the MS4-2003 permit)
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- State owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved 2016 NHDES List of Impaired Waters
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations.

The Department has completed most of the Phase 1 mapping elements. Initial catchment areas were preliminarily based on a 100-foot buffer setback around each drainage structure connected to an outfall regulated by this permit. The Department has utilized several resources to complete this task. The entire mapping system is ArcGIS based and consists of Asset layers including:

- Culvert and Closed Drainage Systems (CCDS)
- Structural Stormwater Treatment
- Flow (Open Conveyances, etc.)
- Outfalls and Interconnections
- National Wetlands Inventory Map
- NHDES 303(d) Assessment
- EPA's 2010 Urbanized Area Map
- NHDOT Right of Way limits within 2010 Urbanized Area Map
- Preliminary MS4 Catchments

The process included:

- 1) Mapping Drainage Infrastructures (Drainage Structures, Pipes, Inlets and Outlets)
- 2) Mapping a Structural Stormwater Treatment facilities
- 3) Connecting Stormwater Flow from the Catch Basins to the Outlets
- 4) Identifying what was in the Urbanize Area and under the control of NHDOT
- 5) Identifying the outfall that discharged to a Waters of the United States
- 6) Identifying interconnection with other MS4 and private systems
- 7) Identifying what particular NHDES Assessment Unit received the discharge
- 8) Identifying any particular impairments or TMDL that are relevant to the Permit
- 9) Mapping the Catchments for each outfall and interconnection
- 10) Applying the geographic referenced information to the MS4 Permit conditions

3.2 Phase II Mapping

Phase II Mapping: Additional outfall features including the field-verified limits of the catchment area will be needed to address the Phase II mapping requirements, but this is not required to be completed until ten (10) years from the effective date of the permit (July 1, 2028). The Phase II mapping requirements include the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Connecting Storm Drain Pipes and Open Channel Conveyances
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.

3.3 Additional Recommended Mapping Elements

Additional Mapping Considerations: Although not specifically required by the 2017 MS4 Permit, the following outfall features and related information should be included in the geodatabase of the storm system:

- Storm drain material, shape, size (pipe diameter), age
- Interconnections from municipal or privately-owned stormwater treatment structures
- Locations where municipal sanitary sewer systems exists, properties known or suspected to be served by a septic system, especially in high density urban areas
- Areas where the Department has received or could receive septic system discharges
- Stormwater BMP Locations
- Inspection dates and representation of work completed of past illicit discharge investigations
- Locations of suspected confirmed and corrected illicit discharges with dates and flow estimates

The Department anticipates completing these additional mapping efforts as part of its overall asset management system and will be collecting data as funding, manpower and time allows.

4 Assessment and Priority Ranking of Outfalls

As described below, the Department has completed an assessment and priority ranking of its outfalls in terms of their potential to have illicit discharges and related public health significance consistent with the 2017 MS4 Permit. The ranking will be used to determine the priority order for performing IDDE investigations and meeting permit milestones.

The Department has approximately 3,200 regulated stormwater outfalls within the Urbanized Area associated with its roadways, facilities and other properties that have been determined to discharge to surface waters or wetland areas. These outfalls are primarily contained within Turnpikes, Districts 5 and 6 and one patrol area (PS 414) in District 4.

4.1 Preliminary Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall or interconnection. For purposes of this initial screening, the Department delineated preliminary catchment areas based on a 100-foot setback distance from any drainage infrastructure to define the preliminary contributing areas for investigation of potential sources of illicit discharges. The 100-foot distance is generally consistent with the right-of-width for most roadways, especially the higher traffic-volume roadways in the more urbanized areas. The right-of-way limits generally represent the boundary limits for roadway drainage.

Consistent with the Permit, these preliminary catchment area delineations will be refined later as part of the catchment investigations based on field observations, topographic contours and drainage infrastructure mapping, where available.

4.2 Outfall / Interconnection Inventory and Initial Ranking

The Department has visited most of its outfalls last summer in 2018 to initially assess how many outfalls have dry weather flow. Approximately 309 outfalls were observed to have dry weather flow. The Department classified each of its outfalls and interconnections within the Urbanized Area under its control into one of the following categories:

Problem: Outfalls/interconnections with known or suspected illicit discharges based on existing information. The Department has not identified any Problem outfalls.

High Priority: Outfalls/interconnections that are not considered excluded and have one of the following features:

- Discharges to waters impaired for bacteria
- Discharges to waters with a bacteria TMDLs
- Discharges to a beach
- Discharges to waters with (AU) shellfish designated use
- Discharges to NHDES Water Supply Intake Protection Areas

- Discharges to waters impaired for pollutants of concern

Low Priority: Outfalls/interconnections that are not classified as Problem, High, or Excluded.

Excluded: Outfalls/interconnections that have one of the following features are considered Excluded from the IDDE process because there is very low potential for an illicit connection:

- Discharges from a single drainage structure
- Discharges from a catchment that is entirely within a Limited Access Right of Way
- Discharges from a catchment that does not have a building/residence within 100 feet

Table 4.1 provides an initial breakdown of the priority ranking of regulated outfalls. The priority ranking was based on the criteria listed above, the available GIS data and geospatial analysis tools.

Table 4.1: Estimated No. of Outfalls within each Priority Category

IDDE Priority	Total
Excluded	2,180
High Priority	132
Low Priority	329
Grand Total	2,641

Based on the results of this analysis, approximately 461 outfalls are considered of low and high priority outfalls and will need to undergo dry weather screening/ sampling. Many of the regulated outfalls are considered Excluded from the IDDE Program largely because the outfalls are connected to only one catchbasin, are located in a limited access roadway or located where the nearest building or residence is more than 100 feet away and thus the potential for an illicit connection is considered extremely low. Approximately 65% of the outfalls categorized as Excluded drain to unnamed wetlands and not directly to water bodies.

At this time, the distinction between High and Low Priority outfalls is not considered highly critical since both outfall types need to be screened for dry weather flow within 3 years of the effective date or by July 2021. High Priority outfalls should be done first. It is estimated that 15 to 30 outfalls could be inspected daily, on average, or approximately 60 to 150 outfalls per week, depending on accessibility, outfall proximity, weather and other site-specific factors. Based on these assumptions, it is possible that the dry weather screening process for both High and Low Priority outfalls could be completed in 6 to 12 weeks depending mostly on the prevalence of dry weather.

5 Dry Weather Outfall Screening and Sampling

The MS4 Permit requires all outfalls/interconnections (except Problem and Excluded Outfalls) to be inspected for the presence of dry weather flow. The Department intends to initiate dry weather outfall screening in 2019, starting with High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section.

The Department plans to complete the dry weather screening process in two phases. The first phase consists of an initial visit to determine if any dry weather flow is observed at regulated outfalls. All low and high priority outfalls were visited to determine if there was discharge (flow) and any evidence of illicit discharge.

During the second phase, high priority outlets that had observed flow during the first inspection will be visited first and sampled if flow is evident followed by low priority outlets. The second phase is expected to be completed in 2021. Sampling for outfalls with dry weather discharge will include:

- Ammonia
- Chlorine
- Conductivity/Salinity
- Bacteria (e. coli or Enterococcus)
- Surfactants
- Temperature
- Pollutant of Concern (See Table 5.4)

Preparation for Dry Weather Outfall Screening and Sampling involves Desktop Analyses, Equipment Preparation and Outfall Access Planning / Coordination as described below.

5.1 Desktop Preparation for Field Investigation

5.1.1 Select Weather Stations to Monitor Precipitation

To document that dry weather outfall screening and sampling is done during periods when no more than 0.1 inches of rainfall has occurred in previous 24-hour period and no significant snow melt is occurring, field inspectors should identify representative online weather stations in the various targeted sampling locations to monitor precipitation conditions and verify appropriate dry weather conditions (e.g., <0.1 inch in 24 hours) during outfall screening and sampling. Periods of significant snow melt, or even high groundwater tables should be avoided to limit the potential for flow and having to sample. Ideally dry weather screening should be done during the dry summer months when groundwater levels are low and potential for flow will be at its lowest.

5.1.2 Develop GIS-based Checklist to Record Inspection Data

Prior to initiating dry weather screening, a field inspection checklist needs to be developed in the geodatabase to record attribute data in the field and be able to identify outfalls that discharge to impaired receiving water bodies and the related pollutant(s) of concern that needs to be sampled during the dry weather sampling. The field inspection sheet should include sanitary sewer indicator parameters consistent with the permit requirements.

The screening inspection checklist will enable field personnel to record observations and field-testing results at each of the outfalls. Hardcopy versions should also be developed to have on hand in case the GPS connection is not available in the field. Table checklist will include the following items to be documented in the field for each outfall inspected consistent with the permit;

Table 5-1. Field Attributes to be Included on Inspection Checklist Collected in the Field

Physical Attributes	Water Quality Readings (if Flow Present)
<ul style="list-style-type: none"> • Unique Outfall identifier • Active Flow Observed (yes or no) • Receiving Water • Inspection Date • Outfall Characteristics (i.e. dimensions, material (concrete, PVC)) • Spatial Location (Lat and Long +/- 30 feet) • Physical Condition • Photos Taken 	<ul style="list-style-type: none"> • Ammonia • Detergents/Surfactants • Chlorine • Conductivity • Temperature • Salinity • Indicator Bacteria • Pollutants of Concern

5.1.3 Identify Safe Vehicle Parking Locations / Outfall Access

Prior to initiating field investigations, inspectors should develop a game plan to identify groups of high priority outfall(s) to be screened each day, accounting for available access, travel time, staff and sample delivery coordination to the NHDES laboratory. **Bacteria samples have a max. hold time of 6 hours and thus samples will need to be delivered to the lab daily prior to the lab closing time to allow for processing.**

Field inspectors should develop map books of targeted outfall locations that can be accessed from designated vehicle parking locations. Vehicle parking locations and outfall access should be done on Department Right-of-Way and avoid use of private property. This involves a desktop analysis evaluating Department roadway and facility locations as they relate to outfall locations and designate appropriate parking and access locations.

Whenever possible, parking along major multi-lane roadways should be avoided for safety reasons and, if necessary, should be coordinated with the District Engineer and Foreman about proper protection and signage as well as possible lane closure to access outfalls from roadways. Property ownership and personnel protection gear are also

important considerations. Safety issues related to accessing outfalls along steep embankments should also be considered and carefully planned.

5.1.4 Field Equipment and Training

Field investigators should collect and become familiar with the appropriate safety and water quality testing equipment. **Table 5-2** lists field equipment commonly used for dry weather outfall screening and sampling.

Table 5-2. Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Hardcopy field sheets in case the GIS units fail due to lack of satellite connection or battery failure
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Perm. Markers/ White Board	For proper labeling of bottles and outfall ID #'s
Nitrile Gloves	To protect the sampler and sample bottle from contamination
Flashlight/headlamp w/batteries	For looking in outfalls or manholes
Cooler with Ice	For transporting samples to the laboratory
Digital Camera	Photograph outfall conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, Safety glasses and boots at a minimum
GPS Receiver	For taking spatial location data
YSI63 Water Quality Meter	Hand held meter, if available, for measuring conductivity, temperature, pH
Water Quality Test Kits	Test kits for Ammonia, Surfactants and Chlorine Have extra kits on hand to sample more outfalls than anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are kept clean and dry. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Shovel	To clear minor amounts of sediment
Vegetation Scythe or Machete for	Limited Vegetation Clearing
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Traffic Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper	For accessing hard to reach outfalls and manholes

5.1.5 Outfall Dry Weather Screening Field Investigations

The following outlines a sequence of steps to conduct dry weather outfall screening/ sampling:

1. Develop a game plan to identify groups of high priority outfall(s) to be screened in daily time periods, based on available access, travel time, staff and sample delivery / coordination to the NHDES laboratory.
2. Acquire the necessary mapping, and field equipment (see **Table 5-2 above**).
3. Conduct the outfall inspection during dry weather:
 - a. Mark and photograph the outfall (Photograph should reference outfall ID #)
 - b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device)
 - c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. **If flow is observed, sample and test the flow following the procedures described in the following sections.**
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.
6. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

5.1.6 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, use water quality meters/test strips to measure targeted water quality parameters and collect a sample for lab analysis of the required permit parameters listed in **Table 5-3**. The general procedure for collection of outfall samples is as follows:

1. Label sample bottles with Outfall ID#, Date, Time and Parameter to be tested and list information on field sheets
2. Put on protective gloves (nitrile/latex/other) before sampling
3. Collect sample with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling)
5. Use test strips, test kits, and field meters for certain dry weather parameters (see **Table 5-3**)
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern
7. Fill out chain-of-custody form for laboratory samples (Specific to each laboratory)

8. Deliver samples to the NHDES Laboratory on Hazen Drive in Concord
9. Dispose of used test strips and test kit ampules properly
10. Decontaminate all testing personnel and equipment

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

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 5-3** lists various field test kits and field instruments that can be used for outfall sampling associated with the 2017 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern. Analytic procedures and user’s manuals for field test kits and field instrumentation can be found at the respective device manufacturer’s website.

Table 5-3. Standard Dry Weather Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMets Ammonia-Nitrogen Test Kit
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine	CHEMetrics™ V-2000, K-2513 Hach™ Pocket Colorimeter™ II	CHEMets Chlorine Test Kit
Conductivity	YSI Pro 30 / 63	NA
Temperature	YSI Pro 30 /63	NA
Salinity	YSI Pro 30/63	NA
pH	YSI Pro 30/63	Hydrion Dip Stiks pH Test Strips
Indicator Bacteria: <i>E. coli</i> (freshwater) or Enterococcus (tidal water)	NHDES Laboratory (40 CFR § 136)	NA
Pollutants of Concern ¹	NHDES laboratory (40 CFR § 136)	NA

Table 5-4 provides a listing of the additional pollutants of concern for various water quality impairments, the estimated No of outfalls discharging to these water bodies, the sample bottle type, holding time and preservatives methods.

Table 5-4. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives for Pollutants of Concern

Pollutant Causing Impairment	Pollutant of Concern	No of Outfalls	Sample Bottle ¹	Holding Time	Preservative
Aluminum	Aluminum (Total)		50 ml	28 days	Cool ≤6°C, HNO ₂ pH <2
Benthic Macroinvertebrate Assessments	Total Phosphorus (FW ²)		250 ml, P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
	Total Nitrogen (tidal)		250 ml, P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
Bacteria	Freshwater (E. coli)		varies	6 hours	Cool ≤6°C,
	Tidal waters (Enterococcus)		varies	6 hours	Cool ≤6°C,
Chloride	Chloride		plastic	28 days	Cool ≤6°C,
Chlorophyll-a	Total Phosphorus (FW ²)		250 ml, P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
Dissolved oxygen saturation	Total Phosphorus (FW ²)		250 ml, P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
	Total Nitrogen (tidal)		250 ml P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
Iron	Iron (total)		50 ml P	28 days	Cool ≤6°C, HNO ₂ pH <2
Phosphorus	Total Phosphorus (FW ²)		250 ml, P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
Nitrogen (Tidal)	Total Nitrogen		250 ml P	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2
Sedimentation / Siltation	Total Suspended Solids (TSS)		500-1L, P		Cool ≤6°C,
PAH's/ Oil & Grease					

Notes: ¹ Sample Bottle volumes and type may vary depending on the lab and detection levels ²FW = Freshwater

Table 5-5 lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

Table 5-5. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives⁴

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	EPA: 350.2, SM: 4500-NH3C	0.05 mg/L	28 days	Cool ≤6°C, H ₂ SO ₄ pH <2,
Surfactants	SM: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Chlorine	SM: 4500-Cl G (in the field)	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	SM: 2550B	NA	Immediate	None Required
Specific Conductance	EPA: 120.1, SM: 2510B	0.2 μs/cm	28 days	Cool ≤6°C
Salinity	SM: 2520	-	28 days	Cool ≤6°C
Indicator Bacteria: <i>E.coli</i> <i>Enterococcus</i>	<i>E.coli</i> EPA: 1603 Other: Colilert®, Colilert-18® <i>Enterococcus</i> EPA: 1600 Other: Enterolert®	<i>E.coli</i> EPA: 1 cfu/100mL Other: 1 MPN/100mL <i>Enterococcus</i> EPA: 1 cfu/100mL Other: 1 MPN/100mL	8 hours	Cool ≤10°C, 0.0008% Na ₂ S ₂ O ₃

SM = Standard Methods

5.1.7 Interpreting Outfall Sampling Results

Outfall analytical data from dry weather sampling can be used to help identify the major type or source of discharge. **Table 5-6** shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. **Reported values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.**

Table 5-6. Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>850 μ S/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2017 MS4 Permit)
Indicator Bacteria ¹ : <i>E.coli</i> <i>Enterococcus</i> ²	<i>E.coli</i> : the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 235 colonies per 100 ml <i>Enterococcus</i> : the geometric mean of the three most recent samples taken during a 60-day period shall not exceed 35 colonies per 100 ml and no single sample taken during the bathing season shall exceed 104 colonies per 100 ml

5.2 Follow-up Ranking of Outfalls and Interconnections

Based on information gathered during dry weather screening, outfalls will be reevaluated and re-prioritized as either High or Low priority before initiating more detailed catchment investigations. Outfalls and/or interconnections where indicators of sanitary sewer or other illicit discharges were detected or suspected (i.e., possible evidence observed but inconclusive) will be considered or remain as High Priority outfalls.

The rankings will be updated periodically as dry weather screening information becomes available but will be completed within three (3) years of the effective date of the permit (by July 1, 2021).

¹ EPA Illicit Discharge Detection and Elimination: A Guidance Manual:
https://www3.epa.gov/npdes/pubs/idde_chapter-12.pdf

² NHDES Water Division:
https://www.des.nh.gov/organization/divisions/water/wmb/beaches/faq_advisories.htm

6 Catchment Investigations

Consistent with Section 2.3.4.8 of the MS4 permit, following completion of the dry weather screening of the high and low priority outfalls, the Department will initiate catchment area investigations. Outfalls/catchment areas will then be reevaluated and reprioritized based on the dry weather screening results and the additional screening data discussed below.

A separate Catchment Investigation Plan will be developed over the next 6 months following completion of the Dry Weather Inspection and Sampling process to conduct more detailed investigations for outfalls that had potential indicators of illicit discharges or had one or more of the following SVFs in their initial catchment. Various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques will include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing. This section outlines a systematic procedure to investigate outfall catchments to trace the source of potential illicit discharges. All data collected as part of the catchment investigations will be recorded and reported in each annual report.

6.1 System Vulnerability Factors

The Department will review relevant mapping, historic plans and records to identify catchment areas with higher potential for illicit connections. The following **System Vulnerability Factors (SVFs)** will be reviewed for each catchment:

- Previous dry weather screening data including prior exceedance(s) of bacteria water quality standards; ammonia levels above 0.5 mg/l; or surfactants levels \geq 0.25 mg/l.
- Municipal sewer system maps.
- Density of Industrial/Commercial Sites- Highly developed areas with institutional, municipal, commercial, or industrial sites, especially older sites, may have a greater potential for illicit discharges. Examples sites that include, but are not limited to, car dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.
- Age of development and infrastructure: Areas with the sanitary sewer systems that are more than 40 years old may have a high illicit discharge potential.
- Sewer conversion: Areas that were once serviced by septic systems and have been converted to sewer connections may have a high illicit discharge potential.
- Known areas involving road construction and municipal sewer mains within ROW
- Prior work on storm drains or sewer lines
- Known septic system breakouts or areas with septic systems that are thirty (30) years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential.
- Sewer pump/lift stations, siphons, or known sanitary sewer equipment along the right of way or catchment area with known failures or blockages

An SVF inventory will be documented for each catchment retained as part of this IDDE Plan and included in the annual report.

6.2 Dry Weather Manhole Inspections

The Department will initiate dry weather investigations that involves systematically inspecting, evaluating and sampling, if necessary, key junction manholes in the drainage system connected to High Priority outfalls. For most catchments, manhole inspections will start at the outfall and move upstream into the system.

Infrastructure connection information will be incorporated into the SADES storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

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

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

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

The manhole inspection methodology will be conducted in one of two ways (or a Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections.
2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. Sampling and analysis will be in accordance with procedures outlined in **Section 5**. Additional indicator sampling may assist in determining potential sources (e.g., bacteria for sanitary flows, conductivity to detect tidal backwater, etc.).

3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.
4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two manholes.
5. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

6.3 Wet Weather Outfall Sampling

A wet weather investigation will be conducted at outfalls where catchment areas that have a minimum of one (1) System Vulnerability Factor (SVF) as identified in Section 6.1. The Department will be responsible for implementing the wet weather outfall sampling program and making updates as necessary.

Outfalls will be inspected and sampled to determine the presence of sanitary flows to the MS4 caused by wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems.

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening.
2. Wet weather sampling will occur during or after a storm event of enough depth or intensity to produce a stormwater discharge at the outfall. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.
3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in **Section 6.4**.
4. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

The status and results of wet weather sampling will be summarized and subsequent Annual Reports.

6.4 Source Isolation and Confirmation

If evidence of an illicit discharge is detected and the source is not readily apparent, additional investigation may be needed upstream of the outfall and between drainage structures to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges

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

These methods are described in the sections below. In depth source isolation and confirmation procedures will be provided upon completion of dry weather screening.

6.4.1 Sandbagging

This technique can be useful when attempting to isolate small, intermittent flows with very little perceptible or periodic flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours and should only be used when dry weather is forecast.

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

6.4.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and detecting the emergence of smoke from sanitary sewer vents from buildings that are illegally connected to the storm drain system or detect cracks and leaks in the system itself. Typically, a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. Test personnel are placed in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure).

It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

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

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

6.4.3 Dye Testing

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

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

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

6.4.4 CCTV/Video Inspection

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

7 Illicit Discharge Removal

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

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

7.1 Confirmatory Outfall Screening

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

8 Ongoing Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized for screening and scheduled for ongoing screening once every five (5) years. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in **Section 5** of this plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in **Section 7**. All sampling results will be reported in the annual report.

9 Training

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

10 Progress Reporting

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

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

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

Appendix H

IDDE Inspection Results and Data (placeholder)

Appendix I

Bureau of Environment (BOE) Manual and Organizational Chart

Bureau of Environment

Administrator

Project Management Section

Section Chief

Sr. Environmental Manager

Sr. Environmental Manager

Environmental Manager

Environmental Analyst

Environmental Coordinator

Environmental Coordinator

Program Management Section

Air Quality & Noise Program

Contamination Program

Cultural Resources Program

Water Quality Program

Wetlands Program

Operations Management Section

Section Chief

Sr. Environmental Manager

Environmental Manager

Environmental Coordinator

Administration

Administrative Secretary

Specail Environmental Projects



BUREAU OF ENVIRONMENT

Environmental Process Manual

February 26, 2015

Table of Contents

Purpose and Overview	4
NHDOT Bureau of Environment	4
Purpose of the Manual	4
Part 1 – Project Management	6
Chapter One – Responsibilities of Environmental Managers	6
Chapter Two – Responsibilities of Environmental Coordinators	7
Chapter Three – National Environmental Policy Act	8
Chapter Four – Bureau of Environment Environmental Review Process	9
Section 1 – Air Quality	15
Section 2 – Coast Guard Section 9 Bridge Permit	15
Section 3 – Coastal Zone	16
Section 4 – Conservation Lands	17
Section 5 – Contamination/Hazardous Materials	19
Section 6 – Cultural Resources	19
Section 7 – Designated Rivers	19
Section 8 – Environmental Justice	21
Section 9 – Essential Fish Habitat	22
Section 10 – Farmlands/Farmland Soils	23
Section 11 – Floodplains/Floodways	24
Section 12 – Invasive Plants	25
Section 13 – Noise	27
Section 14 – Rare Species/Natural Communities	28
Section 15 – Section 4(f)	29
Section 16 – Section 6(f)	31
Section 17 – Shoreland Protection	33
Section 18 – Water Quality	34
Section 19 – Wetlands/Surface Waters	35
Section 20 – White Mountain National Forest	36
Section 21 – Wild & Scenic Rivers	37
Section 22 – Wildlife/Fisheries	39
Part 2 – Program Management	41
Chapter Five – Air and Noise Program	41
Air Quality	41
Noise	44
Chapter Six – Contamination Program	47
Chapter Seven – Cultural Resources Program	54
Chapter Eight – Water Quality Program	60
Chapter Nine – Wetlands Program	62
Chapter Ten – Bureau of Environment Consultant Management	66
Low Bid Selection Procedures	66
Qualifications Based Selection Procedures	67
Task Order Development/Authorization Process	68

List of Appendices

Acronyms.....	Appendix A
Bureau of Environment Organizational Chart.....	Appendix B
Programmatic Agreement for Categorical Exclusions.....	Appendix C
Request for Environmental Documentation (“Green Sheet”).....	Appendix D
Environmental Review Checklist.....	Appendix E
Summary of Initial Environmental Review.....	Appendix F
Air & Noise Request for Project Review.....	Appendix G
Natural Heritage Bureau Data Sharing Agreement.....	Appendix H
Programmatic Floodplain Finding for Categorical Exclusions.....	Appendix I
Alteration of Terrain Process for NHDOT Projects.....	Appendix J
Coastal Zone Management Act Federal Consistency Review Flowchart.....	Appendix K
Project Timeline.....	Appendix L
Programmatic Wetland Finding for Categorical Exclusion.....	Appendix M
NHDOT Cultural Resources Project Review Procedures.....	Appendix N

Purpose and Overview

NHDOT Bureau of Environment

The mission of the NH Department of Transportation (NHDOT) is “transportation excellence enhancing the quality of life in New Hampshire.” Transportation excellence in New Hampshire is fundamental to the state's sustainable economic development and land use, enhancing the environment, and preserving the unique character and quality of life. The NHDOT will provide safe and secure mobility and travel options for all of the state's residents, visitors, and goods movement, through a transportation system and services that are well maintained, efficient, reliable, and provide seamless interstate and intrastate connectivity.

The principal role of the NHDOT Bureau of Environment (BOE) is to evaluate transportation construction projects and maintenance activities relative to impacts on natural, cultural and socioeconomic resources. The BOE also acts as an environmental liaison between the NHDOT and the federal, state, local and private environmental organizations as well as the general public. Coordinated interagency efforts address such issues as water quality, air quality, noise, wetlands, wildlife, historic resources, archeological sites, farmlands, hazardous waste/contamination, permitting, and regulatory compliance. The BOE is an integral part of accomplishing the mission of the NHDOT. Compliance with environmental regulations and the environmentally responsible design, construction, and maintenance of transportation facilities ensures not only that the NHDOT continues to receive the funding necessary for carrying out its mission, but also contributes to the preservation and enhancement of New Hampshire's environment, character, and quality of life.

The BOE is located within the Division of Project Development but also regularly interacts with the Division of Operations and the Division of Aeronautics, Rail and Transit. The BOE consists of two sections, Project Management and Program Management. The Project Management Section manages the environmental aspects of NHDOT projects through design and construction. The Program Management Section manages all aspects of specific environmental disciplines, consisting of five programs: Contamination, Cultural Resources, Air and Noise, Water Quality, and Wetlands. The two sections within the Bureau work together to perform all necessary environmental studies and to appropriately document findings. The Bureau organization chart can be found in Appendix B.

Purpose of the Manual

This Environmental Process Manual is primarily focused on providing a broad overview of the environmental processes carried out by the NHDOT BOE in accordance with various state and federal regulations. The manual contains guidance for complying with state and federal environmental laws and regulations applicable to the design, construction, and maintenance of transportation facilities in New Hampshire, although it is not intended to provide step-by-step instructions on environmental permitting and documentation.

The manual applies to highway facilities that are owned and operated by the NHDOT. Local agencies may also use the Environmental Process Manual as a resource; however, the manual is not intended to

provide guidance specific to carrying out Local Public Agency (LPA) projects. The intended users of this manual are NHDOT staff and consultants working on NHDOT highway projects.

Updating and revising the manual is a continuous process because of the ever-changing status of environmental issues and laws. While NHDOT endeavors to keep the Environmental Process Manual current, it is the user's responsibility to ensure that any action taken to comply with environmental laws and regulations is based on the most current information available.

Part 1 of this manual describes the Project Management Section, including an overview of its primary responsibilities, a summary of the environmental review process that this Section oversees, and a description of the resources and issues addressed during design and construction of NHDOT projects.

Part 2 provides a summary of the major responsibilities of each program within the Program Management Section. Because each program addresses a variety of issues within each discipline, this part of the manual is intended to only provide an overview rather than detailed processes.

Part 1 – Project Management

The main function of the NHDOT BOE Project Management Section is to identify, document, minimize impacts and plan for the mitigation of impacts to the natural, cultural and socioeconomic resources associated with transportation projects throughout the State of New Hampshire. The Project Management Section staff is comprised of Environmental Managers, an Environmental Analyst, and Environmental Coordinators.

Chapter One – Responsibilities of Environmental Managers

The NHDOT BOE Environmental Managers are responsible for managing the environmental aspects of transportation projects. They are involved with projects from the preliminary design phase through construction and also ensure completion of any post-construction environmental commitments and permit conditions.

Major responsibilities of the Environmental Managers include:

- Management of the environmental review of engineered highway projects to ensure compliance with state and federal regulations;
- Consultant oversight;
- Coordination with BOE Program Managers, Project Managers, and project engineers;
- Coordination with resource agencies;
- Carrying out public involvement procedures;
- Coordination of permitting requirements;
- Preparation and review of contract documents;
- Preparation of Environmental Commitments;
- Tracking compliance with Environmental Commitments, mitigation requirements, and permit conditions.

Environmental Managers may prepare any or all of the following documents throughout the development of a project.

Environmental review documents:

- National Environmental Policy Act (NEPA) document or non-federal environmental document
- Section 4(f) Evaluation
- Essential Fish Habitat Assessment
- Biological Assessment
- Section 6(f) Evaluation

Contract documents:

- Summary of Environmental Issues – This document summarizes environmental actions that the Contractor must carry out prior to and during construction in order to remain in compliance with

1) various permits obtained to carry out the project, 2) commitments made to avoid or minimize impacts to certain resources, and 3) mitigation requirements agreed upon by regulatory agencies. The Summary of Environmental Issues is often referred to as the “Green Sheet” since it is printed on green paper and included in the project proposal ahead of any environmental-related specifications, Special Attentions, and other documents.

- National Pollutant Discharge Elimination System (NPDES) Special Attention – This document is prepared in conjunction with the Water Quality Program Manager and must be included in the project proposal if the project qualifies for coverage under the EPA Construction General Permit. This Special Attention is used by the NHDOT and the Contractor to file the Notice of Intent.

In addition to these documents, the Environmental Manager coordinates with the Design team on the preparation of the environmental sections in the Prosecution of Work and the Plan, Specifications & Estimate (PS&E) Checklist.

The Project Management Section also has one Environmental Analyst. This position carries out a variety of both project-related and program-related tasks, including serving as the environmental manager for programmatic-type projects, assisting the Environmental Coordinators, and providing assistance to Program Managers.

Chapter Two – Responsibilities of Environmental Coordinators

The NHDOT BOE Environmental Coordinators perform skilled technical and supervisory environmental duties in the development of transportation projects and maintenance activities, with emphasis on technical field inspections and administrative office duties associated with environmental commitments and permitting.

Major responsibilities of the Environmental Coordinators include:

- Ensuring environmental commitments are understood and completed by the Contractor;
- Reviewing and providing implementation oversight for construction plans, wetland plans, and erosion control plans;
- Reviewing and approving Storm water Pollution Prevention Plans (SWPPP) and Invasive Species Control and Management Plans and providing oversight of the implementation of these plans;
- Ensuring compliance with the National Pollutant Discharge Elimination System (NPDES) permit and wetland and shoreland permits;
- Participating in the Stormwater Outreach program, which includes PowerPoint presentations and speaking at state and municipal meetings with the stormwater outreach trailer;
- Assisting the Division of Operations on construction-related environmental concerns such as water quality, permitting, and invasive species;
- Attending 60% and 90% design meetings;
- Attending the Pre-Construction meeting;
- Organizing and running the “Environmental Pre-Construction” meeting associated with New Hampshire Department of Environmental Services (NHDES) requirements for most major impact projects.

The Environmental Coordinator may be required to monitor certain aspects of the project after construction is completed. Such activities are usually associated with wetland mitigation sites. Post-

construction monitoring may involve reporting on the survival rate of wetland plantings, eliminating invasive species, or reviewing the progress of created wetlands. Post-construction monitoring requirements are typically included in the Environmental Commitments section of the environmental document or in conditions included in state or federal wetland permits.

Chapter Three – National Environmental Policy Act

Overview

The National Environmental Policy Act (NEPA) was enacted in 1969. Under NEPA, the NHDOT must prepare detailed documents assessing the environmental impact of, and alternatives to, actions that affect the environment. The intent of NEPA is to provide a framework for 1) making decisions that are based on an understanding of environmental consequences, and 2) undertaking actions that protect, restore, or enhance the environment. Federal agencies are required to integrate the NEPA process at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to avoid potential conflicts late in a project's development.

The NEPA review takes into consideration the effect an action may have on various aspects of the environment. Impacts on specific resources, such as endangered species and cultural resources are also regulated by other environmental laws, such as the Endangered Species Act, and the National Historic Preservation Act. In this way, NEPA is considered an umbrella regulation, since compliance with NEPA necessitates compliance with many other state and federal regulations. During the review process, the lead agency would consult with the agencies overseeing these statutes to ensure compliance with any criteria and standards promulgated under these laws.

NHDOT carries out the NEPA review and documentation process on behalf of the Federal Highway Administration for transportation projects that receive federal funding or require a major federal action. Completion of the NEPA review allows FHWA to authorize funding for the final design and construction of a project, including any necessary right-of-way acquisitions. While NEPA is only required for federal undertakings, the BOE also completes a NEPA-equivalent environmental review for non-federal projects.

Classifications of NEPA

Federal undertakings are classified into one of three levels under NEPA. Generally, large-scale projects involving major new location construction are developed as Class I projects and require the preparation of an Environmental Impact Statement (EIS). Minor construction projects are normally developed as Class II projects and are known as Categorical Exclusions (CE). They have no significant environmental impact and do not require an EIS or an Environmental Assessment (EA). When the environmental impact is not clearly established for major reconstruction and/or relocation projects, the project is classified as Class III and an EA is required to determine if an EIS is warranted.

The vast majority of NHDOT projects are Class II undertakings. The NHDOT and FHWA have a Programmatic Agreement for Categorical Exclusion Approvals (*Appendix C*), which establishes the types of projects, or "actions," that can be categorically excluded from the NEPA requirement to prepare an EA or EIS. Typically, classification as Categorical Exclusion must be confirmed with FHWA for each project. However, the Programmatic Agreement identifies certain actions that never or almost never cause significant environmental impacts; therefore, these actions are programmatically classified as Categorical Exclusions without further review by FHWA.

Chapter Four – Bureau of Environment Environmental Review Process

Within the BOE, the environmental review process begins when a "Request for Environmental Documentation" form (more commonly known as the Green Sheet, not to be confused with the Summary of Environmental Issues, which is also sometimes referred to as the green sheet) is sent from the project's originating Bureau to the Administrator of the BOE. The Green Sheet contains a brief description of the project as well as a synopsis of the need for the project, known constraints, and a list of reasonable alternatives to the project (see *Appendix D*). It also contains the tentative project schedule. Projects may originate from and may entail:

- Bridge Design (bridge replacement, widening, or rehabilitation of substructure and/or superstructure);
- Highway Design (reconstruction, rehabilitation, or preservation of existing roadways; safety improvements; widening; guardrail replacement; culvert replacement);
- Traffic (signal or signage installation or replacement);
- Highway Maintenance (betterment projects such as roadway resurfacing or restoration).

After receipt of the Green Sheet, the BOE Administrator provides the form to the Project Management Section Chief for assignment to the appropriate staff member. Project assignments are based on the scope of the project, anticipated issues, staff work load, and the project's anticipated schedule.

Once the project is assigned, the Environment Manager follows the steps outlined below as the project progresses. The Environmental Review Checklist is utilized to help avoid overlooking potential concerns (*Appendix E*).

Collection of Available Information

A thorough investigation of a project's potential environmental impacts requires gathering information from many different sources. Information about the project area can be obtained from:

Plans (existing detail plans; as-built plans; right-of-way plans)

<\\dot\DATA\Images\Projects\HTML-Templates\rptPlanInventory.html>

<\\dot\data\images\Bureaus\B14-FinanceContracts\Archive>

<\\dot\data\images\Bureaus\B14-FinanceContracts\Archive Bridge>

Maps

- USGS Maps
- Hurd and Co. 1892
- National Wetlands Inventory Maps
- Tax Maps
- Floodway/Floodplain Maps
- Coastal Zone Map
- NHDES Designated Rivers Map
- County Soil Surveys
- Prime, Unique, and Statewide Important Farmland Maps
- Groundwater Maps
- Sanborn Maps

Other

- Aerial Photos
- DES Contaminated Sites List
- Correspondence Files
- Cultural Resource Files
- Traffic Reports
- Accident Reports
- Bridge Files
- Bridge Inspection Reports

Many of the resources listed above are available through various mapping websites, including NHDES OneStop and NH GRANIT. In addition, the NH Natural Heritage Bureau and the US Fish & Wildlife Service provide online mapping tools to identify species of potential concern in the project area. Links to applicable websites and online tools are provided in the Environmental Review Checklist.

The Environmental Manager should track resources and issues that are investigated by completing the Environmental Review Checklist as information is obtained.

Field Reviews and Resource Delineations

The purpose of the field review is to become familiar with the project area and to begin a general assessment of the potential impacts associated with the project. The information gathered to this point will indicate the presence of certain resources within the project area and point to other social and/or economic issues that will need to be addressed. Prior to the field review, it is often helpful to obtain project plans from the project engineer.

A field review may not be necessary for certain statewide programmatic-type projects of minimal scope such as resurfacing and signage replacement, especially when these projects consist of multiple segments of roadways over a wide area. However, a field review should be completed for all other types of projects.

The site visit should include the following:

Potential Impact Evaluation

- Hazardous materials (complete Initial Site Assessment form)
- Wetlands and surface waters
- Invasive species
- Cultural resources
- Other resources of concern

Photographs

- All structures and features within the project area (buildings, cemeteries, parks, etc.)
- Bridges, especially abutments, rail, and spans
- Roadway features (approaches, intersections, lane configurations, etc.)
- Stone walls
- General streetscape
- Environmental resources, such as wetlands, rare plants, surface waters, etc.

Post Site Visit

Wetlands

The Environmental Manager should consult with the BOE Wetlands Program Manager to determine the best method for delineating wetlands. Consultation with design personnel may be necessary to determine the appropriate limits of the wetland delineation. See Section 19 for more information.

Historic or Archaeological Resources

The Environmental Manager should review the project and potential cultural resource concerns with the BOE Cultural Resources Program to determine the appropriate next steps. See Section 6 for more information.

Contamination/Hazardous Materials

If any contamination or hazardous material is suspected in the vicinity of the project, based on field observations or known remediation sites listed in the NHDES OneStop database, the Environmental Manager should provide the BOE Contamination Program Manager with the Initial Site Assessment (ISA) form completed in the field, results of the database search via the NHDES OneStop GIS online tool, and a description and location of the project. The Contamination Program Manager will determine if further investigation is required and, if necessary, will coordinate with the appropriate consultant and NHDES. Generally, the Contamination Program Manager will need to know the depth and limits of proposed excavation to determine potential concerns. See Section 5 for more information.

Water Quality

The Environmental Manager should refer to the Alternation of Terrain flowchart (*Appendix J*) to determine the level of involvement the project is likely to have regarding water quality issues. The results of the flowchart review should be provided to the BOE Water Quality Program Manager with a description of the project, including location, alternatives under consideration, potential size of the project, and potential area of earth disturbance. The Water Quality Program Manager will determine if the project requires coverage under the EPA Construction General Permit and, if so, will save a copy of the NPDES Special Attention in the project folder on the S drive. If the project should consider stormwater treatment, the Water Quality Program Manager and Environmental Manager must coordinate with the design team. See Section 18 for more information.

Air and Noise

The Environmental Manager should complete the Air & Noise Checklist to determine if the Air & Noise Program Manager will need to review the project. See Sections 1 and 13 for more information.

Initial Review Summary

The Summary of Initial Environmental Review (*Appendix F*) should be completed, identifying any natural or cultural resources that may require further investigation and outlining potential constraints that may be of concern to the proposed project. This summary should be sent to the project engineer and Project Manager at the Environmental Manager's earliest convenience so that potential constraints can inform the development of the project scope and budget.

Plot Findings in CAD/D as Appropriate

Information such as the location of wetlands, surface waters, invasive plants, historic properties or districts, noise receptors, etc., when delineated by BOE staff, should be entered on the appropriate layer in the CAD/D system. The Environmental Analyst within the Project Management Section serves as the BOE CAD/D liaison. The Environmental Manager should coordinate with the Environmental Analyst

and the project engineer to ensure that environmental information is entered and reviewed for accuracy. More information on CAD/D procedures and standards can be found here: <http://dotweb/cadd/general.htm>

Coordination

NHDOT coordinates with federal, state, regional, and local agencies, as well as interested persons or groups, to identify significant issues and viable mitigation measures to be analyzed during project development. This coordination entails written correspondence, meetings, and other communications.

NEPA regulations 23 CFR 771.111 (FHWA) and 40 CFR 1506.6 (Council on Environmental Quality) require early and continuing opportunities for the public to be involved in the NEPA process. It is the responsibility of the Bureau of Environment to evaluate input on social, economic, natural, and cultural resources and issues, ensuring that it is considered during the development of the project and included as appropriate in the environmental document.

Initial Contact Letters

As part of the public involvement process, the Environmental Manager is responsible for preparing and sending initial contact letters soon after receiving the green sheet. Initial contact letters are sent to town officials, local organizations, and State and Federal agencies to solicit feedback on potential environmental concerns, and to help identify social, economic, and environmental issues and resources within a project area. Initial contact letters are also used as an opportunity to invite interested parties to become Consulting Parties under Section 106 of the National Historic Preservation Act.

Initial contact letters are sent for federal and state funded projects, and the number of letters sent is determined by the project scope and anticipated resource concerns, as determined by the Environmental Manager. More information on this process is located on the BOE S drive (S:\Environment\BOE Procedures\Initial Contact Letters).

Interagency Coordination Meetings

NHDOT BOE staff members organize monthly interagency cultural resource and natural resource coordination meetings. These meetings provide an opportunity for early coordination and problem solving on natural and cultural resource concerns that arise in the development of transportation projects, thereby streamlining State and Federal permitting and approvals. More information on each meeting is available on the BOE Website: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/project-management/nracrmeetings.htm>

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/crmeetings.htm>

Public Informational Meetings

With the exception of resurfacing and other programmatic-type projects, most NHDOT projects require at least one Public Informational Meeting. The necessity for the Public Informational Meeting is determined by the Project Manager and project engineer. It is generally the Environmental Manager's responsibility to provide an overview of environmental issues at this meeting and seek input on resources of concern. In addition, this meeting should be used as an opportunity to describe the Section 106 consultation process and invite interested parties to become consulting parties under Section 106. More information on consulting parties can be found here:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/documents/Bureau16consultingpartyhandout-updatedAug2011.pdf>

Public Hearings

Projects that require the acquisition of right-of-way or permanent easements generally require a formal Public Hearing to establish the need for the project. The NHDOT Bureau of Right-of-way coordinates this process: <http://www.nh.gov/dot/org/projectdevelopment/rightofway/index.htm>. The NHDOT also uses the Public Hearing as an opportunity to provide a summary of environmental impacts. The Environmental Manager attends the Hearing and provides an environmental statement. For Categorical Exclusions, it is NHDOT's policy that the NEPA document be available in draft form approximately two weeks prior to the Hearing.

Project Classification

Projects receiving federal funding must be classified in accordance with 23 CFR 771. Classification occurs only after sufficient environmental studies have been undertaken to determine that a project will have significant environmental impacts (Class I – Environmental Impact Statement) or no significant environmental impacts (Class II – Categorical Exclusion). If the project's environmental impact is uncertain, the project will be classified as Class III (Environmental Assessment).

The EIS process is completed in the following steps: Notice of Intent, draft EIS, final EIS, and record of decision (ROD). Details on the EIS process are available on the online FHWA Environmental Review Toolkit: <http://environment.fhwa.dot.gov/projdev/docueis.asp>. The EA process involves FHWA approval of the document followed by public notices of document availability (30 day review period). The process culminates in a determination by FHWA that the project would result in significant impacts, at which time an EIS must be prepared, or the project would not result in significant impacts, at which time a finding of no significant impact (FONSI) is prepared. More details on the EA process are available here: <http://environment.fhwa.dot.gov/projdev/docuea.asp>

After completion of preliminary environmental studies, the Bureau of Environment recommends a project classification according to the criteria for Class I, II, and III projects. The recommended project classification is then submitted to FHWA for concurrence with the draft NEPA document in all cases except for Programmatic Categorical Exclusions, which do not require concurrence from FHWA. The BOE Administrator, in coordination with the Project Management Section Chief, is responsible for sending the recommended classification to FHWA. FHWA will review each project's recommended classification and notify the Department by letter that they either concur or recommend a different classification.

For projects classified as Categorical Exclusions that are subject to a Public Hearing, confirmation of the original classification is required. After considering comments received at the Public Hearing and/or on the environmental document, the BOE Administrator, in consultation with the project's Environmental Manager, determines if the CE classification may be sustained. If the NEPA classification does not need to change following the Public Hearing, a letter is sent to FHWA recommending reaffirmation of the classification, in conjunction with submittal of the final NEPA document. At this time, copies of the final document can be distributed to the Project Manager, town officials, and other interested parties, and/or placed on the NHDOT website at the Project Information Center:

<http://www.nh.gov/dot/projects/specifics.htm>

If comments received at the Public Hearing reveal unanticipated concerns or impacts, and re-classification of the project is necessary, the appropriate new level of environmental documentation will be required. This determination should be made following review of the hearing transcript and Report of the Commissioner. In all cases, FHWA must confirm the classification of the project and determine that NEPA has been completed before the project can progress to final design. If the project requires a Section 4(f) Evaluation, FHWA must also make a Section 4(f) Determination before the project can

proceed. See Chapter 4, Section 15 for information on review and distribution of Section 4(f) Evaluations.

NHDOT document templates and sample documents are located here:
<http://www.nh.gov/dot/org/projectdevelopment/environment/documents.htm>

Permitting

Most transportation projects require permits before construction activities can begin. The Environmental Manager will advise design personnel of the type(s) of permit required by a proposed action. BOE personnel will then coordinate with the appropriate agency representatives to facilitate acquisition of the permit. Permit applications are generally submitted during Final Design of the project, upon completion of the Slope & Drain phase. The following permits may be required:

- NHDES Wetlands Permit (Dredge & Fill; Permit By Notification; OR Routine Roadway Maintenance Notification)
- Section 404 Permit (Army Corps Individual Permit OR Programmatic General Permit)
- NHDES Shoreland Permit OR Shoreland Permit By Notification
- Water Quality Certification
- Coast Guard Section 9 Bridge Permit

A summary of the project development timeline can be found in Appendix L.

Natural, Cultural, & Socioeconomic Resources and Issues

The following is a list of the natural, cultural, and socioeconomic resources and issues that are generally considered during the environmental review process. More details on the resources or issues shown in bold are provided below in the sections that follow. Sections 1-22 are listed in alphabetical order.

Social/Economic

Safety
 Transportation Patterns
Air Quality
Noise
 Displacements
Contamination/Hazardous Materials
 Neighborhoods
 Business Impacts
 Land Acquisition
 Land Use
 Tax Base
 Recreation
Conservation Lands
 Construction Impacts

Farmlands
 Community Services
 Energy Needs
 Utilities
Environmental Justice
Coast Guard Section 6(f)

Natural

Water Quality
Wetlands/Surface Waters
 Groundwater
Floodplains/Floodways
Wildlife/Fisheries
Rare Species/ Natural Communities
Shoreland Protection
Wild & Scenic Rivers
Designated Rivers
White Mountain National Forest
Coastal Zone
Invasive Plants
Essential Fish Habitat

Cultural

Cultural Resources (Historical/Archaeological) Section 4(f)

Section 1 – Air Quality

Please refer to Chapter 4 for a detailed overview and technical guidance on the Air and Noise Program. The following is a summary of how air quality is addressed during the NEPA review process.

Overview

The Clean Air Act of 1970 (CAA), the Clean Air Act Amendments of 1990 (CAAA) and the National Environmental Policy Act (NEPA) require that each federal action be evaluated for potential impacts to air quality. As such, the NHDOT Environmental Managers are asked to review all projects with the Air and Noise Program Manager for a cursory review early in preliminary design. The following types of projects are likely to require additional review for air quality impacts:

- Federal projects which do not appear in the STIP or that have not been accurately identified in the STIP
- Projects identified in the STIP as “regionally significant”
- Projects in Manchester or Nashua
- Projects involving the addition of or alteration of an existing traffic signal or intersection

Upon initial review by the Air and Noise Program, the Environmental Manager may be asked to provide a completed Air and Noise Request for Project Review form (*Appendix G*). This form is intended to provide the Program with the necessary information to complete a more detailed air quality impact analysis. If any anticipated air quality impacts are identified during the completion of this analysis, the Program shall investigate potential mitigation measures. Any mitigation measure that is found to be both feasible and reasonable shall be incorporated into the design of the project and included as an environmental commitment to the NEPA process.

Section 2 – Coast Guard Section 9 Bridge Permit

Overview

Under Section 9 of the Rivers and Harbors Act of 1899, and the General Bridge Act of 1946, the US Coast Guard has the authority to approve proposed bridge and/or causeway locations and plans. The primary purpose of these Acts is to preserve the public right of navigation and to prevent interference with interstate and international commerce. These Acts require that pertinent project information, including but not limited to proposed locations and plans for new bridges, be approved by the Coast Guard prior to construction.

Regulations and Policies

- Section 9 of the Rivers and Harbors Act of 1899
- General Bridge Act of 1946
- US Coast Guard by DOT Order 1100.1, Dated March 31, 1967 (49 CFR 1.4(a)(3))
- NHDOT US Coast Guard Coordination Manual

Technical Guidance

Alteration or replacement of bridges over navigable waters may require a Bridge Permit from the Coast Guard.

For Federal-Aid highway projects involving navigable waters, the NHDOT Bureau of Bridge Design must ask the Federal Highway Administration (FHWA) to coordinate with the Coast Guard to determine if a Bridge Permit is necessary. For non-FHWA funded projects involving navigable waters, Bridge Design must initiate coordination with the Coast Guard.

Navigable waters in New Hampshire include all tidal waters, the Merrimack River from the Massachusetts/New Hampshire state line to Concord, NH; Lake Umbagog within the State of NH; and the Connecticut River to Pittsburg.

If the Coast Guard confirms that a Bridge Permit is required, the NHDOT must apply for the permit and provide pertinent project information. Refer to the US Coast Guard Bridge Permit Application Guide: http://www.uscg.mil/hq/cg5/cg551/CP_16591_3C.pdf

If a NHDOT Project requires a Bridge Permit, a Water Quality Certificate is also required under Section 401 of the federal Clean Water Act (CWA). According to Section 401, any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters, shall provide the licensing or permitting agency with a certification from the state where the discharge originates or will originate, that the discharge will meet state surface water quality standards.

The Environmental Manager must coordinate with the design team on obtaining a Bridge Permit, and the BOE Water Quality Program Manager on obtaining the Water Quality Certificate. It is essential that the need for these permits is determined early in design of the project since these permitting processes can take up to a year.

Permits and Approvals

- Section 9 Bridge Permit
- Section 401 Water Quality Certification

Section 3 – Coastal Zone

Overview

The Coastal Zone Management Act (CZMA) is the congressional plan for managing America's coasts. It was enacted to encourage the participation and cooperation of state, local, regional, and federal agencies and governments having programs affecting the coastal zone. The CZMA is the only environmental program that requires a balance between economic development and resource protection within the coastal zone. The act allows states to develop a Coastal Zone Management Plan (CZMP) in which they define permissible land and water use within the state's coastal zone. This coastal zone extends 3 miles seaward and inland as far as necessary to protect the coast.

The communities that are subject to the CZMA make up New Hampshire's coastal zone: Dover, Durham, Exeter, Greenland, Hampton, Hampton Falls, Madbury, Newfields, Newington, Newmarket, New Castle, North Hampton, Portsmouth, Rollinsford, Rye, Seabrook, and Stratham.

Regulations and Policies

- Coastal Zone Management Act of 1972
- Federal Consistency Regulations (15 CFR Part 930)
- Federal Executive Order 12372
- State Executive Order 83-10

Technical Guidance

The New Hampshire Coastal Program (NHCP) is authorized by the CMZA and administered by the New Hampshire Department of Environmental Services (NHDES). The CMZA established a formal review process known as federal consistency. The federal consistency review process in New Hampshire ensures that federal activities affecting any land or water use, or natural resource, in New Hampshire's coastal zone will be conducted in a manner consistent with the enforceable policies of the NHCP. NHDOT projects located within the aforementioned coastal zone communities may require a federal consistency review. The determination of the need for such review is made by the NHCP's Federal Consistency Coordinator. NHDOT projects that generally require a formal consistency finding are those that require a non-programmatic federal permit (including Army Corps Individual Permit or Coast Guard Bridge Permit), and those that receive funding from specific federal programs within the US DOT (FHWA, Federal Railroad Administration, Federal Aviation Administration, and Federal Transit Administration). The federal program that funds most highway projects, the Federal-Aid Highway Program, requires federal consistency review under the CZMA. The source of funding for a project can be confirmed in ProMIS or by the Project Manager.

Projects that require a consistency finding due to federal funding must be reviewed through the intergovernmental review process. The contact for this process is the Grants and Compliance Office at the NH Office of Energy and Planning (OEP). Once the NHCP confirms that a consistency finding is required, the Environmental Manager needs to prepare a memo to OEP that provides a project summary, source of funding, anticipated permits, and the contact for the lead Federal agency. If available, it is helpful to attach a detailed project description, preliminary plans, location map, conference report from a Public Informational Meeting, and a Project Report from ProMIS. FHWA should be copied on this memo. The intergovernmental review process can take up to 180 days.

Please refer to CZMA 307(c) Federal Consistency and the New Hampshire Coastal Program manual dated 1998 located at the NH Coastal Program website:

<http://des.nh.gov/organization/divisions/water/wmb/coastal/cfcp/index.htm>

Refer to Appendix K for more information on determining if a federal consistency review is needed.

Permits and Approvals

- Coastal Zone Consistency Finding

Section 4 – Conservation Lands

Overview

Conservation land is land that is protected from further development in perpetuity to retain certain natural or cultural values. Protection is accomplished with deed restrictions or a conservation easement held by a public or private entity other than the landowner. In addition to private conservation organizations, there are two New Hampshire authorities that may hold an interest in or easement on certain conservation lands.

The Conservation Land Stewardship (CLS) Program is responsible for monitoring and protecting the conservation values of conservation easement lands in which the State of New Hampshire has invested through the Land Conservation Investment Program (LCIP). The CLS Program is located within the NH Office of Energy & Planning. The LCIP is responsible for monitoring the condition and status of 80 New

Hampshire-held conservation easements (approx. 25,000 acres) acquired by the LCIP. The LCIP Monitoring Program is funded by the interest generated from the LCIP Monitoring Endowment. The endowment was created to ensure that New Hampshire's investment in conservation land would be maintained in perpetuity. In 1998, Chapter 364 was codified at RSA 162-C:6 to allow in certain circumstances the New Hampshire Department of Transportation (NHDOT) to acquire lands from LCIP-encumbered properties for minor highway improvements where no reasonable or prudent alternatives exist. RSA 162-C:6 established a review, hearing, and appraisal process through the Council on Resources and Development (CORD) to release, when deemed necessary, LCIP lands to the NHDOT.

The New Hampshire Land and Community Heritage Investment Program (LCHIP) is an independent state authority that makes matching grants to New Hampshire communities and non-profits to conserve and preserve New Hampshire's most important natural, cultural and historic resources. LCHIP works in partnership with New Hampshire municipalities and non-profits to acquire land and cultural resources, or interests therein, with local, regional and statewide significance. The legislatively mandated mission of the program is to ensure the perpetual contribution of these resources to the economy, environment and quality of life in New Hampshire. RSA 227-M:13 stipulates that the NHDOT may "obtain interests in lands acquired by the Authority under this chapter adjacent to state highways. Permissible expansion, modifications, or alterations under this section shall include drainage easements, slope easements, lane widening, the addition of a passing, climbing, or turning lane, or similar adjustments, but shall not include construction of a new highway or portion thereof, construction of a bypass for an existing highway, or similar major alterations. Approval shall not be granted if reasonable and prudent alternatives exist nor if individual or cumulative approvals are likely to materially impair the conservation or preservation purposes for which the parcel was originally protected." A public hearing is required before a decision can be made.

Regulations and Policies

- RSA 162-C:6
- NH RSA 227-M

Technical Guidance

The Environmental Manager must send an initial contact letter to the CLS Program and LCHIP to determine if LCIP or LCHIP lands/easements are located within or adjacent to the project area. This letter should be sent for all projects, regardless of funding, except for those that involve only paving. In addition, the Environmental Manager should utilize online mapping tools, such as NH GRANIT, to determine if other types of conservation lands exist in the project area. This review, along with the initial contact letters sent to town officials, should uncover any conservation lands that may be present. The NHDOT Bureau of Right of Way may also determine if conservation easements are present.

If any such lands are present, the Environmental Manager must coordinate with the design team to incorporate, to the extent practicable, any measures to avoid or minimize impacts. If impacts can be avoided, it is prudent to include an environmental commitment in the environmental document to note the location of such lands and alert the Contractor that impacts must be avoided.

If the design team determines that impacts to conservation land cannot be avoided, a hearing may be required depending on the protection entity. Acquisition of land protected by conservation easement may also require review by the NH Attorney General's Office. A property appraisal to determine the value of the land proposed for acquisition may be necessary, and replacement in kind may be necessary for mitigation. The Environmental Manager must coordinate closely with the appropriate protecting entities, the Project Manager, and the Bureau of Right of Way.

Permits and Approvals

- Approval by Protecting Entity

Section 5 – Contamination/Hazardous Materials

Please refer to Chapter Six for detailed information on the Contamination Program.

Overview

The Environmental Manager is responsible for performing the initial New Hampshire Department of Environmental Services (NHDES) OneStop search to identify potential contaminated sites and known remediation sites (active or closed) within 1,000 feet of a project as part of the initial environmental review. The Environmental Manager provides the list of identified sites to the Contamination Program. Based on the project information and list of contaminated sites, the Contamination Program will provide an interpretation of whether it meets the “straight face” test or not. If it does not meet the “straight face” test, the Contamination Program will identify the questions that need to be answered to determine whether the site(s) would affect the project. The Environmental Manager is responsible for communicating the outcome with the Project Manager. If it is determined that the assistance of the Contamination Program is needed, it is the responsibility of the Environmental Manager to coordinate with the Contamination Program.

Section 6 – Cultural Resources

Please refer to Chapter Seven – Cultural Resources for a detailed overview of the Cultural Resources Program.

Overview

Federal and State legislation directs the consideration of historical resources for NHDOT undertakings. Section 106 of the National Historic Preservation Act requires federal agencies and those receiving federal funding, permitting or licensing to take into account the impacts of their undertakings on properties eligible for or listed in the National Register of Historic Places and affords the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on the undertaking prior to the project’s execution. Projects that are not subject to Section 106 must adhere to regulations of NH RSA 227-c: Historic Properties.

Regulations and Policies

- Section 106 of the National Historic Preservation Act
- NH RSA 227-c: Historic Properties

Technical Guidance

Please refer to Appendix N for details instructions on cultural resource review procedures.

Section 7 – Designated Rivers

Overview

The Rivers Management and Protection Act, NH RSA 483, was established in 1988 and allows individuals or organizations to nominate a river as a NH Designated River. Once approved by the

Legislature and signed by the Governor, a nominated river becomes a Designated River and the quality and quantity of flow is afforded greater regulatory protection. The Rivers Management and Protection Program (RMPP) of the NH Department of Environmental Services oversees the Designated Rivers program.

After designation, a Local Advisory Committee (LAC) is formed, which is responsible for adopting and implementing a River Management Plan. The LAC also reviews permit applications for any work proposed within a ¼ mile of a Designated River.

The entire length of each Designated River is classified using four categories: natural, rural, rural-community, and community. Specific protection measures apply to each of these categories, with the most important difference being restrictive limitations on channel alterations in natural river segments. All natural segments of Designated Rivers are also classified as Outstanding Resource Waters under the Surface Water Quality Regulations (Env-Wq 1700).

Regulations and Policies

- NH RSA 483, New Hampshire Rivers Management and Protection Act of 1988
- Env-Wq 1700, Surface Water Quality Regulations

Technical Guidance

The Environmental Manager should determine if the project is located within a ¼ mile of a Designated River, and identify the classification of the river segment where the project is located. A map of all Designated Rivers is located on the DES website.

Natural River Segments

If the project is located within a ¼ mile of a natural river segment, coordinate with the NHDOT Bureau of Environment's Water Quality Program Manager regarding Outstanding Resource Water (ORW) requirements (Env-Wq 1708.05).

If the project will impact the banks or channel of a natural river segment, work must comply with RSA 483:9 III. Coordinate with the DES Rivers Coordinator.

Stream Crossings

Any stream crossing located within a ¼ mile of a Designated River is classified as a Tier 3 crossing regardless of watershed size (Env-Wt 904.04(a)(2)). See Section 19 for more information.

Permit Applications

If the project is located within a ¼ mile of a Designated River, wetland and shoreland permit applications must be sent to the LAC via certified mail. If the LAC is inactive, applications should be sent to the DES Rivers Coordinator.

Notification of Routine Roadway and Railway Maintenance cannot be used for maintenance activities located within a ¼ mile of a Designated River.

NEPA

If the project is located within a ¼ mile of a Designated River, the LAC should be sent an initial contact letter unless the project entails only resurfacing or signage. If the LAC is inactive, the letter should be sent to the DES Rivers Coordinator.

Permits and Approvals

Permit applications for work within a ¼ mile of a Designated River must be sent to the LAC via certified mail. The LAC may provide comments on the application, some of which may require additional coordination to satisfy concerns. While the LAC does not have authority to approve or deny an application, the DES Wetlands Bureau does take their concerns into account when reviewing applications.

Section 8 – Environmental Justice

Overview

The United States Environmental Protection Agency (EPA) defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Per Executive Order 12898, Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Federal agencies must also consider Environmental Justice (EJ) under NEPA, which includes examining and disclosing the possible and likely effects of their actions on the human environment.

The US Department of Transportation has adopted the following three EJ principles:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Regulations and Policies

- Title VI of the Civil Rights Act of 1964
- Executive Order on Environmental Justice (EO 12898)
- US DOT Order on Environmental Justice
- FHWA Order on Environmental Justice
- Executive Order on Improving Access to Services for Persons with Limited English Proficiency (EO 13166)

Technical Guidance

The NHDOT Bureau of Environment facilitates the project development process by integrating environmental considerations and regulatory requirements into NHDOT's transportation program. To effectuate Environmental Justice and to eliminate disparate impact on populations protected under Title VI and Executive Order 12898, the BOE provides technical expertise required in analyzing the social, economic, and environmental impacts of each project.

For projects that originate in the Preliminary Design Section of the Bureau of Highway Design, the Chief of Preliminary Design requests an Environmental Justice Population Analysis from the NHDOT Chief of Labor Compliance. Results of this analysis are sent to Highway Design and the Bureau of Environment. The analysis determines if there are meaningfully greater EJ populations in the project area as compared

to the surrounding area. If a project does not originate in Preliminary Design, and is expected to be a non-programmatic Categorical Exclusion, the Environmental Manager should request the Population Analysis from the Chief of Labor Compliance.

EJ populations included in the population analysis are elderly, minority, low-income, disabled, and limited English proficiency populations. The analysis includes special considerations that should be taken into account in the project's design and public outreach. For example, if a project is located in an area with a large population of individuals with limited proficiency in English, the Project Manager may determine that it's appropriate to provide project notices in more than one language.

The Environmental Manager should note the presence of any EJ populations, as well as any special considerations associated with these populations, in the environmental document, and describe how these were addressed.

Permits and Approvals

Environmental Justice consists of core principles that are incorporated into all aspects of project planning, design, and outreach. There are no permits or approvals associated with Environmental Justice.

Section 9 – Essential Fish Habitat

Overview

Per the National Oceanic and Atmospheric Administration (NOAA), “Essential Fish Habitat (EFH) is identified for species managed in Fishery Management Plans under the Magnuson-Stevens Fishery Conservation and Management Act. EFH is the habitat necessary for managed fish to complete their life cycle, thus contributing to a fishery that can be harvested sustainably.” NOAA, regional fishery management councils, and other federal agencies work together to minimize impacts to EFH from coastal and marine development. EFH includes aquatic habitat, wetlands, coral reefs, sea grasses and rivers.

Regulations and Policies

- Magnuson-Stevens Fishery Conservation and Management Act

Technical Guidance

The Magnuson-Stevens Fishery Conservation and Management Act mandates that federal agencies conduct an EFH consultation with NOAA National Marine Fisheries Service (NMFS) regarding any actions authorized, funded, or undertaken that may adversely affect EFH. An adverse effect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Tidal waters designated as EFH can be identified here:

<http://www.greateratlantic.fisheries.noaa.gov/hcd/STATES4/smaine.htm>

A list of waters designated as EFH for Atlantic salmon is included as Appendix C in the Army Corps Programmatic General Permit:

<http://www.nae.usace.army.mil/Missions/Regulatory/StateGeneralPermits/NewHampshireGeneralPermit.aspx>

A worksheet has been designed to assist Federal agencies in determining whether an EFH consultation is necessary, and in developing the needed information should a consultation be required. The EFH Assessment Worksheet for Federal Agencies is a series of questions that provide an initial screening to help determine the overall degree of adverse effects on EFH. The EFH Assessment Worksheet for Federal Agencies is located here:

<http://www.greateratlantic.fisheries.noaa.gov/hcd/assessworksheetfinal.rtf>

The EFH Assessment Worksheet should be prepared for any federally funded or permitted NHDOT project that will result in impacts within the EFH-designated water body, or that is directly adjacent to EFH and has substantial water quality implications (such as projects on new alignment or that result in increased impervious surface). The Environmental Manager, working on behalf of FHWA, prepares the worksheet. If it is determined that the project will result in no adverse effect on EFH, no consultation is required. If it is determined that there will be an adverse effect but the effect is not substantial, then only an abbreviated EFH consultation is required. The worksheet (including a detailed project description, location map, and photographs) should be emailed to NMFS (copying FHWA) for concurrence and conservation recommendations. If it is determined that the project will result in a substantial adverse effect on EFH, an expanded EFH consultation is required. A more detailed EFH Assessment will need to be prepared and sent to NMFS. Coordination meetings may be necessary to discuss details of the project and determine how to minimize or mitigate impacts to EFH.

For more information, please refer to the NOAA Fisheries Northeast Regional Office:

<http://www.greateratlantic.fisheries.noaa.gov/hcd/>

Permits and Approvals

- NMFS Concurrence on Proposed Action

Section 10 – Farmlands/Farmland Soils

Overview

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding [SSM, USDA Handbook No. 18, October 1993].

In accordance with the Farmland Protection Policy Act (FPPA) of 1981, federal agencies must identify and consider the effects of their programs on the conversion of farmland to non-agricultural uses. Farmland includes “prime farmland, unique farmland or other farmland that is of statewide or local importance.” Farmland soils subject to FPPA requirements do not have to be currently used for cropland. They can be forestland, pastureland, cropland, or other land, but not water or urban built-up land.

A *Farmland Conversion Impact Rating Form (AD-1006 or CPA-106)* must be completed when it is determined that a proposed project will impact farmlands subject to the Farmland Protection Policy Act.

Regulations and Policies

- Farmland Protection Policy Act of 1981 (Public Law 97-98, subtitle I of Title XV, Section 1539-1549)

Technical Guidance

Form *AD-1006* is required for any project that may irreversibly convert farmland of prime importance to non-agricultural use and is completed or funded by a Federal Agency (such as the Federal Highway Administration) or receives technical assistance from the Natural Resource Conservation Service (NRCS). If the project qualifies as a Corridor-Type Project, i.e. a transportation project connecting two distant points and crossing several different tracts of land, form *CPA-106* should be used. These forms can be found on the NRCS website:

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/>

The FPPA contains provisions that exempt construction within an existing right-of-way purchased on or before August 4, 1984, as well as projects involving land already in or committed to urban development (land with a density of 30 structures per 40-acre area). If these exemptions apply to a NHDOT project, then coordination with NRCS is not necessary and this should be noted in the environmental document.

To determine if protected farmlands are present within the proposed project's area of impact, refer to the farmland soils maps contained in the New Hampshire GIS (*GRANIT*) and contact the appropriate Natural Resource Planning Leader for NRCS.

Permits and Approvals

- Approval is required from NRCS for projects impacting farmland soils.

Section 11 – Floodplains/Floodways

Overview

Floodplains are lowland areas adjoining inland and coastal waters that are periodically inundated by floodwaters. The Regulatory Floodway is the floodplain area that is “reserved in an open manner, i.e., unconfined or unobstructed either horizontally or vertically, to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than 1 foot as established by the Federal Emergency Management Agency (FEMA) for administering the National Flood Insurance Program” (23 CFR 650A). The New Hampshire Office of Energy and Planning administers the National Flood Insurance Program in New Hampshire and is the State coordinating agency for the National Flood Insurance Program (NFIP) of FEMA

Executive Order 11988, Floodplain Management, requires Federal agencies to evaluate the potential effects of actions it may take in a floodplain to avoid adversely impacting floodplains wherever possible

Regulations and Policies

- Executive Order 11988 Floodplain Management, dated May 24, 1977
- Code of Federal Regulations Title 23 Location and Design of Encroachments on Floodplains (23 CFR 650A)
- Code of Federal Regulations Title 44
- New Hampshire Executive Order 96-4

Technical Guidance

The Environmental Manager determines if floodplains or regulatory floodways are present in the project area by utilizing mapping tools available through the FEMA or NH GRANIT websites. If present and the proposed project may result in impacts to the regulatory floodway or floodplains that result in a change in base flood elevation or flood storage capacity, the Environmental Manager initiates contact with the NH Office of Energy and Planning (OEP) and serves as the liaison between OEP and the appropriate Design bureau.

State Executive Order 96-4 requires all NH state agencies to comply with the floodplain management regulations of communities that participate in the NFIP. Coordination with FEMA is necessary only if there are impacts to the regulatory floodway or changes to the boundary of the floodplain or floodway due to an increase in water surface elevation above what has been calculated in the Flood Insurance Study (FIS), which is available through OEP. Regulations specify that there can be no fill in the floodway unless a no-rise condition can be proven. If this is not possible, then NFIP regulations require a Conditional Letter of Map Revision (CLOMR) be obtained from FEMA before the following types of projects can be constructed:

- A project on a stream or river for which base flood elevations have been specified but a regulatory floodway has not been designated if the development would result in more than a one foot increase in the base flood elevation.
- A project on a stream or river for which base flood elevations and a regulatory floodway have been designated and the development would result in any increase in the base flood elevation.

Additionally, 23 CFR 650A states that a proposed action that includes a significant encroachment in a floodplain shall not be approved unless the FHWA finds that the proposed significant encroachment is the only practicable alternative. FHWA and NHDOT approved a Programmatic Floodplain Finding for Categorical Exclusions in 2003 (*Appendix I*). This finding assumes that NEPA documentation will include:

- (1) The reasons why the proposed action must be located in the floodplain,
- (2) The alternatives considered and why they were not practicable, and
- (3) A statement indicating whether the action conforms to applicable State or local floodplain protection standards.

Changes in base flood elevation and flood storage volume must be determined through hydraulic analysis completed by Bridge or Highway Design. This evaluation should be completed as part of the alternatives analysis, and the Environmental Manager should keep FHWA informed of anticipated floodplain impacts.

Permits and Approvals

- Floodplain Finding from FHWA OR Programmatic Floodplain Finding for Categorical Exclusions
- Army Corps of Engineers concurrence (if fill in a floodplain is proposed)
- FEMA concurrence/approval (if changing base flood elevation)

Section 12 – Invasive Plants

Overview

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. These plants readily colonize disturbed areas and habitat edges, such as transportation and river corridors. Once established in these areas, invasive plants often continue to spread to adjacent habitats. Invasive plants are aggressive competitors with the ability to significantly reduce diversity of native plant and animal species.

Invasive plants spread by a variety of mechanisms, including birds, wind, and water. Human activities are also a major factor in the spread of these plants, from gardening and transport of nursery stock, to erosion control and wildlife plantings. Routine maintenance and construction activities along transportation corridors can also play a significant role in the spread of invasive plants by dispersing or introducing seeds and other viable plant materials.

Regulations and Policies

- Executive Order 13112 on Invasive Species
- FHWA Guidance on Invasive Species
- US Department of Agriculture Noxious Weed Control and Eradication Act, 7 U.S.C. 7701
- NH Department of Agriculture Administrative Rules, Invasive Species, Chapter Agr 3800; RSA 430:55
- NHDES Administrative Rules, Invasive Aquatic Species, Chapter Env-Wq 1303.02; RSA 487:16-a

Both the NH Department of Agriculture (NHDAMF) and NHDES regulate invasive species in New Hampshire, and each agency maintains a list of prohibited invasive plants. The NHDES regulates invasive aquatic plants, which also includes the emergent species purple loosestrife and phragmites, while the NHDAMF regulates terrestrial species. Env-Wq 1300 and Agr 3800 prohibit the spread of listed invasive plants.

To comply with state and federal regulations and policies, the NHDOT has adopted the use of best management practices and standard specifications that focus on preventing the spread of invasive plants during maintenance and construction activities.

Technical Guidance

Project Development

As part of the environmental review process, the Environmental Manager or a consultant is responsible for identifying existing populations of invasive plants and evaluating the extent to which these plants will be impacted by the project. Invasive plants are generally not delineated for statewide programmatic-type projects of minimal scope; however an environmental commitment should be included in the NEPA document to prohibit the spread of invasive plants during construction.

If invasive plants are identified in a project area, the NEPA document should include an environmental commitment that lists the species present and directs the contractor to use appropriate best management practices to prevent their spread.

Delineations of invasive plant populations are entered in the project's CAD/D drawing using the INV line style and are shown on construction plans when the project is advertised. Note that delineations done more than two years prior to advertising may require re-evaluation by the Environmental Manager to determine if there are new or expanded populations.

The Department's Standard Specifications designate invasive plants as Type I or Type II based on the complexity of control measures that are required to prevent the spread of the plants during construction. In general, Type II plants require a greater level of control due largely to their ability to spread from stem or root fragments. The most common Type II plants are phragmites, Japanese knotweed, and purple loosestrife. Invasive plant delineations that are entered into CAD/D are labeled as Type I or Type II.

The Prosecution of Work (POW) includes a section on invasive plants that the Design Bureau will ask the project's Environmental Manager to complete using standard language provided in the base POW. If invasive plants are located in the project area and will likely be impacted by construction, then this section will include language directing the Contractor to submit an Invasive Species Control and Management Plan prior to clearing and grubbing. The necessity of an Invasive Species Control and Management Plan is also noted in the Summary of Environmental Issues sheet that is included with the contract.

Operations

The Bureau of Environment assists Operations by providing education and outreach, and assistance with best management practices for invasive plants. The NHDOT manual *Best Management Practices for Roadside Invasive Plants* provides guidance on preventing the spread of invasive plants during routine maintenance activities. The manual can be found on the BOE website: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/invasivespecies.htm>

Permits and Approvals

Pesticide Permit - The use of herbicides in the right-of-way of public roads requires a Pesticide Permit from the NH Division of Pesticides, and the treatment must be carried out by a licensed pesticide applicator. If a Contractor chooses to use herbicides during construction, it is the responsibility of the Contractor to obtain the Pesticide Permit and retain a licensed pesticide applicator.

Invasive Species Control and Management Plan – The Contractor submits this plan to the Department after a contract is awarded. The plan is submitted for approval through the Construction Bureau's Contract Administrator to the BOE's Environmental Coordinator. The project's Environmental Manager may be asked to review the plan. The content of the plan is outlined in Item 697.11 of the Standard Specifications. It is important that all parties understand that in most cases the control measures implemented during construction will not result in eradication of the invasive plant(s). The Environmental Coordinator reviews the plan and submits a letter of approval, with or without conditions, to the Contract Administrator and plan preparer.

Contractors working on NHDOT projects can choose to utilize herbicides as part of the Invasive Species Control and Management Plan, although this is not a common practice because of the amount of time that may be needed to achieve full control of invasive plants. However, if a Contractor chooses to treat invasive plants with herbicides, it is the Contractor's responsibility to obtain a Pesticide Permit and hire a licensed applicator.

Section 13 – Noise

Please refer to Chapter 4 for a detailed overview and technical guidance on the Air and Noise Program. The following is a summary of the NEPA review process as it applies to highway traffic noise.

Overview

The Department's *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects* (Noise Policy), was established to meet the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) as a prerequisite for receiving federal-aid highway funds. Additionally, in order to maintain equitability between the Federal and State highway systems within the State of New Hampshire the Department has adopted the requirements of 23

CFR 772 to be applicable to all Type I highway projects subject to FHWA or NHDOT approval. The Department's Noise Policy is located here:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/air-noise.htm>.

The NHDOT will perform noise impact assessments for Type I projects during the Preliminary Design Phase of the highway project's development process. A noise analysis will be conducted for each reasonable Type I alternative. If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I and subsequently requires a noise analysis. The noise impact assessments will determine the noise impact of the proposed highway project on the community.

The NHDOT Environmental Managers are asked to consult with the Air and Noise Program Manager to determine if a project meets the definition of a Type I project and, if necessary, provide the completed Air and Noise Request for Project Review form (*Appendix G*). All Type I projects will be reviewed by the Air and Noise Program for noise impacts as defined in the Noise Policy. If any noise impacts are identified the Air and Noise Program shall evaluate any potential noise mitigation measures for both feasibility and reasonableness in accordance with the Department's Noise Policy. Any mitigation measure that is found to be both feasible and reasonable shall be incorporated into the design of the project and included as an environmental commitment to the NEPA process.

Section 14 – Rare Species/Natural Communities

Overview

The Federal Endangered Species Act requires federal agencies to conserve endangered and threatened species. The New Hampshire Natural Heritage Bureau (NHB) maintains data on known locations of federal and state endangered plant and animal species as well as exemplary natural communities. The NHDOT is required to coordinate with NHB on all projects.

Regulations and Policies

- Endangered Species Act of 1973 (16 USC 1531-1544)
- NH Endangered Species Conservation Act of 1979 (NH RSA 212-A)
- NH Native Plant Protection Act of 1987
- Migratory Bird Treaty Act of 1918 (16 USC 703-712)
- The Bald and Golden Eagle Protection Act (16 USC 668-668d)

Technical Guidance

In accordance with the Data Sharing Agreement between NHDOT and NHB, certain projects (resurfacing, signage, guardrail, rumble strips, signals and roadway striping) that meet criteria established by NHB may be screened with the NHB GIS Screening Layer to determine if any records of concern exist in the project area (*Appendix H*). If the use of the screening layer determines that no further review by NHB is necessary, a Note to File should be included in the environmental document. More information on this process can be found on the BOE S drive (S:\Environment\Rare Species\Data Sharing\NHB Screening Layer).

Other types of projects and projects that do not pass the screening layer will require submittal to NHB via the online DataCheck Tool. If there are no records in the project area, NHB will issue a letter stating that there are no anticipated impacts to rare species or natural communities. If a species/habitat is located in the project area, NHB will review the project for the likelihood of adverse impacts.

If NHB determines that the project could result in adverse impacts, further coordination with NHB, NH Fish and Game (NHFG) or the United States Fish and Wildlife Service (USFWS) will be necessary.

Federally Listed Species

The USFWS consultation website (<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm>) and Information, Planning, and Conservation System (<http://ecos.fws.gov/ipac/>) should be utilized to determine if potential concerns exist with federally listed species. If a project is located in tidal waters, the National Oceanic and Atmospheric Administration (NOAA) Protected Resources Division website should be consulted (<http://www.greateratlantic.fisheries.noaa.gov/Protected/>).

Potential concerns require coordination with USFWS or NOAA.

Informal Consultation

Informal consultation consists of discussions between the NHDOT and the USFWS regarding what types of listed species are located in the project area and the effect the project may have on the species. If it is determined that the proposed project is likely to adversely affect a listed species, then a formal consultation is required.

Formal Consultation

During a formal consultation, the NHDOT and USFWS share information regarding the scope of the project and the species likely affected. The USFWS will prepare a biological opinion on whether the proposed project will jeopardize the continued existence of a listed species. If a project is determined to jeopardize a species, the USFWS will provide the NHDOT with alternative actions.

Permits and Approvals

Approval or concurrence from NHB, Fish and Game, and/or USFWS may be necessary.

Section 15 – Section 4(f)

Overview

Section 4(f) of the USDOT Act addresses the use of land from publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public or private historic sites for Federal highway projects. Compliance with Section 4(f) is typically evaluated during the NEPA review process. Section 4(f) applies to transportation projects that receive funding from or require approval by FHWA.

FHWA regulations state: "The Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

- There is no feasible and prudent alternative to the use of land from the property; and
- The action includes all possible planning to minimize harm to the property resulting from such use.

Supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic, and environmental impacts or community disruption resulting from such alternatives reach extraordinary magnitudes."

It should be noted that Section 4(f) applies to all significant historic sites, regardless of ownership, but only to publicly owned public parks, recreational areas, and wildlife and waterfowl refuges. Significant historic sites are those listed or eligible for listing in the National Register of Historic Places.

Regulations and Policies

- Title 49 U.S.C. Section 303, originally Section 4(f) of the DOT Act of 1966
- Title 23 U.S.C. Section 138
- 23 Code of Federal Regulations (CFR) 774

Technical Guidance

Section 4(f) is a complex regulation. The guidance below provides a basic overview of the process. For more detailed guidance, please see the FHWA Section 4(f) Policy Paper (<http://environment.fhwa.dot.gov/4f/4fpolicy.pdf>) and always consult with FHWA for project-specific guidance.

There are three methods that FHWA can use for approving the use of a Section 4(f) resource: *de minimis* impact determination, Programmatic Section 4(f) Evaluation, and Individual Section 4(f) Evaluation. If a project requires preparation of a Section 4(f) Evaluation (Individual or Programmatic), approval of the final 4(f) Evaluation by FHWA is necessary before design approval can be granted by FHWA. This is typically done in conjunction with approval of the NEPA document.

Individual Section 4(f) Evaluation

An Individual Section 4(f) Evaluation must be prepared if FHWA determines that the use of Section 4(f) land does not qualify as *de minimis* or programmatic. Early coordination with the FHWA will determine the need for completing an Individual Section 4(f) Evaluation.

Individual Section 4(f) Evaluations are processed in two stages: draft and final. The draft evaluation must be provided to the US Department of the Interior and officials with jurisdiction, made available for public comment, and undergo legal sufficiency review with FHWA. A 45-day comment period is required. The draft evaluation should be submitted to FHWA as one hardcopy and 2 CDs. In addition, copies should be sent to town officials, SHPO, consulting parties, and other interested parties as warranted. The Environmental Manager should provide a preliminary draft evaluation to FHWA for initial review and comment prior to the formal distribution of the draft.

Programmatic Section 4(f) Evaluation

Programmatic Section 4(f) evaluations are a time-saving procedural option for preparing Individual Section 4(f) Evaluations for certain minor uses of Section 4(f) property. Under a Programmatic Section 4(f) Evaluation, certain conditions are laid out such that, if a project meets the conditions, it will satisfy the requirements of Section 4(f) that there are no feasible and prudent alternatives and that there has been all possible planning to minimize harm. These conditions generally relate to the type of project, the severity of impacts to Section 4(f) property, the evaluation of alternatives, the establishment of a procedure for minimizing harm to the Section 4(f) property, and adequate coordination with appropriate entities.

There are five nationwide Programmatic Section 4(f) Evaluations, for projects that:

- have a net benefit to a Section 4(f) property;
- necessitate the use of historic bridges;
- use minor amounts of land from public parks, recreation areas, and wildlife and waterfowl refuges;

- use minor amounts of land from historic sites; or
- consist of walkway and bikeway construction.

A Programmatic Section 4(f) Evaluation must contain specific sections that detail how the programmatic criteria are satisfied. The primary benefit in the use of a Programmatic Section 4(f) Evaluation is the amount of time saved during the approval process because programmatic evaluations do not require distribution of a draft document for legal sufficiency review or review by the US Department of the Interior. The Environmental Manager should still provide a draft evaluation to FHWA for review and comment prior to the formal distribution of the document.

De Minimis Section 4(f) Impact Determination

A *de minimis* impact is one that, after taking into account any measures to minimize harm (such as avoidance, minimization, mitigation or enhancement measures), results in either:

- 1) A Section 106 finding of no adverse effect or no historic properties affected on a historic property; or
- 2) A determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

The *de minimis* Section 4(f) impact determination is made by FHWA. A use of Section 4(f) property having a *de minimis* impact can be approved by FHWA without the need to develop and evaluate alternatives that would avoid using the Section 4(f) property. Information related to the *de minimis* impact determination should be included in the project NEPA document.

Officials with Jurisdiction

As described in the FHWA Section 4(f) Policy Paper, Section 4(f) regulations define the entities and individuals who are considered the officials with jurisdiction for various types of 4(f) resources. In the case of historic sites, the officials with jurisdiction are the State Historic Preservation Officer (SHPO). When the Advisory Council on Historic Preservation (ACHP) is involved in consultation concerning a property under Section 106, the ACHP is also an official with jurisdiction over that resource for the purposes of Section 4(f). When the Section 4(f) property is a National Historic Landmark, the designated official of the National Park Service is also an official with jurisdiction over that resource. In the case of public parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction are the officials of the agency or agencies that own or administer the property in question.

Early and ongoing coordination with the officials with jurisdiction is essential in avoiding project delays. Written concurrence from the officials with jurisdiction is required as part of the Section 4(f) Evaluation.

Permits and Approvals

- Federal Highway Approval of Section 4(f) Evaluation

Section 16 – Section 6(f)

Overview

According to the National Park Service, “the Land and Water Conservation Fund (LWCF) Program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies). The program is intended to create and maintain a nationwide legacy of high

quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States.”

Section 6(f) of the Land and Water Conservation Act requires that property acquired or developed with LWCF assistance shall be retained and used for public outdoor recreation. Any property so acquired or developed shall not be wholly or partly converted to other than public outdoor recreation uses without the approval of the National Park Service Regional Director pursuant to Section 6(f)(3) of the LWCF Act and 36 CFR Part 59. The Director has authority to disapprove conversion requests and/or reject proposed property substitutions.

More information on LWCF and Section 6(f) can be found in the National Park Service LWCF Manual: <http://www.nps.gov/nrcr/programs/lwcf/manual/lwcf.pdf>

Regulations and Policies

- Land and Water Conservation Act
- Code of Federal Regulations Title 36, Chapter 1, Part 59

Technical Guidance

The NH Division of Parks and Recreation is the State LWCF Manager. Any permanent or temporary use of a LWCF property must be reviewed and approved by the LWCF Manager and the National Park Service, and conversion of LWCF property, if approved, may require replacement in kind (mitigation).

Upon assignment of a project, the NHDOT BOE Environmental Manager sends an initial contact letter to the NH Division of Parks and Recreation to determine if any LWCF properties exist in the project area. One exception to this is when a project involves only paving an existing roadway, in which case a letter does not need to be sent since work will be contained to the roadway footprint within existing right-of-way. For other project types with more involved scopes of work but that will still remain in the right-of-way, the LWCF Manager should be contacted so that any LWCF properties adjacent to the project area can be identified in the environmental document and contract documents as being off-limits to the Contractor.

If LWCF properties exist in the project area, the Environmental Manager should coordinate with the design team to determine if impacts can be avoided. If impacts can be avoided, it is usually prudent to include an Environmental Commitment in the NEPA document that identifies the location of the LWCF property and directs the Contractor to avoid impacts.

If it is determined that impacts to a LWCF property cannot be avoided by a proposed project, the Environmental Manager must contact the State LWCF Manager for further coordination with the National Park Service. If the impacts will consist of permanent conversion of any portion of a LWCF property, then an evaluation of the proposed impacts must be prepared to describe that (1) all practical alternatives to the proposed conversion have been evaluated, (2) the fair market value of the property to be converted has been established and the property proposed for substitution is of at least equal fair market value as established by an approved appraisal (prepared in accordance with uniform Federal appraisal standards) excluding the value of structures or facilities that will not serve a recreation purpose, and (3) The property proposed for replacement is of reasonably equivalent usefulness and location as that being converted.

If impacts to a LWCF property will be temporary, the impacts may be approved as a temporary non-conforming use if the duration of impact will be six months or less. The Environmental Manager must coordinate with the State LWCF Manager.

A Section 6(f) impact may also be considered a Section 4(f) impact, in which case the appropriate 4(f) approval must be obtained from FHWA.

Permits and Approvals

- National Park Service Approval of Section 6(f) Conversion or Temporary Non-Conforming Use

Section 17 – Shoreland Protection

Overview

Per New Hampshire Department of Environmental Services (NHDES) “The Shoreland Water Quality Protection Act (SWQA) was originally named the Comprehensive Shoreland Protection Act (CSPA) and was enacted into law in the 1991 session of the Legislature. The act establishes minimum standards for the subdivision, use and development of shorelands adjacent to the state's public water bodies. On July 1, 2005, Senate Bill 83 established a commission to study the effectiveness of the comprehensive shoreland protection act. Among other things, the commission was charged with assessing land-use impacts around the state's public waters; size, type, and location standards pertaining to structures as outlined in the CSPA; shoreland buffer and setback standards; and nonconforming use, lot, and structure standards. The final report of the commission contained 17 recommendations for changes to the CSPA. Sixteen of those recommendations for change were enacted into law and became effective April 1, 2008 and July 1, 2008. The changes were broad in scope and included limits on impervious surfaces, a provision for a waterfront buffer in which vegetation removal was limited, shoreland protection along rivers designated under RSA 483 (Designated Rivers), and the establishment of a permit requirement for many new construction, excavation and filling activities within the Protected Shoreland. During the 2011 legislative session, the CSPA was renamed to the Shoreland Water Quality Protection Act and included changes to vegetation requirements within the natural woodland and waterfront buffers, the impervious surface limitations and included a new shoreland permit by notification process.

Regulations and Policies

- Shoreland Water Quality Protection Act, RSA 483-B
- New Hampshire Certified Administrative Rule Env-Wq 1400, Shoreland Protection

Technical Guidance

During the environmental review process, it must be determined if a project is located within the jurisdiction of the SWQPA. To make this determination, the Environmental Manager will need to know if their project area includes any of the following:

- Fourth order and greater streams and rivers;
- NH Designated Rivers;
- Lakes and ponds greater than 10 acres in size;
- Tidal waters subject to the ebb and flow of the tide.

The NHDES Shoreland Program maintains a Consolidated List of Waterbodies, which includes all jurisdictional water bodies under the SWQPA. This list is available on the Shoreland Program website: <http://des.nh.gov/organization/divisions/water/wetlands/cspa/index.htm>

The NH GRANITview Data Mapper can also be used to identify water bodies subject to the SWQPA. If a project is located within the jurisdiction of the SWQPA, the Environmental Manager must determine if the project will result in ground disturbance or tree clearing within 250 feet of the jurisdictional waterbodies listed above. If so, a shoreland permit will be required prior to any construction activities.

The Environmental Manager shall include the standard shoreland commitment in their NEPA document regarding the need to obtain the appropriate shoreland permits prior to any construction activities.

The Environmental Manager will coordinate with the Wetlands Program and the Design team during the preparation of the shoreland permit application in accordance with the procedures as outlined in Chapter 9 of this manual.

See the BOE Website for application forms:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetlands.htm>

Permits and Approvals

- NHDES Shoreland Permit or Permit By Notification

Section 18 – Water Quality

Please refer to Chapter 8 for additional information on the Water Quality Program.

Overview

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

In accordance with the NHDES Alteration of Terrain (AOT) Administrative Rules Env-Wq 1500, activities that result in terrain alteration shall not cause or contribute to any violations of the surface water quality standards established in Env-Wq 1700, the NHDES Surface Water Quality Regulations. Per a Permit Exemption signed by NHDES and the Department in 2011, NHDOT projects are not required to obtain an AOT Permit but must still comply with AOT regulations. A flow chart implementing the Department's AOT review process is located in Appendix J.

Regulations and Policies

- Clean Water Act of 1972
- NHDES Administrative Rules Env-Wq 1500 (Alteration of Terrain)
- NHDES Administrative Rules Env-Wq 1700 (Surface Water Quality)

Technical Guidance

The Environmental Manager utilizes the AOT flow chart (*Appendix J*) to determine the potential for water quality concerns and the need to coordinate with the Water Quality Program Manager. Based on the definitions in the flow chart, if a project will only involve the installation of utilities or other roadway appurtenances, and/or is an asphalt maintenance project, then there is no need to consult with the Water Quality Program Manager. For all others projects, the Environmental Manager should provide the Water Quality Program Manager with a location map, project description, range of alternatives, and anticipated project area. A review will be conducted for each reasonable alternative to determine the water quality impact of the proposed highway project on surrounding water bodies.

If any water quality issues are identified, the Environmental Manager and the Water Quality Program Manager should meet with the Design team to evaluate potential water quality mitigation measures for both feasibility and reasonableness in accordance NPDES and AOT regulations. Any mitigation measure that is found to be both feasible and reasonable should be incorporated into the design of the project and included as an environmental commitment in the NEPA document.

Upon review of a project that will result in more than an acre of earth disturbance, the Water Quality Program Manager will save a copy of the NPDES Special Attention in the project folder on the S drive and will complete information on impaired water bodies. During Final Design of the project, the Environmental Manager should complete the remaining sections of the Special Attention and provide it and the necessary attachments (Natural Heritage Bureau memo, USFWS memo, Section 106 memo) to the project engineer. This Special Attention is used by the Contractor for filing the Notice of Intent for coverage under the NPDES Construction General Permit.

If a project requires an individual Federal permit (Individual Army Corps permit or Coast Guard Bridge Permit), the Environmental Manager must coordinate with the Water Quality Program Manager to obtain the required individual Water Quality Certification from NHDES (see Chapter 8 for more details).

Permits and Approvals

- Water Quality Certificate
- NPDES Construction General Permit

Section 19 – Wetlands/Surface Waters

Please refer to Chapter Nine – Wetlands for a detailed overview of the Wetlands Program.

Overview

The US Army Corp of Engineers (ACOE) and the US Environmental Protection Agency (EPA) define wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." These areas, along with surface waters and banks, are protected by federal and/or state regulations.

The New Hampshire Department of Environmental Services Wetlands Bureau (NHWB) regulates any work that is conducted in wetlands. Pursuant to New Hampshire Revised Statutes Annotated (RSA) 482-A:3, Fill and Dredge in Wetlands "No person shall excavate, remove, fill, dredge or construct any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state without a permit from the department."

Regulations and Policies

- NHDES Administrative Rules Env-Wt 100-900
- NH RSA 482-A:3, Fill and Dredge in Wetlands
- Section 404 of the Clean Water Act

Technical Guidance

The Environmental Manager, Wetlands Program Manager, or a consultant should delineate wetlands and surface waters early in the environmental review process. Wetland delineation is generally not required for projects that will not impact areas outside the paved roadway, such as resurfacing projects. When completing the wetland delineation, it is important to be mindful of possible construction access to the site when determining the extent of delineation needed.

A preliminary assessment of wetland impacts should be made by the project team for each design alternative, if applicable to the project, and documented in the environmental document. If, after

avoidance and minimization measures are incorporated, the project will still require wetland mitigation, the need for mitigation should be documented in the environmental document. Since the environmental document is completed in the preliminary design phase of all but the more programmatic projects, the Environmental Manager should include appropriate environmental commitments in the document regarding the need for wetland permits, wetland mitigation, etc. If a project will require mitigation, the Environmental Manager should coordinate with the NHDES Mitigation Officer, the Army Corps, and the town's Conservation Commission on appropriate mitigation. Coordination with State and Federal agencies regarding permitting and mitigation is typically initiated at a Natural Resource Agency Coordination Meeting.

See the BOE Website for application forms and guidance.

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetlands.htm>

In addition to State and Federal permitting requirements, the FHWA must make a wetland finding per Executive Order 11990 (Protection of Wetlands), which directs federal agencies to avoid undertakings or funding for new construction located in wetlands unless the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. FHWA and NHDOT approved a Programmatic Wetland Finding for Categorical Exclusions in 2001 (*Appendix M*).

Permits and Approvals

- NHDES Permit
- ACOE Permit
- FHWA Wetland Finding OR FHWA Programmatic Wetland Finding for Categorical Exclusions

Section 20 – White Mountain National Forest

Overview

The White Mountain National Forest (WMNF), managed by the US Forest Service (USFS), consists of nearly 800,000 acres in northern New Hampshire and Maine. The Federal Highway Administration (FHWA) designates certain public roads that provide access to the National Forest as Forest Highways; these roads are mutually identified by the USFS, FHWA, and New Hampshire Department of Transportation (NHDOT). Where Forest Highways cross National Forest lands, the FHWA has secured authorization from the USFS to use a portion of the lands for highway right-of-way.

When NHDOT proposes a project located within the WMNF, the Project Manager and Environmental Manager must coordinate with the WMNF on design, environmental, and construction related concerns. It is the responsibility of FHWA and NHDOT to carry out the National Environmental Policy Act (NEPA), with FHWA as the lead federal agency and the USFS as a cooperating agency. An environmental review is required for federal and non-federal projects.

Regulations and Policies

- Memorandum of Understanding Related to Forest Highways Over National Forest Lands
<http://www.fhwa.dot.gov/agreements/headquarters/hflc1agr.htm>
- Memorandum of Understanding Regarding the Appropriation and Transfer of National Forest System Lands for Highway Purposes
http://www.fhwa.dot.gov/real_estate/uniform_act/acquisition/fsmou.cfm

Technical Guidance

The Bureau of Environment has one Environmental Manager who is assigned all NHDOT highway and bridge projects located within the WMNF. This provides consistency in environmental reviews and a single point of contact for the WMNF on environmental issues.

When the Environmental Manager is assigned a project located within the WMNF, regardless of project funding, the WMNF Forest Engineer is contacted about the project to determine the appropriate coordination that should ensue with WMNF resource specialists. Site visits and/or meetings may be desired. Issues that may be red flags with the WMNF include non-programmatic projects, impacts outside existing ROW or easements, invasive species, stream crossings, and tree clearing.

The MOU noted above retained the Forest Service's right to any merchantable timber and other resources within highway easements on a National Forest. As part of any project or maintenance activity, the NHDOT must notify the WMNF of timber or other resource materials to be removed and the WMNF will determine if a timber sale or other authorization for removal is needed. It is prudent to make NHDOT Contractors aware of this requirement by including an environmental commitment in the NEPA document that prohibits any clearing not shown on construction plans without prior approval by the NHDOT and WMNF.

Resource concerns that are specific to the WMNF include Regional Forester Sensitive Species, a WMNF-specific list of species that are rare or of special concern, and Candidate Wild & Scenic Rivers, rivers that may be designated as Wild & Scenic in the future. These lists should be obtained from the WMNF to be considered during the environmental review. It is the Environmental Manager's responsibility to address these and all other applicable resource concerns in the NEPA document, with input from the WMNF as warranted.

National Forests are considered public multiple-use land holdings. The incidental, secondary, occasional or dispersed activities that often take place throughout a National Forest (such as hunting, bird watching, off-trail hiking, etc) are not considered under Section 4(f). Section 4(f) applies only to those portions of a multiple-use public property that are designated by statute or identified in an official management plan of the administering agency as being primarily for public park, recreation, or wildlife and waterfowl refuge purposes, and are determined to be significant for such purposes. Section 4(f) will also apply to any historic sites within the multiple-use public property that are on or eligible for the National Register (NR). It is important for the Environmental Manager to coordinate with WMNF officials to determine if a NHDOT project may impact an area on the WMNF that is subject to Section 4(f).

A draft NEPA document, and Section 4(f) Evaluation, if applicable, should be submitted to the WMNF for review and comment. The Environmental Manager should allow 30 days for review of a NEPA document. Review of a Section 4(f) Evaluation should follow the timelines required by regulation.

Permits and Approvals

- US Forest Service Concurrence on Proposed Action

Section 21 – Wild & Scenic Rivers

Overview

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Rivers may be designated by Congress or, in some cases, the Secretary of

the Interior. Each river is administered by either a federal or state agency. Designated segments need not include the entire river and may include tributaries. River segments are classified as wild, scenic, or recreational.

There are four administering agencies of the Wild & Scenic River System: Bureau of Land Management, National Park Service, US Fish and Wildlife Service, and US Forest Service.

Section 7 of the Wild and Scenic Rivers Act provides standards and procedures used in evaluating the effects of proposed water resources projects, including bridge, roadway, and bank stabilization projects. A determination under Section 7 is required when a project has a federal nexus (funding or permit) and will impact the channel or banks of a Wild and Scenic River. A determination may be required for a project proposed in the channel or banks of a river below, above, or on a stream tributary to a Wild and Scenic River if the project is likely to result in effects within the Wild and Scenic River. A project would be prohibited if the Section 7 determination finds a “direct and adverse effect” on the values for which a river was designated as Wild and Scenic, or that the project would “invade the area or unreasonably diminish” the values of the Wild and Scenic River. The responsibility for the Section 7 determination lies with the National Park Service unless the river flows through lands administered by another federal river-administering agency (such as the US Forest Service). More information can be found here: <http://www.rivers.gov/publications.php>

Two rivers in New Hampshire have been designated as Wild & Scenic:

- Lamprey River
- Wildcat River and its tributaries

Lamprey River

The Lamprey is designated as Wild and Scenic along 23.5 miles in the towns of Durham, Epping, Lee, and Newmarket, and is classified as recreational that entire length. The boundary of the river corridor is a ¼ mile from the ordinary high water mark on each side of the river. The management of designated sections of the Lamprey River is overseen by the Lamprey River Local Advisory Committee (LAC), which consists of representatives from towns along the river corridor, as well as the National Park Service.

Wildcat River

The management of designated sections of the Wildcat River and its tributaries is overseen by the US Forest Service, State of New Hampshire, and the Town of Jackson. A total of 14.51 miles of the Wildcat and its tributaries are designated as Wild and Scenic. On private land, the boundary of the river corridor is the 100-year floodplain, which varies from 75 feet to several hundred feet. On federal land, the river corridor boundary is 500 feet from the center of the river. The Wildcat River and its major tributaries have been delineated in three segments identified as the Headwaters segment, the Intervale segment, and the Jackson Falls segment. The following table summarizes these segments and their classification.

River Segment	River Name	Classification	Length (Miles)
Headwater	Wildcat River	Scenic	4.45
	Wildcat Brook	Scenic	2.83
	Bog Brook	Scenic	1.58
Intervale	Wildcat River	Scenic	3.79
	Great Brook	Scenic	1.05
Jackson Falls	Wildcat River	Recreational	0.81

Source: Wildcat River Comprehensive River Management Plan

Regulations and Policies

- Wild & Scenic Rivers Act, 1968, Public Law 90-542; 16 U.S.C. 1271 et seq.

Technical Guidance

The Environmental Manager should determine if the project is located within the corridor of a Wild and Scenic River, and should identify the classification of the river segment where the project is located.

If a project will impact the channel or banks of a Wild and Scenic River or the channel or banks of a river below, above, or on a stream tributary to a Wild and Scenic River, the Environmental Manager should consult with the FHWA Environmental Program Manager to determine who should initiate contact with the river-administering agency. Coordination with the river-administering agency should be established as early in the design process as possible to avoid potential delays. More information on what is considered an impact can be found here: <http://www.rivers.gov/documents/section7/process-flowchart.pdf>

Wild and Scenic Rivers are subject to Section 4(f) of the Department of Transportation Act of 1966 if the river segment is classified as recreational. If a project has the potential to impact a recreational segment of a Wild and Scenic River corridor, the Environmental Manager should work with the FHWA Environmental Program Manager to determine if Section 4(f) will be triggered by the proposed project. Detailed information on Section 4(f) can be found in Section 15 of this manual.

Permits and Approvals

If the project is located in or near a Wild and Scenic River, a Section 7 determination may be required. Coordination with the river-administering agency should be established as early in the design process as possible to avoid potential delays.

Section 22 – Wildlife/Fisheries

Overview

There is substantial overlap between this section and Section 14 – Rare Species, Section 9 – Essential Fish Habitat, and Section 19 – Wetlands (specifically, stream crossings). For information on those topics, please refer to the appropriate section.

The NH Fish and Game Department (NHFG) issued the NH Wildlife Action Plan (WAP) in 2006. According to the NHFG Website, “the plan, which was mandated and funded by the federal government through the State Wildlife Grants program, provides New Hampshire decision-makers with important tools for restoring and maintaining critical habitats and populations of the state's species of conservation and management concern. It is a pro-active effort to define and implement a strategy that will help keep species off of rare species lists.”

While the WAP is not regulation, it does help provide guidance that can be applied to certain NHDOT actions, and it is also taken into consideration as part of the Army Corps Secondary Impacts Checklist that is required in the wetland permit application package. Another guidance document that has been incorporated into permitting is the NH Stream Crossing Guidelines, which includes guidance on aquatic organism passage. NHDES requires that certain stream crossings be designed according to the Stream Crossing Guidelines.

Regulations and Policies

- NH Nongame Species Management Act of 1988 (NH RSA 212-B)
- NH Endangered Species Conservation Act of 1979 (NH RSA 212-A)
- Endangered Species Act of 1973 (16 USC 1531-1544)
- NH Stream Crossing Rules (Env-Wt Chapter 900)
- Magnuson-Steven Fishery Conservation and Management Act
- Migratory Bird Treaty Act of 1918 (16 USC 703-712)
- The Bald and Golden Eagle Protection Act (16 USC 668-668d)

Technical Guidance

The first step in determining if any wildlife concerns exist in a project is to review NH Natural Heritage Bureau data (see Section 14). If wildlife records are in the vicinity of the project, the Environmental Manager must coordinate with NHFG. Any conditions that are agreed upon to avoid or minimize impacts to wildlife should be incorporated into the environmental document as environmental commitments.

Fisheries concerns arise when a project will impact surface waters, especially if work on stream crossings is proposed. These projects should be reviewed with NHFG and other appropriate agencies. Fisheries concerns typically relate to fish passage and construction impacts. Information presented to NHFG and other agencies should include details such as stream classification, perched culverts, and construction timing.

As part of the environmental review, it is helpful to determine if the project is located in areas identified by the Wildlife Action Plan as Highest Ranked Habitat (see Environmental Review Checklist for links). This information can be noted in the environmental document, and is required for wetland permitting (Army Corps Secondary Impacts Checklist). However, the presence of such habitat is generally not a concern, and is not typically reviewed with NHFG, unless the project involves substantial habitat conversion or fragmentation, such as what would result from a roadway on new alignment.

Permits and Approvals

- Concurrence from NH Fish & Game on proposed work that involves potential impacts to rare wildlife species.
- Concurrence from NH Fish & Game on proposed work that involves stream crossings or other impacts to surface waters.
- Also see Section 14 – Rare Species, Section 9 – Essential Fish Habitat, and Section 19 – Wetlands

Part 2 – Program Management

The purpose of the BOE Program Management Section is to provide support and technical assistance to BOE and other NHDOT personnel on a wide variety of environmental issues.

Chapter Five – Air and Noise Program

Overview

The purpose of the Air and Noise Program is to provide technical and regulatory expertise relative to potential air quality and noise impacts associated with transportation projects and maintenance/operations activities, including technical evaluations, guidance to NHDOT personnel, report preparation and review, consultant oversight, computer analyses, and detailed field observations.

Air Quality

The NHDOT has been evaluating the public impact of transportation related air quality impacts since the development of NEPA in 1969 and the Clean Air Act (CAA) of 1970. NEPA requires, among other aspects, the evaluation and mitigation of adverse environmental effects, including air quality. The CAA and the Clean Air Act Amendments (CAAA) of 1990 took the requirements of NEPA one step further, to specifically identify and regulate air emissions from stationary and mobile sources through the identification of the National Ambient Air Quality Standards (NAAQS). As such, any action on behalf of the Department that involves federal funding or approval must demonstrate compliance with the CAA and the air quality objectives of NEPA.

Regulations and Policies

- Air Pollution Control Act of 1955
- Clean Air Act of 1963
- Air Quality Act of 1967
- Clean Air Act of 1970 (CAA)
- Clean Air Act Amendments of 1977 and 1990 (CAAA)
- National Ambient Air Quality Standards (NAAQS)
- National Environmental Policy Act (NEPA) of 1969
- Mobile Source Air Toxics (MSATs)
- FHWA’s 2012 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA

Technical Guidance

Clean Air Act

The CAA established the NAAQS, which include emission standards for: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur dioxide. Areas in violation of any of the NAAQS are given a designation of “nonattainment.” As of the date of this document, New Hampshire’s only nonattainment area is the Central NH Sulfur Dioxide (2010) Nonattainment Area. Historically NH also had two Carbon Monoxide nonattainment areas in Manchester & Nashua that were re-designated to “maintenance” areas in 2001. NH is in attainment for all other NAAQS criteria pollutants.

State Implementation Plans (SIPs) are developed for each nonattainment area, targeting the source categories (stationary, area, on-road, and off-road) and explaining how each nonattainment area will be brought into attainment to meet the requirements of the CAA. NHDOT is required to implement the transportation related measures of the SIP. Once attainment has been achieved a “maintenance plan” is required.

Transportation Conformity

Transportation conformity is required by the CAA, and ensures that all federally funded or approved plans, programs and projects conform to the air quality objectives of the SIP. The EPA establishes the conformity regulations in consultation with the USDOT. The USDOT (FHWA and FTA) implement the conformity regulations and demonstrate transportation conformity in consultation with the EPA. As many transportation related air quality issues cannot be addressed on an individual project basis, transportation conformity is established at both the regional (planning) and local (project) level.

The majority of transportation related air quality issues are addressed at the regional level. Transportation conformity at this level is demonstrated through the development of Regional/Metropolitan Transportation Plans (RTP/MTP) and Transportation Improvement Programs (TIPs). In NH these plans/programs are developed and implemented by the Regional Planning Commissions. NHDOT demonstrates conformity through the development of a Statewide Transportation Plan (STIP) that includes a conformity determination by FHWA and FTA. As such, every federal project must be accurately represented in the STIP, including any non-federal efforts that have been designated by the RPC's to be “Regionally Significant”.

The STIP is developed by the Department's Bureau of Planning and Community Assistance. It is the responsibility of the Department's Project Managers to coordinate directly with the Bureau of Planning and Community Assistance for any project changes that would require a STIP amendment. The Bureau of Environment is only responsible for checking that all federal and/or “Regionally Significant” projects are accurately reflected in the STIP prior to a project's final NEPA classification.

Of the NAAQS pollutants, only carbon monoxide and particulate matter can typically be addressed at the project level. This requires a “hot-spot” analysis for any project within a carbon monoxide or particulate matter nonattainment or maintenance area. The analysis must demonstrate that the project will not create any new NAAQS violations, increase the frequency or severity of existing NAAQS violations or delay the attainment of the NAAQS. As of the date of this document, the only areas of concern in relation to these two pollutants are the Manchester and Nashua CO maintenance areas. As such, project level conformity is only required within the State for projects within either Manchester or Nashua.

For projects that are located within either of the State's CO maintenance areas, transportation conformity can sometimes be demonstrated through the use of the FHWA's *Carbon Monoxide Categorical Hot-Spot Finding*. This finding allows for projects that meet certain parameters to categorically demonstrate transportation conformity without the need to prepare a more detailed hot-spot analysis.

NEPA

In New Hampshire, the transportation related pollutant of greatest concern at the project level is carbon monoxide (CO). Even if a project is located outside one of the State's two CO maintenance areas, NEPA requires consideration of a project's impact on local and regional air quality. As such, this requires all projects to undergo at least a cursory NEPA level air quality review. The level of NEPA related air quality analysis is typically dictated by a project's anticipated NEPA classification. Most EIS level projects and some EA projects will require at least a basic CO “hot-spot” analysis that would include a

quantitative evaluation of the three “worst” intersections within the project area to determine if any CO violations are anticipated. As most CEs and many EAs are typically intended to address non-efficiency related safety issues or improve roadway efficiency and reduce area congestion, projects processed under these classifications frequently only require a qualitative evaluation of the anticipated air quality impacts.

A qualitative project evaluation typically involves determining if adverse air quality impacts can be reasonably anticipated. This is frequently completed by comparing the existing level of service of an intersection with the level of service under the proposed build condition. If an intersection’s level of service is anticipated to remain the same or improve, and will not be below a “C” under the proposed build condition, it is reasonable to conclude that the proposed project will not result in any adverse air quality impacts and may even provide some level of air quality benefit. If, however this conclusion cannot be made, it may be necessary to compare the intersections within the project area with similar or worse intersections for which a hot-spot analysis was completed. If the comparison intersection was found not to result in any CO violations, the same can be concluded for the proposed intersection. If neither of these conclusions can be drawn, or public concern is anticipated a quantitative analysis should still be performed regardless of the project’s classification.

In addition to CO, particulate matter (PM-10 and PM-2.5) can also be of concern at the project level. Transportation related particulate matter issues are most commonly associated with diesel emissions. As such, any project that is anticipated to substantially increase heavy-duty truck traffic should include a particulate matter hot-spot analysis similar to the above described CO hot-spot analysis.

It is also important to note that in recent years the greater Keene area has been struggling to maintain PM-2.5 compliance due to the topography of the area and increased wood smoke emissions during the winter months. While the majority of the particulate matter emissions in this area originate from non-transportation related sources, if PM-2.5 compliance is not maintained, substantial transportation related restrictions would likely be imposed. As such any project proposal within the Keene area should be directly coordinated with the Southwest Regional Planning Commission to ensure that any local particulate matter initiatives are not adversely affected.

Mobile Source Air Toxics (MSATs)

In addition to establishing the NAAQS, the CAAA also identified a list of 188 hazardous air pollutants, 21 of which are transportation related and are known as Mobile Source Air Toxics (MSATs). Six of the MSATs have been identified as having the greatest influence on public health: benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter (DPM). As the impact of MSATs on public health is still evolving, there are no specific standards associated with these pollutants. As such, the FHWA has developed a three-tiered approach to evaluating a project’s potential effect on MSATs during the completion of the NEPA process. This approach is highlighted in a Memorandum sent to the FHWA Division Administrators on December 6, 2012, titled; *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*. Depending on a project’s circumstances, a qualitative or even quantitative analysis may be necessary. However, many projects only require consideration of MSATs and do not require an analysis at all. The above noted Memorandum provides guidance on determining the level of evaluation as well as sample language for inclusion in the NEPA review documentation.

Mitigation

Air quality mitigation is implemented at both the regional and local level depending on the associated impact. In NH, regional (planning level) mitigation is typically administered by the Regional Planning Commissions, the NH Department of Environmental Services, and the NHDOT’s Bureau of Planning and Community Assistance. The Bureau of Environment’s Air and Noise Program is not responsible for

regional air quality mitigation initiatives. However, the Air and Noise Program is responsible for administering local (project level) mitigation. Air quality mitigation at both the planning and project level can involve one or more of the following:

- Funding air quality projects (Park & Rides, HOV lanes, high-speed tolling, traffic signal synchronization, etc.)
- Modifications to existing traffic signals
- Public transportation enhancements
- Bicycle and pedestrian enhancement activities

Planning level mitigation can also involve one or more of the following, which are typically infeasible at the project level.

- Alteration of the available regional fuel mixtures
- Requirements for increased vehicle efficiency
- Vehicle inspection, maintenance and emission control

Construction Air Quality

Construction air quality is addressed during the NEPA public involvement and environmental review process. Effective control of construction related air quality is typically achieved by requiring the Department's contractor to meet all necessary emission control standards and implement dust control measures, as necessary.

Noise

New Hampshire has been evaluating the public impact of increased highway traffic noise since the development of NEPA in 1969 and the Federal-Aid Highway Act of 1970. NEPA requires, among other aspects, the evaluation and mitigation of adverse environmental effects, including noise. The Federal Highway Act mandated the FHWA to develop noise standards for the mitigation of highway traffic noise and authorized the use of federal highway funds for noise abatement.

23 CFR 772 is a prerequisite for receiving federal-aid highway funds and requires:

- Identification of highway traffic noise impacts;
- Examination of potential abatement measures;
- Incorporation of reasonable and feasible highway traffic noise abatement measures into the highway project;
- Coordination with local officials to provide helpful information on compatible land use planning and control; and
- Identification and incorporation of necessary measures to abate construction noise

The NHDOT *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects* (the Noise Policy), was established in 1996 to meet the requirements of 23 CFR 772 and applies to all Type I highway projects subject to FHWA or NHDOT approval. The most recent revision to the Noise Policy is located on the BOE Website:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/air-noise.htm>

Regulations and Policies

- Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772)
- National Environmental Policy Act of 1969

- New Hampshire Department of Transportation's *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects*, dated July 6, 2011.

Technical Guidance

Type I Projects

A Type I project is a proposed highway project that involves:

- (1) The construction of a highway on a new location; or,
- (2) The physical alteration of an existing highway where there is either:
 - (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
 - (ii) Substantial Vertical Alteration. A project that removes shielding thereby exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
- (3) The addition of one or more through-traffic lane(s). This includes the addition of a through-traffic lane that functions as an HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- (4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- (5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
- (6) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
- (7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

If a project is determined to be a Type I project under this definition then the entire project area as defined in the environmental document is a Type I project.

The NHDOT must perform a noise impact assessment during the preliminary design phase of any Type I highway project. A noise analysis will be conducted for each reasonable Type I alternative. If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I and subsequently requires a noise analysis. The noise impact assessment will determine the noise impact of the proposed highway project on the community and will include the following:

- Identification of receptors
- Traffic noise prediction
- Identification of noise impacts
- Examination of potential mitigation measures
- The incorporation of feasible and reasonable noise mitigation measures

- Coordination with local officials to provide helpful information on compatible land use planning and control

Type II Projects

A Type II project is a proposed project for noise abatement on an existing highway where no highway improvements are programmed. As of the date of this document, no funding is available for Type II projects; therefore, the Department does not complete noise abatement for Type II projects.

Mitigation

Any noise abatement (mitigation) measure must be both feasible and reasonable as outlined in the Noise Policy. Mitigation measures that are found to be both feasible and reasonable shall be incorporated into the design of the project and included as an environmental commitment to the NEPA process. Noise abatement measures include the following:

- Traffic management measures
- Alteration of horizontal and vertical alignments
- Acquisition of property rights for the construction of noise barriers/berms or the establishment of buffer zones
- Construction of noise barriers or berms
- Noise insulation of public use or non-profit institutional structures

Mitigation measures will be determined on a site-by-site basis to obtain the most cost effective abatement, consistent with design and community related factors. Abatement is most frequently obtained through the construction of a noise barrier, a berm, or a combination of the two.

Feasibility

Feasibility deals with engineering, safety and environmental considerations. Cross streets, ramps, driveways, and other noise sources will influence the amount of noise reduction that can be achieved. Safety and environmental impacts are also important considerations in determining whether a barrier is feasible. If the safety and environmental impacts associated with an abatement measure cannot be minimized or mitigated to such an extent that the overall benefits of such a measure outweigh its disadvantages, the measure is considered infeasible. The construction of a noise barrier is not feasible if a 5 dBA noise reduction cannot be achieved for at least 1 impacted receptor.

Reasonableness

Reasonableness implies that common sense and good judgment have been applied in arriving at a decision. In order for an abatement measure to be considered reasonable it must meet the Department's Cost (or Dimensional) Effectiveness Index, provide at least a 7 dBA noise reduction for at least 1 benefited receptor, and be supported by the majority of the benefiting receptors. If any of these reasonableness criteria cannot be met the abatement measure is considered unreasonable.

Noise Concerns

Noise concerns received by the Air and Noise Program will be evaluated by discussing the requirements of the Noise Policy with the concerned party. At the request of the concerned party, the Department shall collect noise measurements for informational purposes. Regardless of the results of the noise measurements no funding is available to mitigate unless the noise complaint is located within Type I project area that is identified in the current 10-Year Transportation Plan.

Construction Noise

Construction noise will be addressed during the NEPA public involvement and environmental documentation project phases. Effective control of highway construction noise will be achieved by design considerations, sequence of operations, source control, site control, time and activity constraints, and community awareness, as practicable.

Chapter Six – Contamination Program

Overview

The purpose of the Contamination Program is to assess contamination material constraints, guiding the NHDOT relative to contamination issues, recommending and administering remedial activities, and assuring compliance with all rules and regulations relative to contamination issues and the handling of hazardous or regulated materials associated with NHDOT actions.

The Contamination Program assists with projects for both the Division of Project Development and the Division of Operations. For projects under the Division of Operations (projects at NHDOT facilities), the Contamination Program will coordinate with the NHDOT Office of Stewardship and Compliance (OSC).

Regulations and Policies

- New Hampshire Code of Administrative Rules Env-Or Oil and Remediation Program Rules
- Env-SW Solid Waste Rules
- Env-HW 100-1100 Hazardous Waste Rules
- Env-A 1800 Asbestos Management and Control
- Resource Conservation Recovery Act (RCRA), 1976

Technical Guidance

Contaminated Sites

Per New Hampshire Code of Administrative Rules Env-Or 602.07, “Contamination means the presence of any regulated contaminant, as defined herein, other than naturally occurring substances at naturally occurring or background levels, in soil, groundwater, soil gas, air, sediment, surface water, construction/excavation debris, or any other material at a concentration that has the potential to adversely affect human health or the environment.”

The following contaminants may be addressed by the Contamination Program:

- Petroleum – Gasoline, heating oil, diesel fuel, waste oil, creosote, etc. Frequently stored in aboveground or underground storage tanks.
- Asbestos – Typically found in insulating, fireproofing, and surfacing materials. Asbestos has been identified on NHDOT bridge components (backwall, shoes asphalt, membrane). Asbestos can also be found in soil.
- Lead-based paint –May be health and disposal issues if it is present in buildings to be demolished. Most common in pre-1980 structures.
- Polychlorinated Biphenyls (PCBs) – Generally found in insulating oils in transformers and other electrical components (dielectric fluid), hydraulic systems, heat transfer equipment, and other applications.

- Metals – Arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury. May be naturally present in low concentrations, but can be concentrated (typically in soil). Typically associated with waste oil, industrial processes, chemicals, and electrical components.
- Chlorinated solvents – Tetrachloroethene, perchloroethene, trichloroethene, trichloroethane, carbon tetrachloride, and their derivative products. Used in dry cleaning, parts cleaning, and other industrial applications.
- Unknowns – Drums, barrels and tanks of unknown contents.

The Contamination Program has the following responsibilities in regards to contamination on NHDOT construction projects:

- Oversee the investigation and documentation of site conditions prior to construction, when feasible;
- Assign an environmental consultant to assess soil and groundwater quality prior to, during, and/or after construction;
- Assist with the coordination of waste disposal at the sites; and
- Provide support and guidance to the Environmental Managers, Project Managers, Contract Administrators and Environmental Coordinators regarding contamination.

In the event that soil or groundwater contamination is suspected or known to be present within the construction area of a project, especially when those areas require excavation, a site-specific plan should be in place to deal with that contamination.

Pre-construction investigations may provide valuable information for planning construction activities in areas of known or suspected contamination. The goal of a pre-construction investigation is to establish what type of contamination is present, where the contamination is located, what the source of the contamination is (or was), and what the concentrations of contaminants are. This information is used to plan for contaminated soil and groundwater management, either prior to or during construction. The information can also assist the NHDOT contractor and/or consultant in preparing a site-specific health & safety plan. If a project contains known or suspected contaminated areas, the Contamination Program Manager (CPM) should be contacted to determine whether a pre-construction investigation is recommended.

If a subsurface investigation will be conducted, the Contamination Program should notify NHDOT Materials and Research to coordinate the geotechnical efforts with the environmental subsurface investigation.

The CPM and the BOE consultant will provide guidance on the applicable environmental regulations based on the type(s) of contamination encountered in the project area.

When contamination is identified in advance, the Prosecution of Work will address specific items or tasks that will be performed by the NHDOT Contractor, such as UST removal, contaminated soil management, contaminated groundwater treatment during dewatering, etc.

The CPM may require that one of the BOE Consultants provide oversight during construction activities to assist the NHDOT Contract Administrator (CA) with the contamination issues and to protect the interests of the NHDOT with regard to costs and regulatory liability.

The CPM will need to be notified when work in contaminated areas is expected to occur so that arrangements can be made to get a BOE Consultant on site.

The Contamination Program is responsible for keeping the respective NHDES representative apprised of contamination projects.

Hazardous Waste

As defined by RSA 147-A:2, VII, "hazardous waste" means a solid, semi-solid, liquid or contained gaseous waste, or any combination of these wastes:

- (a) Which, because of either quantity, concentration, or physical, chemical, or infectious characteristics may:
 - (1) Cause or contribute to an increase in mortality or an increase in irreversible or incapacitating reversible illness, or
 - (2) Pose a present or potential threat to human health or the environment when improperly treated, stored, transported, disposed of or otherwise mismanaged.

Or, which has been identified as a hazardous waste by the department using the criteria established under RSA 147-A:3, I or as listed under RSA 147-A:3, II. Such wastes include, but are not limited to, those which are reactive, toxic, corrosive, ignitable, irritants, strong sensitizers or which generate pressure through decomposition, heat or other means. Such wastes do not include radioactive substances that are regulated by the Atomic Energy Act of 1954, as amended.

In 1976, Congress enacted the Resource Conservation and Recovery Act (RCRA) to protect human health and the environment from improper hazardous waste management practices. NHDOT falls under RCRA and other federal environmental laws and regulations, including the Toxic Substances Control Act (TSCA).

In addition to federal rules and regulations, the generation, storage, transportation and disposal of hazardous waste must comply with the New Hampshire Code of Administrative Rules Env-HW 100-1100 Hazardous Waste Rules.

The generation, transportation and disposal of hazardous waste requires an Environmental Protection Agency (EPA) ID number, which can be obtained from the New Hampshire Department of Environmental Services (NHDES) Reporting and Information Management Section (RIMS). Each NHDOT project location will require an EPA ID number for the generation of hazardous waste. The EPA ID number will need to be activated prior to the generation of hazardous waste and be deactivated when the generation of hazardous waste has been completed and the waste has been transported to a disposal facility. The Contamination Program is responsible to ensure that an EPA ID number has been obtained for NHDOT projects and OSC is responsible for obtaining EPA ID numbers for NHDOT facilities.

NHDOT projects with anticipated hazardous waste should be brought to the attention of the Contamination Program for guidance on regulations, prosecution of work wording, and to determine if a consultant should be assigned to the project.

Contractors generating and transporting hazardous waste require specialized training and licensing. The type of training and licensing will depend on the type of hazardous waste being generated and transported.

NHDES charges a fee for the disposal of hazardous waste. The contractor is responsible for paying the fee and charging the fee against the project.

Hazardous Waste Manifests

As defined by NHDES RIMS, a Hazardous Waste Manifest is a shipping document that tracks hazardous waste from the point of generation to ultimate disposal.

The removal and transport of hazardous waste requires a hazardous waste manifest per New Hampshire Code of Administrative Rules Env-Hw 510. When shipping a hazardous waste off-site, a generator shall prepare a manifest in accordance with 40 CFR 262 Subpart B.

Hazardous material employees, including those participating in pre-transportation functions (which include completing or signing the hazardous waste manifest) must be trained per 49 CFR 172. In addition, NHDES requires every business generating more than 220 pounds of hazardous waste in a calendar month to have an employee on staff at the generating facility who is a certified Hazardous Waste Coordinator in the State of New Hampshire.

The Contamination Program or a BOE consultant may need to sign a hazardous waste manifest on behalf of the NHDOT. Prior to signing a manifest, the manifest should be reviewed for accuracy:

- Generator ID number
- Site address
- Hazardous waste being removed is accurately accounted for and labeled
- Signed and dated accurately by the transporter

The Contamination Program is responsible for tracking project development manifests and retaining the hazardous waste manifests for three years. Generator and Facility to Generator copies of the manifest should be provided to the Contamination Program for tracking in the Manifest Database. Please see the Database section within this chapter for additional information on the Manifest Database.

Asbestos

Asbestos is a group of naturally occurring mineral fibers that are typically found in building materials (sheetrock, joint compound, vinyl floor tile, mastics, roofing components, ceiling tiles, caulking, glazing, glues, insulation). When asbestos containing materials are disturbed or deteriorating, the asbestos fibers can become airborne, once airborne, the fibers can be inhaled and cause possible health issues.

Asbestos on Bridges

Asbestos has been identified on NHDOT bridges in the deck asphalt, deck membrane layer, backwall, shoes and utility lines. The NHDOT Bureau of Bridge Design in coordination with the Bureau of Bridge Maintenance is responsible for reviewing as-built plans, maintenance records and utility records to determine if the asphalt/membrane should be sampled or if the backwall or shoes should be assumed to contain asbestos. Bridges constructed, advertised or renovated between 1958 and 1978 and bridges located on the border of New Hampshire and Vermont are of main concern. The BOE Environmental Managers should contact the Contamination Program regarding asbestos on bridge projects. The Contamination Program is responsible for providing a consultant to conduct asbestos abatement oversight and perimeter air sampling.

Asbestos Utilities

The Environmental Manager should consult with the project engineer to determine if asbestos utility lines may be encountered during a project. This information will be obtained from the Utilities Section. If asbestos utilities will be impacted, the Environmental Manager should notify the Contamination Program,

which will arrange for a Consultant to provide oversight during construction activities involving the asbestos utility pipe.

Asbestos as Solid Waste

Asbestos waste was commonly used as fill material, especially in Nashua and Hudson. NHDOT projects located in these areas should be assessed for asbestos in the soil. NHDOT projects determined to contain asbestos in the soil should be handled per Env-Sw 2100 Management and Control of Asbestos Disposal Sites. BOE Environmental Managers should coordinate with the Contamination Program to determine if a project may be affected by asbestos in the soil.

Underground Storage Tanks

The NHDOT owns a portfolio of approximately 196 underground storage tank (UST) facilities primarily consisting of motor fuel (gas and diesel) and building heating systems. USTs are regulated under 40 CFR 112 (SPCC Rule), 40 CFR 280, and state UST regulations Env-Or 400.

Env-Or 400 requires that all underground components of the UST systems have secondary containment installed by December 2015. This requirement results in the need for double-walled tanks, double-walled piping terminating in containment sumps, and containment structures/sumps under each fuel dispenser. Facilities must be upgraded to these standards or be permanently closed. The NHDOT is currently in the process of replacing or upgrading UST systems. Compliance with Env-Or 400 is required for UST removal activities. The Engineer on record for design and replacement needs to be a Contamination Program consultant.

Projects

When known or suspected underground storage tank (UST) sites are identified in the Prosecution of Work, or are suspected based on observations at the construction site (i.e. old gas stations, or old patrol sheds), several steps can be taken to facilitate their handling and avoid complications and delays. If the NHDOT contractor has a contract item for UST removal, the contractor will be responsible for removing the UST. If properly certified, the contractor may handle this item, or subcontract it to a company that specializes in UST removal and environmental contracting. Either way, the NHDOT contractor would be responsible for scheduling and coordinating the removal. If the UST removal is not within the NHDOT Contractor's scope of work, the CPM should be contacted to determine whether the UST removal should be added to the NHDOT Contractor's scope or coordinated by the BOE.

Databases

Risk Assessment Survey for Contamination and Appraisal of Land Database(RASCAL)

The RASCAL database is a web-based data management systems that assists in the management of data necessitated for the evaluation of properties associated with NHDOT projects. NHDOT project development policy necessitates that all properties potentially affected by design projects be screened for hazardous materials (hazmat) issues, and that this screening be performed as early as possible in project planning to maximize the time available for assessment of contamination and to allow for the incorporation of this data into purchasing decisions, route selection, construction planning, and health & safety plan preparation. The RASCAL database assists in the collection and management of the information required by this policy.

RASCAL meets the requirements of the All Appropriate Inquiry, which is necessary to purchase property. RASCAL also feeds a NHDOT Right of Way database (POSSUM).

The RASCAL database manual is located here (S:\Environment\MANUALS\BOE Manual\BOE Manual 2014\Database Manuals).

The Environmental Managers must coordinate with the Contamination Program to ensure that all necessary information is entered into RASCAL for projects that require acquisition of right-of-way or easements.

Consultants

The Contamination Program maintains contracts with environmental consulting companies to assist with the management of environmental issues. The Contamination Program is responsible for assigning a project to a consultant as necessary.

The Contamination Program is responsible for coordinating the procurement of funds for consultant work, consultant scopes of work, writing authorizations, and reviewing invoices. In order to obtain funding for consultant work, the Contamination Program Manager should coordinate with the Project Manager. No authorizations can be issued prior to the Project Manager running an estimate.

The BOE also has access to a statewide environmental contractor that may be utilized for some tasks, especially those that are beyond the scope of the NHDOT Contractor's specification. Some of these tasks may include cleanup of accidental spills, drum or barrel characterization and removal, underground storage tank removal, and asbestos.

Government Accounting Standards Board

The Government Accounting Standards Board (GASB 49) is the accounting and financial reporting for pollution (including contamination) remediation obligations. Statement No. 49 of the Governmental Accounting Standards Board states "a government is required to estimate the components of expected pollution remediation outlays and determine whether outlays for those components should be accrued as a liability or, if appropriate, capitalized when goods and services are acquired." The Contamination Program is required to disclose the nature and source of pollution remediation obligations, the amount of the estimated liability, the methods and assumptions used for the estimate, the potential for changes in estimates, and estimated recoveries that reduce the measurement of the liability.

Oil Discharge, Disposal and Cleanup Fund

The Oil Discharge, Disposal and Cleanup (ODD) Fund is a financial assistance program for owners of petroleum storage facilities. The program provides reimbursement for cleaning up contamination at storage tank facilities and provides funding to clean up contaminated water supplies due to methyl tertiary butyl ether (MtBE) and other gasoline ethers.

The NHDOT maintains several properties that have on-going work under the ODD Fund. In order for the work to be reimbursed, regulations Odb 100-600 Oil Disbursement Board must be followed.

Post-Construction

The NHDOT has projects that are closed but have on-going remediation. The remediation work is funded with Work Class Code 383. The Project Manager is the CPM for closed projects.

Groundwater Management Plans

Projects may require groundwater management plans depending on known or suspected groundwater contamination that will be impacted by project activities (ENV-Or 600 Contaminated Site Management). A Contamination Program consultant will determine the best approach for handling the groundwater and

the associated costs. Any required permits will be obtained by the consultant on behalf of the NHDOT. If the contractor decides to not follow the approach outlined by the consultant, it is the responsibility of the contractor to complete the work (including sampling and obtaining necessary permits) within the estimated cost provided by the consultant.

Activity and Use Restrictions

Activity and Use Restrictions (AURs) are implemented under Env-Or 608 at sites where a NHDES remedial action relies on the restriction of site activities and uses to achieve or maintain protection of human health and the environment. The NHDOT owns properties with AURs, which typically require an inspection by the Contamination Program on a regular basis.

NHDOT projects that involve work on a property with an AUR will require coordination with NHDES and oversight by a BOE consultant.

Soil Management Plans

NHDOT projects may require soil management plans (SMPs) depending on known or suspected soil contamination that will be impacted by project activities. SMPs will be prepared by a Contamination Program consultant and will be part of the project contract. The SMP will inform the contractor what needs to be done with the project soils. The contractor will be responsible for determining how to complete the work in accordance with the SMP.

Project Operation Plan

The project operation plan (POP) will be prepared by the contractor; however, the POP must be reviewed by a Contamination Program consultant and signed by a Professional Geologist (PG). For asbestos on bridge projects, the POP will need to be signed by a certified industrial hygienist (CIH). POP procedures are currently in development.

Prosecution of Work

BOE Environmental Managers can use base Prosecution of Work (POW) language for straightforward projects (i.e. programmatic paving projects) and to handle contamination-related issues identified during NEPA. The Contamination Program can review language as needed. For projects with Contamination Program involvement, the Contamination Program will determine if/when a consultant will be used to develop POW language, and when the Program will develop POW language. In those instances when a consultant is used, the consultant may work directly with the Specifications Office of NHDOT Highway Design to develop language as appropriate, ensuring that the Contamination Program and Environmental Manager are copied on correspondence and provided opportunity to comment. The Contamination Program will be responsible for ensuring that the POW language is adequately reviewed for consistency with other projects/specifications, and to ensure that the deliverable specified in the consultant authorization is adequate. The Environmental Manager will also need to review the POW language to understand commitments, requirements, and to ensure there are no conflicts with other commitments made.

Once draft POW language is provided to the Environmental Manager by Design, the Environmental Manager will be responsible for coordinating with the Contamination Program to make sure adequate time is provided for the Program to complete a final review of the POW, either in house, or through the consultant.

Emergency Procedures

BOE may receive an emergency call that requires immediate response. If the emergency is associated with an ongoing project, the NHDOT Contract Administrator should refer to the contract administrator manual for guidance. BOE should coordinate directly with the NHDOT Contract Administrator.

BOE may receive emergency calls from the NHDOT districts or public. BOE should notify and coordinate with the district engineer or appropriate administrator/director. The Contamination Program oversees the Responses to Chemical Spills, Hazardous Materials and Waste Containment Sites Statewide contract that can be utilized for all spills. Local fire and/or police should be contacted along with NHDES. If it is after hours contact the state police at 223-4381.

One of the four environmental consulting firms with a NHDOT contract can be contacted for guidance and oversight. Verbal authorization can be granted to the consultant by the Contamination Program or BOE Administrator, a written authorization can be prepared later.

Chapter Seven – Cultural Resources Program

Overview

The Cultural Resources Program ensures that state and federal regulations are followed in identifying resources with historic and/or archaeological significance associated with transportation projects. This program requires coordination with historic agencies and the public at the local, state and federal levels. Once areas of potential concern have been identified, program personnel work in collaboration with NHDOT staff, other federal and state agencies and interested parties on avoidance, treatment, protection and/or mitigation of these culturally significant sites.

Federal and state legislation directs the consideration of historical resources for NHDOT undertakings. Section 106 of the National Historic Preservation Act requires federal agencies and those receiving federal funding, permitting or licensing to take into account the impacts of their undertakings on properties eligible for or listed on the National Register of Historic Places and affords the Advisory Council for Historic Preservation (ACHP) the opportunity to comment on the undertaking prior to the project's execution. Projects that are not subject to Section 106 must adhere to regulations of NH RSA 227-c: Historic Properties.

Regulations and Policies

- Section 106 of the National Historic Preservation Act of 1966, as amended in 2006. Protection of Historic Properties
- Section 110 of the National Historic Preservation Act of 1966, amended in 2006. Guidelines for Federal Agencies with Historic Properties under their Jurisdiction
- New Hampshire Revised Statutes Annotated, Chapter 227-c: Historic Preservation

Technical Guidance

Please refer to Appendix N for details instructions on cultural resource review procedures.

Request for Project Review

The Request for Project Review (RPR) form initiates the Section 106 consultation process with the NH State Historic Preservation Office (SHPO). Guidance for filling out the form and templates are on the NH

Division of Historical Resources website: <http://www.nh.gov/nhdhr/review/rpr.htm>. All transportation RPR forms are first sent to the NHDOT Cultural Resources Program for review.

Aboveground Resources

Resource Identification

Procedures for identifying Cultural Resources, including landscapes and historic structures, that may be affected by State or Federal transportation projects are located in Appendix N.

The need for inventory forms will be determined in consultation with the Cultural Resources Program, SHPO, and the lead federal agency. All inventory form templates and manuals can be found on the NHDHR website. The following types of forms may be requested:

- Individual Inventory Form – provides information on a single property (such as a bridge, house, or commercial property) and evaluates its historical significance.
- Project Area Form – typically completed during planning phases, provides historical and architectural information on properties within the Area of Potential Effect (APE). Recommends if additional survey is needed. Does not make eligibility recommendations.
- Historic District Area Form – summarizes the history, architecture, and significance of a group of resources.

Program Comment for Post-1945 Common Concrete and Steel Bridges and Culverts

The Program Comment is used on bridges built post 1945 and of certain construction types. Use of the Program Comment will negate the need for the bridge to undergo individual Section 106 review. Any federal agency can use the Program Comment. A guidance manual and a list of exempt bridges is located on the BOE Website:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/cultural.htm>

Programmatic Agreement

FHWA'S Every Day Counts 2 initiative encourages the use of Programmatic Agreements (PA) to streamline project review and development, a type of Section 106 program alternative that also aligns with the environmental streamlining provisions of the most recent transportation bill reauthorization, the Moving Ahead for Progress in the 21st Century Act (MAP-21). In December of 2012, the NHDOT started working with FHWA and SHPO to develop a PA to further streamline Section 106 review of transportation projects in New Hampshire. In partnership with the NH Public Works Association and NH chapter of the American Council of Engineering Companies, the team began by drafting an implementation plan that, among other things, identified goals, challenges, and tools important to developing and implementing a fully functional agreement. Regular implementation team meetings culminated in this comprehensive PA.

Signed on November 26, 2014, the PA establishes procedures for processing projects, provides standardized forms for reporting, and clearly lays out the roles and responsibilities of FHWA, NHDOT, SHPO and the project sponsor in order to operate under the PA. It streamlines the Section 106 process by promoting consistency and transparency of project development and review practices and requirements, and by encouraging an understanding among project sponsors of the goals of Section 106 and the benefits of incorporating those goals early during a project's design. A wide range of transportation undertakings ("*projects*") typically do not impact or affect historical resources. The PA streamlines the Section 106 review of these types of projects by enabling NHDOT to conduct individual historical resource reviews, thereby removing FHWA and the SHPO from project-by-project evaluation activities.

The PA applies to a subset of federally-funded transportation undertakings that are identified in the agreement as either Appendix A undertakings (undertakings with no potential to cause effects to historical resources) or Appendix B undertakings (undertakings with minimal potential to cause effects to historical resources). Appendix A undertakings include projects such as pavement rehabilitation, signal timing, signing and some bridge maintenance activities. The NHDOT Cultural Resources Program will make the determination whether a proposed project is an Appendix A undertaking. If so, Section 106 review will be limited to completion of an Appendix A Certification Form. Appendix B undertakings require further coordination with the NHDOT Cultural Resources Program, as well as information gathering due to the potential, albeit minimal, for the undertaking to cause effects to historic resources. These undertakings include such projects as non-historic bridge and culvert maintenance, bicycle and pedestrian improvements, and railroad improvements, among others. With a completed Appendix B Certification Form and accompanying materials, a project sponsor will coordinate directly with the NHDOT Cultural Resources Program, which will again determine the appropriate next steps, such as the survey of potential historical properties. The PA cannot be used for non-federal undertakings.

National Register eligibility determinations and review of archaeological reports will still be made in accordance with the current FHWA and SHPO review process. Undertakings that, by necessity or design, do not fall under the PA, or are determined not applicable to the PA by NHDOT, the SHPO, or FHWA, will follow the regular Section 106 consultation process. It is also important to note that a project sponsor may request at any time that an undertaking be reviewed under the normal Section 106 process. Similarly, under unique circumstances, such as known controversy, SHPO, the Advisory Council on Historic Preservation (ACHP), the public, or FHWA may also request that an undertaking be reviewed under the normal Section 106 process.

More information is available here:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/cultural.htm>

Archaeological Resources

Guidelines have been developed for use in archaeological investigations for NHDOT projects under environmental review by the BOE. They apply to investigations completed in house, through the NHDOT Service Agreement under a direct contract with NHDOT, or under a contract with a prime engineering firm contracting with NHDOT. The guidelines provide detailed direction within the framework of the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation* (http://cr.nps.gov/local-law/arch_stnds_7.htm).

The guidelines clarify the nature of phased archaeological investigations associated with a NHDOT project and detail the specific report requirements. If significant variation from these guidelines is necessary, the approach is verified with the NHDOT, which will present the issue to SHPO for review. Such variations are clarified in the resulting report. Much of the guidance has resulted from discussions with FHWA, Army Corps of Engineers (ACOE), SHPO, other state agencies, and NHDOT archaeological contractors. Given the fragile nature of archaeological deposits and the need to accurately record the characteristics of soils containing cultural material, archaeological excavation will not occur when soils are frozen and snow covered.

All archaeologists contracting with NHDOT as principal investigators will be qualified for work as determined by the NHDHR and meet the minimal standards presented in 36 CFR 61, the Secretary of the Interior's Professional Qualification Standard for Archaeology.

The United States and the State of New Hampshire do not formally recognize any Indian tribe within the boundaries of the State of New Hampshire. However the National Historic Preservation Act of 1996, as amended on December 12, 2000, and 36 CFR 800 require the NHDOT (acting under the auspices of and as designee for the FHWA) to make reasonable and good faith effort to consult with Native American groups during the Section 106 process concerning affected historic properties that are of cultural and religious significance to them. Accordingly, with respect to NHDOT projects, relevant federal and state recognized tribes within 50 miles of the state border (e.g., the Penobscot, Passamaquoddy, and Micmac of Maine; Abenaki of Vermont; Nipmic and Wampanog of Massachusetts) and other Native American groups with ties to the state are given a reasonable opportunity to identify their concerns about historic properties and participate in the resolution of adverse effects. The ultimate decision on consultation with non-federally recognized tribes, however, rests with the federal agency and is determined in consultation with the SHPO.

Archaeological Regulations and Policies

The implementing regulations for Section 106 that apply to archaeological resources, 36 CFR 800, clarify the process for determining the existence of an undertaking; the definition of the area of potential effect; historic resource identification; evaluation of National Register eligibility utilizing the National Register criteria, resource integrity, historic contexts, and discussion of comparable properties; establishment of the existence and assessment of effect; and avoidance, minimization, or mitigation of the adverse effects of the undertaking. While the procedures to carry out Section 106 reside in 36 CFR 800, the criteria for the National Register evaluation to determine eligibility and establish significance are provided in 36 CFR 60.4. Archaeological properties, when deemed eligible for listing on the National Register, are usually found eligible under criterion D, the property's ability to yield significant information that contributes to an understanding of the site's contexts and associated site types. Conducting data recovery at a significant site to mitigate impact is considered an adverse effect under the existing guidelines.

Information identifying the location of archaeological sites on state land, or under state waters, is treated with confidentiality and exempt from all laws providing rights to public access. NH RSA Chapter 227-C states that the location of archaeological sites will be kept confidential to deter unauthorized field investigations and vandalism and minimize the risk to the resource (RSA 227-C:11).

RSA 227-C:8 requires that the contracting archaeologist catalogue and record recovered artifacts. Artifacts from most investigations carried out for the NHDOT are placed in the designated state archaeological laboratory facility, now under management of NHDHR.

Cemeteries and Burials

If there are marked burials in the path of proposed construction, the NHDOT prefers that they be left undisturbed. State law requires a 25-foot buffer zone around most cemeteries for new construction, excavation, and buildings.

Cemeteries in and adjacent to project area should be identified. If the project corridor extends within 25 feet of a cemetery, coordination with the BOE Cultural Resources Program is necessary to ensure that all work complies with state regulations. Archaeological investigations prior to construction or archaeological monitoring during construction may be required.

In the event that land-disturbing activities uncover unmarked human remains, excavation must be immediately discontinued. The NHDOT Cultural Resources staff and State Archaeologist, as well as the local police must be notified, and they will call in the county medical examiner to investigate whether the remains require a criminal or archaeological investigation.

If the land disturbance confirms evidence of an archaeological site, the State Archaeologist will arrange with the landowner the protection or removal of the remains. There are provisions for determining who will bear the costs of archaeological investigations. In the case of state funded land alteration, the department funding the construction will fund the archaeological studies. If privately funded, non-commercial land-altering activities, the NHDHR will fund the work. If privately funded commercial land-alterations, the landowner will bear the costs. Investigations will not continue until verbal notification is provided by the NHDOT.

New Hampshire Cemetery and Burial Regulations

Per NH RSA 227-C:8 a-g, the NHDHR is the authority for New Hampshire burials. NHDHR oversees the excavation, analysis, and subsequent management of any unmarked human burials discovered in the course of construction activities.

Per NH RSA 289:3 CEMETERIES, new construction, excavation, or building in the area of a known burial site or within the boundaries of an established burial ground or cemetery shall comply with local zoning regulations concerning burial sites, burial grounds or cemeteries, whether or not such burial site or burial ground was properly recorded in the deed to the property. In the absence of such regulations, no new construction, excavation, or building shall be conducted within 25 feet of a known burial site or within 25 feet of the boundaries of an established burial ground or cemetery, whether or not such burial site or burial ground was properly recorded in the deed to the property, except when such construction, excavation, or building is necessary for the construction of an essential service, as approved by the governing body of a municipality in concurrence with the cemetery trustees, or in the case of a state highway, by the commissioner of the department of transportation in concurrence with the cemetery trustees.

Per NH RSA 290 BURIALS AND DISINTERMENTS, it is illegal and a misdemeanor, under most circumstances, to disinter a human body without a permit. It is important to note that the *accidental* discovery of buried human remains is not a crime.

Per NH RSA 635 CEMETERIES, BURIAL GROUNDS, GRAVESTONES, part of the New Hampshire Criminal Code, states that no person, without written authorization of the owner or lineal descendant of the deceased or municipality will knowingly destroy, mutilate, injure, or remove any tomb, monument, gravestone, or marker or a fragment from a burial plot. It sets out circumstances under which it is permitted to alter or remove cemetery items and/or the remains they mark. This statute also prohibits the possession or sale of tombstones and other objects from cemeteries, a Class B felony.

Stone Walls

Stone walls have been described by Robert Thorson, the region's foremost expert on stone walls, as "archaeological ruins" and "New England's signature landform." Although stonewalls are evidence of human modifications of the landscape, they also benefit the environment by stabilizing surface soils, controlling the location and movement of water, and serving as animal habitat.

In 1990, the NHDOT developed guidelines for review and, as necessary, reconstruction of stone walls and features that may be disturbed during highway projects in New Hampshire.

The NHDOT Stone Wall Treatment Plan (May 1998) and Section 572 of the NHDOT Standard Specifications were developed in consultation with the NHDHR and FHWA. The Stone Wall Treatment

Plan includes specific tasks directed towards maintaining the integrity of our roadside views and vistas by preserving and protecting stone walls within or adjacent to public road rights of way. The State of New Hampshire Roadside Stone Wall Reconstruction Policy was also formulated, noting the relationship of the policy with Federal-aid participation, and the federal Scenic Byways Program and the New Hampshire Scenic and Cultural Byways System.

To ensure that construction projects minimize impacts to stone walls and, when deemed appropriate, preserve original stone for restoring and reconstructing walls to their approximate original condition, the NHDOT takes actions directed at identifying the resource prior to construction, minimizing impacts, and protecting and restoring stone walls.

The NHDOT BOE conducts stone wall assessments in project areas in compliance with the 1990/2006 State of New Hampshire NHDOT Roadside Stone Wall Reconstruction Policy. The Cultural Resource Program is in the process of updating this policy and associated tasks.

NH Stonewall Regulations

RSA 207:36, issued in 1935 and amended in 1959, deals with “Injuring Property,” and states “No person shall tear down, damage or destroy any fence, wall, ... “ on common land and land of another person.

RSA 472:6, issued in 1983, deals with “Removing or Altering Boundary Markers” and states:
Any person who purposely commits or causes to be committed any of the following acts with regard to a boundary marker ...shall be guilty of a misdemeanor: defacement, alteration of a location, or removal of a stone wall or monument,” unless it was a mutual agreement between landowners affected by the boundary movement, authorized by government officials in order to more accurately place the boundary, a finally adjudicated court order or decree, or a law requiring or allowing the alteration.

RSA 473:5, last revised in 1967, states: *All fences of such height as to be reasonably adequate for their purpose and in good repair, consisting of rails, timber, boards or stone wall, barbed, electrified or woven wire, and all brooks, rivers, ponds, creeks, ditches, hedges and other things deemed by the fence-viewers to be equivalent thereto, shall be accounted legal and sufficient fences.*

RSA 539:3 pertaining to “Fences” states that whoever “willfully and unlawfully throw down or leave open a fence, gate or bar belonging to or enclosing land ...shall forfeit to the person injured treble damages, and not more than fifteen dollars.”

RSA 539:4, issued in 1955 and last revised in 2009, updated the 1791 stone wall statute and 1842 additions, retaining most of the original wording in honor of the original `78` statute. Specific reference to stone walls was added and penalties and damages were updated to reflect inflation. This statute is “regarded as almost the only legal countermeasure against the theft of stone walls” (Garvin 2009). *Whoever shall willfully and unlawfully dig or carry away any stone, including stone from a stone wall, ore, gravel, clay, sand, turf, mold, or loam upon or from land holden in common or from the land of another person, or shall aid therein, shall forfeit to the person injured treble damages based on the cost of materials and restoration, and including attorney’s fees and costs.*

State Historic Markers

NH's Historic Highway Marker program is managed jointly by the NHDOT and NHDHR. Information on the program can be found on NHDHR's website: <http://www.nh.gov/nhdhr/markers/>. Applicable state RSA's include RSA227C:4x and RSA236:40-44.

As mitigation for Section 106 Adverse Effects, historic markers may be required. This would be memorialized in the Memorandum of Agreement. A 36-CFR-61 qualified architectural historian is responsible for writing the text to be placed on the marker. Markers can have the same text on both sides, or different text on each side. Once the text has been reviewed and approved by NHDOT and NHDHR, the text is submitted to the NHDOT Traffic Bureau, which is responsible for fabrication and placement of the marker. Currently, markers cost between \$1,500 and \$1,800.

Cultural Resources Agency Meetings

Cultural Resources Agency meetings are held on the 2nd Thursday of each month among NHDOT, SHPO, federal agencies, and any interested parties. The Cultural Resources Program facilitates the meetings, which are held at NHDOT. All project information, including the agenda and meeting minutes can be found on the BOE Website:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/crmeetings.htm>

Databases

The State Historic Archaeological and Architectural Resources Database (SHAARD) was developed in 2014. The SHAARD database compiles information on project undertakings; cultural resources identified during the Section 106 process; undertakings recognized in the Programmatic Agreement; and effect memos and Memorandums of Agreement. SHAARD reports will ultimately provide quantifications on various aspects of the Cultural Resources Program to comply with Section 106 of the National Historic Preservation Act, the Programmatic Agreement stipulations, and the yearly federal archaeological information requests. A user manual for the SHAARD database is currently under development.

Consultant Oversight

The Cultural Resources Program oversees on-call statewide, low-bid, service agreements with architectural historians and archaeological firms. All contract information is saved on the S drive under: {current contract year} Cultural Contracts.

Chapter Eight – Water Quality Program

Overview

The purpose of the Water Quality Program is to provide high-level technical and regulatory expertise for the NHDOT relative to potential water quality impacts associated with transportation projects and maintenance/operations activities, including technical evaluations, guidance to NHDOT personnel, report preparation and review, consultant oversight, computer analyses and detailed field observations.

Regulations and Policies

- Clean Water Act of 1972: <http://www2.epa.gov/laws-regulations/summary-clean-water-act>
- Alteration of Terrain Regulation: <http://www.gencourt.state.nh.us/rsa/html/L/485-A/485-A-17.htm>

Technical Guidance

National Pollutant Discharge Elimination System (NPDES)
<http://www.epa.gov/region1/npdes/newhampshire.html>

Construction General Permit (CGP) and Stormwater Pollution Prevention Plans (SWPPP)

The CGP regulates stormwater discharges to surface waters in New Hampshire from Earth-Disturbing Activity on construction sites. The Water Quality Program provides specific water quality information to the contractors to obtain a Notice of Intent to utilize the CGP. This includes querying the 303(d) list for impaired waters, and identifying co-occurring permits like MS4.

Municipal Separate Storm Sewer System (MS4), and Stormwater Management Plan and Report

The MS4 regulates stormwater discharges to surface waters in New Hampshire from storm sewers. The Water Quality Program provides specific water quality information to the Department to obtain a Notice of Intent, comply with the Stormwater Management Plan and files an annual report. This includes querying the 303(d) list for impaired waters, and identifying co-occurring permits like the CGP.

Remedial General Permit (RGP)

The RGP regulates stormwater discharges to surface waters in New Hampshire from known contaminated sites. The Water Quality Program provides specific water quality information and coordinates with the Contamination Program to obtain a Notice of Intent.

Alteration of Terrain (AOT)

<http://des.nh.gov/organization/divisions/water/aot/index.htm>

The AOT regulates activities that “significantly alter the characteristics of the terrain” during construction and over the life of the facility. Construction activities are regulated by limiting the amount and duration unstabilized earth that is exposed during construction. The NHDOT has obtained a permit exemption from the requirements to obtain a permit from the AOT program, and has developed a compliance flow chart implementing the NHDOT’s compliance procedures (*Appendix J*). Post construction activities are regulated by limiting the amount of untreated/uncontrolled runoff from impervious cover.

Water Quality Certification

<http://des.nh.gov/organization/divisions/water/wmb/section401/index.htm>

All Federal permits require Water Quality Certification by the State. However, most General Permits (CGP, MS4, ACOE PGP) are completed when the General Permit is issued. There are occasions when individual Federal permits are issued and require individual Water Quality Certification. If required by a project, the Water Quality Program Manager will work with the Environmental Manager and design team to obtain the necessary Water Quality Certificate.

303(d) list of Impaired Waters and Total Maximum Daily Load (TMDL) compliance
<http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm>

The 303(d) list is prepared every other year as directed by the Consolidated Assessment and Listing Methodology (CALM). The list forms the basis for many water quality related decisions related to permitting and water quality certification. It also lays out a time table for TMDLs and their implementation.

Chapter Nine – Wetlands Program

Overview

The Wetlands Program performs technical evaluations and report preparation relative to the potential wetland impacts associated with transportation projects for the NHDOT, including processing state and federal wetland permit applications, completing wetland delineations processing shoreland applications, coordinating wetland mitigation requirements, and conducting stream crossing assessments.

Regulations and Policies

- NHDES Administrative Rules Env-Wt 100-900
- NH RSA 482-A:3, Fill and Dredge in Wetlands
- Section 404 of the Clean Water Act

Technical Guidance

Standard Dredge and Fill Permit (Wetland Permit)

Impacts to areas under the jurisdiction of NHDES require a wetland permit. The permitting process will be outlined in detail in the Wetlands Permit Process Manual that is currently under development. The permit application package must be completed in accordance with Env-Wt 100-900, specifically Env-Wt 500. The NHDOT Checklist for the NHDES Permit Application should be used during the permit application process. The checklist and all other application materials are located on the BOE Website: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetlands.htm>

Army Corp of Engineers NH Programmatic General Permit

The ACOE has issued a Programmatic General Permit (PGP) to the State of New Hampshire to expedite the review of projects impacting less than 3 acres of wetlands. The SPGP eliminates the need to apply for an individual permit from the ACOE. A copy of the PGP is located on the BOE Website at the link above.

Army Corps of Engineers Individual Permit

An individual permit, or Section 404 Permit, is generally required from the ACOE when a project impacts greater than 3 acres of jurisdictional wetlands, which includes: structures or work in or affecting navigable waters of the United States, and discharge of dredged or fill material into all waters of the United States including wetlands. In New Hampshire, navigable waters of the United States include all tidal waters and their tributaries to the head of the tide.

More information is located on the ACOE Website:

<http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/ObtainPermit.aspx>

Criteria for Shoreline Stabilization

Projects that propose rip-rap along the embankment of a stream, river, lake or pond require the Env-Wt 404 criteria to be addressed regardless of the total linear feet. Projects that are in excess of 100 linear feet require a PE Stamp. Form Env-Wt 404 needs to be included in the wetland application.

Base Erosion Control Plan

The base erosion control plan is completed for projects that require a wetlands permit application and is a joint effort between the Highway Design, the BOE Water Quality and Wetlands Programs, the Environmental Manager, and the Environmental Coordinator.

Stream Crossings

Across the state, there are at least 17,000 road-stream crossings, some of which have created obstructions to the adequate passage of flow, sediment, and wildlife.

Stream Crossing Assessments are conducted when a permit is required for proposed work on certain stream crossings. The NHDES Stream Crossing Rules require that stream crossings be designed in accordance with the NH Stream Crossing Guidelines, which state “stream crossing construction and replacement are specifically intended to help minimize the impacts on streams and their associated riparian ecosystems and aquatic biota, but will likely minimize the potential for damage to the road and crossings themselves.” More information is located on the BOE Website at the link above.

When seeking to obtain a wetlands permit for a project that includes a stream crossing, the plans and application must be submitted in accordance with the NHWB Env-Wt 100-900 rules, specifically Chapter 900 (Stream Crossings).

A form to request a Stream Crossing Assessment should be submitted to the Wetlands Program by the Environmental Manager, Design team, and/or District office. This form can be found here:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/documents/RequestforStreamCrossingAssessment.doc>

Routine Roadway and Railway Maintenance Activities

Any work that involves routine maintenance activities that are conducted in accordance with the manual Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire does not require a Dredge and Fill permit. Instead, a Notification of Routine Roadway and Railway Maintenance Activities can be used for the following activities, provided certain conditions are met:

- Culvert extensions at the same location
- Culvert replacement and relocation
- Embankment stabilization
- Headwall repair, replacement and construction
- Roadside ditch maintenance (parallel to roadway)

Projects do not qualify for this category if they occur in a bog, marsh, sand dune or undisturbed tidal buffer zone, in or adjacent to a prime wetland or within ¼-mile of a designated river. Please refer to the NHDOT Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire, located on the BOE Website: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/documents/BMPManual.pdf>

Permit by Notification (PBN)

Permit by Notification (PBN) is a streamlined permitting process that can be used instead of the Standard Dredge and Fill permitting process for certain minimum impact projects. Projects eligible for PBN cannot be located in a bog, marsh, sand dune, undisturbed tidal buffer zone, in any wetland identified by the Natural Heritage Bureau as an exemplary natural community or in or adjacent to prime wetlands. Project activities that may qualify for a PBN include:

- Maintenance dredging of nontidal drainage ditches that does not exceed 20,000 square feet.
- Maintenance, repair or replacement of a non-docking structure such as a culvert, headwall, bridge, dam, residential utility line, or rip-rap slope of less than 50 linear feet, provided there is no change in location, configuration, construction type or dimension.

Wetland Permit Database

Each wetland permit application is recorded in the BOE wetland permit database, located on the BOE S drive (S:\Environment\PROJECTS\0_INDEX). When the application is received, the Wetland Program Manager will enter project specific information such as project numbers, date received, date submitted, target date for permit approvals etc. This database allows the Wetlands Program Manager to track all wetland application submittals and their anticipated permit approvals through the priority list that the database generates. The priority list is distributed weekly to keep applicants and regulators informed.

Mitigation

The purpose of mitigation is to achieve no net loss of wetland functions and values due to projects that require dredging, filling and construction in wetlands and surface water areas. Mitigation can include:

- Restoring an existing degraded wetland area
- Creating a new wetland
- Preserving land
- An in-lieu fee payment into the Aquatic Resources Mitigation (ARM) fund

The following is a summary of the steps followed when mitigation is required. Additional information can be found on the BOE S drive (S:\Environment\Mitigation) and on the DES website:

<http://des.nh.gov/organization/commissioner/pip/factsheets/wet/documents/wb-16.pdf>

1. The need for mitigation should be confirmed with DES and the ACOE, generally at a NHDOT Natural Resource Agency Coordination Meeting.
2. The Environmental Manager should contact the local Conservation Commission (and occasionally local land trusts) to seek input on appropriate mitigation options. Any response should be shared with DES.
3. Creation, restoration, and preservation options should be coordinated closely with DES and ACOE. These options need to be explored before the in-lieu fee is considered. Mitigation packages for larger projects may include some combination of any of these mitigation measures.
4. If it is determined that an in-lieu fee will be paid as mitigation, the Environmental Manager should confirm the payment with the Wetlands Program Manager and DES. The preliminary payment can be calculated using the DES Arm Fund Calculator: http://des.nh.gov/organization/divisions/water/wetlands/wmp/documents/arm_fund_calculator.xls
5. Once the in-lieu fee payment is confirmed, the Environmental Manager should coordinate with the Wetlands Program Manager to ensure that Governor & Council approval is obtained for the in-lieu fee payment.
6. DES will not issue the final permit until receipt of the in-lieu fee. NHDOT does not remit the in-lieu fee to DES until after the construction contract is awarded and Governor & Council approval is obtained. For this reason, DES will issue an approval notice prior to receipt of the in-lieu fee. This approval notice lists the conditions that will be included in the permit and should be included in the project's Contract documents.
7. Following Governor & Council approval of the project, the Environmental Manager should coordinate with the Wetlands Program Manager and Bureau Administrator to ensure that the in-lieu fee payment is made to DES.

Emergency Work in Wetlands

When emergency situations occur in NHWB jurisdiction, the NHWB must be contacted directly for emergency authorization before any work can be completed. An emergency, as defined in the DES Administrative Rules (Env-Wt 503.01), is a situation that creates "a threat to public safety or public

health” or “imminent significant damage to property”, and has “occurred within 5 days of the request for emergency approval.”

Division of Operations staff should contact NHWB directly to request the emergency authorization while copying the BOE Wetlands Program Manager. When requesting an emergency authorization, the following information is required and should be submitted via email: a description of the emergency that has occurred, a description of the proposed fix, (if possible a sketch of the proposed fix), photos of the emergency work area, and a USGS topographic map clearly depicting the project location.

NHWB will issue the emergency authorization and send an electronic copy to the appropriate Operations point of contact and will copy the Bureau of Environment Wetlands Program Manager.

When issued, Emergency Authorizations will have an expiration date, prior to which the work must be completed. In addition, there will be an indication as to whether or not an Emergency Follow-up Application and/or report will be required and a deadline for that to be filed. The Wetlands Program Manager is responsible for maintaining a file of Emergency Authorization and ensuring the timeliness of filing a follow-up. In the case of an Emergency Follow-up Application, a Standard Dredge and Fill application package should be submitted to the BOE a few days prior to the file deadline as outlined in the authorization. This follow-up, or “after the fact”, application should contain the same information as a typical application, in addition to the Emergency Authorization number and photographs of the completed work. In the case of a follow-up report, a package consisting of a narrative of the work that was completed, before and after photos, and a location map should be submitted to the BOE a few days prior to the file deadline as outlined in the authorization.

During a general or local disaster (i.e. significant flooding event) work without emergency authorization is allowed per Env-Wt 503.01(d). The BOE should be contacted to determine, on a case-by-case basis, what information needs to be sent to NHDES following the emergency.

Prime Wetlands

Under RSA 482-A:15 and NHDES administrative rules Env-Wt 700, individual municipalities may elect to designate wetlands as prime wetlands if, after thorough analysis, it is determined that high-quality wetlands are present. Typically, a wetland receives this designation because of its large size, unspoiled character, and ability to sustain populations of rare or threatened plant and animal species.

Prime wetland maps can be accessed from the NHDES Wetlands Bureau website to determine if your project is within these town designated protection areas:

http://des.nh.gov/organization/divisions/water/wetlands/prime_wetlands.htm

The original prime wetland files, including delineations, can also be found at the municipal offices and or at NHDES by special request.

The BOE Environmental Manager should determine if any Prime Wetlands are located in or adjacent to a project area. Impacts to Prime Wetlands and, if applicable, to Prime Wetland Buffers, should be avoided if possible. If impacts cannot be avoided, mitigation may be required unless the applicant can demonstrate that there will be no net loss of functions and values to the designated prime wetland as a result of the proposed work. To make a determination of no loss of functions or values the Department often utilizes a wetlands consultant to prepare a project specific functions and values assessment and report. Once the Environmental Manager and the Design team determine that a project will impact Prime

Wetlands, the Environmental Manager should consult with the Wetlands Program Manager for further guidance.

Consultant Oversight

The Wetlands Program oversees on-call statewide service agreements with environmental consulting firms to assist the BOE in wetland association tasks such as wetland delineations and mitigation monitoring.

Permits and Approvals

- NHDES Shoreland Permit or Permit By Notification
- NHDES Wetland Permit, Permit by Notification, or Routine Roadway and Railroad Maintenance Activities Notification
- US Army Corps of Engineers Programmatic General Permit or Individual Permit

Chapter Ten – Bureau of Environment Consultant Management

The BOE manages On-Call Service Agreements, some of which are low bid contracts and some of which are qualifications based contracts.

Low Bid Selection Procedures

Current Service Agreements that follow the low bid selection process:

- Wetlands (3 contracts)
- Architectural Historian (4 contracts)
- Pre-Contact Archaeology (2 contracts)
- Post-Contact Archaeology (2 contracts)

Prequalification Process

The BOE solicits expressions of interest in providing services from firms and/or individuals that have performed these services for the Department in the past, and from other firms and/or individuals known by the Department to provide the required services. In addition, a solicitation will be posted on the Department's website under the heading "Projects Soliciting for Interest," (<http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/consultants/projects.htm>) and will utilize the Department's "Eligible Consultant List."

Firms and/or individuals interested in providing services for the upcoming period shall send a letter of interest to the Bureau of Environment's Contract Coordinator, who is specified for each contract in approved procedures. The letter of interest shall include, at a minimum, a summary of the firm's or individual's specific experience relative to the required services and a statement of qualifications to perform said services.

The Bureau of Environment will establish a pre-qualification evaluation team for the purpose of evaluating expressions of interest that are received. For Wetlands, the team shall be composed of, at a minimum, two Environmentalists, the Wetlands Program Specialist, and the Administrator of the Bureau of Environment, and one team member shall be designated as the Contract Coordinator. For Cultural Resources, the team shall be composed of the BOE Cultural Resources Manager and Cultural Resources Specialist, the BOE Administrator, up to two professional staff from the NH Division of Historical Resources, and the Federal Highway Administration NH Division Environmental Programs Manager.

Either the Bureau of Environment Administrator or the applicable Program Manager shall be designated as the Contract Coordinator. It shall be the responsibility of the team to review the expressions of interest and to recommend a Qualified Bidders List to the Director of Project Development, who will seek approval of the Assistant Commissioner. The team's recommendation will be made based upon the firm's or individual's ability to comprehend the assignment, capacity to perform the work in a timely manner, quality of work, regional and/or NH experience and overall suitability for the required tasks. The Director of Project Development will review the recommendation and supporting justification and will recommend a Qualified Bidders List to the Assistant Commissioner for approval.

The Bureau of Environment will maintain the approved list of prequalified bidders, which will remain in effect until the next review period. The review period will be a maximum of three years, unless there is a lapse in the need for contracted services.

Bidding Process

An invitation to bid will be sent to all of the firms and/or individuals on the Qualified Bidders List approved by the Assistant Commissioner. The bid documents will include an Agreement which details the required services and the terms and conditions under which services are to be performed. A sample project with tasks, estimated work hours and other information necessary to allow the firm and/or individual to submit a complete and comprehensive bid will be included. The list of tasks will cover the range of activities that may be specified on an actual project under the Service Agreement. The firms and/or individuals will be instructed to respond to the sample project with a sealed bid delivered to the bid box in Main Lobby of the John O. Morton Building by a specified closing date.

All bids received by the closing date will be opened in public by the Commissioner or designee, and be reviewed for completeness and compliance with the requirements of the invitation to bid. From the acceptable bids received, the firm(s) and/or individual(s) submitting the lowest bids will be selected. The successful firm(s) and/or individual(s) will be notified and will be required to execute an Agreement with the Department for Statewide Wetland Evaluations for the biennial period. Unsuccessful bidders will be notified in writing as to which firm(s) and/or individual(s) was (were) awarded the Agreement(s).

Assignment of Work Under the Statewide Agreement

It is anticipated that, for most on-call agreements, more than one contract will be awarded for the three-year period. To provide an incentive for the low bidder, the work to be done under these contracts will be distributed such that the low bidder will receive the largest portion of the work, to the maximum extent possible as determined solely by the Department.

Qualifications Based Selection Procedures

Current Service Agreements that follow the qualifications based selection process:

- Air & Noise (1 contract)
- Water Quality (1 contract)
- Environmental Services (3 contracts)
- Contamination (4 contracts)

Process

Information on the selection process for qualifications-based agreements can be found on the NHDOT Website: <http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/consultants/index.htm>.

Task Order Development/Authorization Process

Overview

The process of developing a task order/authorizing consultant work is essential in the tracking and documentation of consultant work scopes and budgets. The documentation generated during this process memorializes agreed upon work tasks and allows for NHDOT Project Managers to plan accordingly for their project estimates. A flow chart of this process is located on the BOE S drive here: (\\dot\data\Environment\MANUALS\20150106ServiceAgreementProcedure.docx)

Definitions

Fee: A fee is a formal document prepared by the consultant that outlines the cost to complete the tasks outlined in the scope.

Independent Government Estimate (IGE): An IGE is a formal document prepared by NHDOT that provides the NHDOT opinion on the costs to complete the tasks identified in a scope of work.

Notice to Proceed (NTP): The NTP, also known as the Authorization, is a formal document directing the consultant to proceed with the tasks outlined in the agreed upon scope, for the agreed upon fee. This letter, issued by the Bureau of Environment Administrator, also identifies invoicing information and any additional conditions not specified in the scope that need to be met in execution of the work.

Proposal: A proposal, also known as a Request for Authorization (RFA), is a formal document prepared by the consultant that represents the agreed upon scope and fee between the NHDOT and the consultant.

Scope of work (Scope): A scope is a formal document that captures and defines the work activities, tasks, deliverables and timeline a consultant must execute in performance of specified work.

Process

The NHDOT determines the need for use of one of its on-call statewide consultants. The manager of the individual contract will work with the consultant to develop a scope. The project details needed to develop the scope are discussed with the consultant during face-to-face meetings, over the phone, or via e-mail (depending upon project complexity). The scope must be representative of the tasks laid out in Article I of the applicable contract approved by Governor and Council, and agreed upon by both NHDOT and the consultant.

Following development of the scope, the contract manager will develop an IGE in coordination with the Environmental Manager based upon the tasks outlined in the scope, and will subsequently request that the consultant submit a proposed fee. The IGE is then compared to the consultant's proposed fee to determine reasonability of costs. The consultant's proposed fee and the IGE should be within a reasonable range. If there is substantial difference, negotiations may be needed to either clarify the scope

and/or agree on a fee. Once agreed upon, the consultant's approved scope and fee are combined and represent a complete proposal and become the basis for the Authorization.

The Authorization/NTP is given to the consultant once the proposal (scope and fee) and IGE are confirmed by the applicable BOE program, Project Manager, and FHWA (if the project has federal oversight – see below). Internal tracking numbers are assigned to the Authorization, and the tracking number, authorized fee, and invoiced amounts are all tracked in the Bureau's consultant database.

For reasons of confidentiality, fees, authorizations and proposals are not located under general project files, but are store separately. However, deliverables, such as reports and analytical results may be filed by project upon completion.

Projects with Full FHWA Oversight

For projects with full FHWA oversight, meaning that in the case of BOE, FHWA must approve consultant task orders that exceed \$10,000; FHWA must approve the task order in writing after NHDOT and the consultant reach agreement on the scope and fee. The contract manager prepares a request for FHWA approval letter from the Administrator. This request letter should include the IGE, proposal, and information on project funding. After receipt of the FHWA approval, the contract manager prepares a NTP to the consultant from the Administrator.

Non-Federal Projects

An official IGE is not necessarily required for projects that are non-Federal. However, the BOE, as a business practice, will generally require that an IGE still be prepared for a project task order.

Verbal Authorizations

Verbal authorization may be given to a consultant for a variety of reasons, including the need to respond to an emergency situation. If a consultant has received a verbal authorization for a task order, a proposal is still required after-the-fact to memorialize total authorized amount and scope.

APPENDIX A

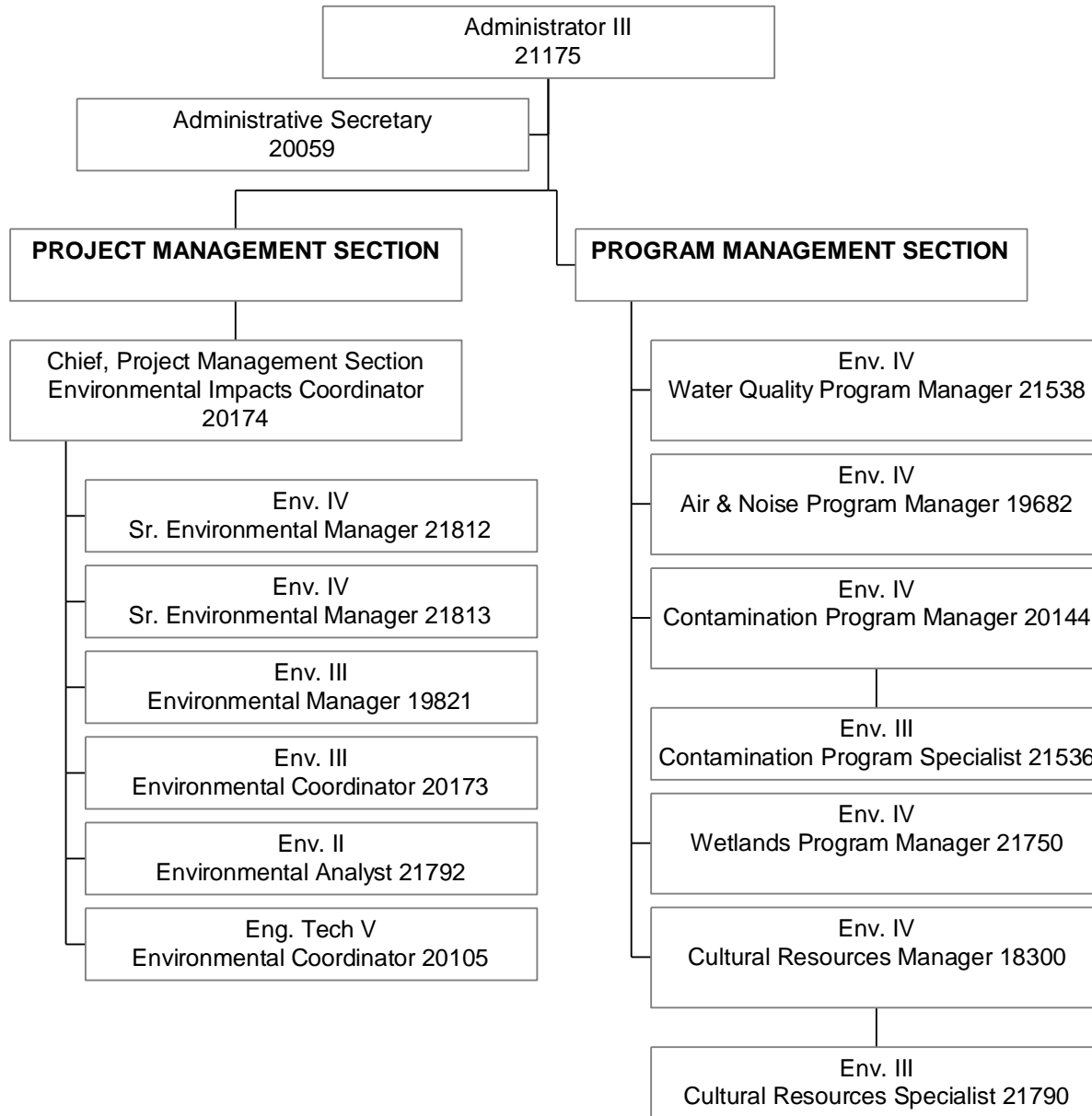
Acronyms

ACHP – Advisory Council on Historic Preservation
ACOE – US Army Corps of Engineers
AOT – Alteration of Terrain
BOE – NHDOT Bureau of Environment
CA – Contract Administrator
CAA – Clean Air Act
CE – Categorical Exclusion
CGP – Construction General Permit
CLS – Conservation Land Stewardship
CORD – Council on Resources and Development
CSPA – Comprehensive Shoreland Protection Act (now SWQPA)
CWA – Clean Water Act
CZMA – Coastal Zone Management Act
CZMP – Coastal Zone Management Plan
DES – New Hampshire Department of Environmental Services
DHR – NH Division of Historical Resources
DOT – New Hampshire Department of Transportation
EA – Environmental Assessment
EFH – Essential Fish Habitat
EIS – Environmental Impact Statement
EJ – Environmental Justice
EPA – United States Environmental Protection Agency
ESA – Endangered Species Act
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
FONIS – Finding of No Significant Impact
FPPA – Farmland Protection Policy Act
IGE – Independent Government Estimate
LAC – Designated River Local Advisory Committee
LCHIP – New Hampshire Land and Community Heritage Investment Program
LCIP – Land Conservation Investment Program
LWCF – Land and Water Conservation Fund
MAP-21 – Moving Ahead for Progress in the 21st Century
MOA – Memorandum of Agreement
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
NAAQS – National Ambient Air Quality Standards
NEPA – National Environmental Policy Act
NHB – New Hampshire Natural Heritage Bureau
NHCP – New Hampshire Coastal Program
NHFG – NH Fish and Game Department
NHWB – New Hampshire Department of Environmental Services Wetlands Bureau
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
NOI – Notice of Intent
NPDES – National Pollutant Discharge Elimination System
NRCS – Natural Resource Conservation Service
OEP – New Hampshire Office of Energy and Planning

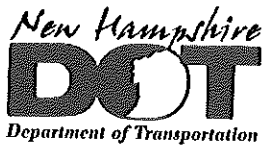
ODD – Oil Discharge, Disposal and Cleanup Fund
POW – Prosecution of Work
PPS&E – Preliminary Plan, Specifications & Estimate
PS&E – Plan, Specifications & Estimate
RFP – Request for Proposal
RGP – Remediation General Permit
RMPP – Rivers Management and Protection Program
ROD – Record of Decision
RPR – Request for Project Review
RSA – Revised Statutes Annotated
SHPO – State Historic Preservation Office
SWPPP – Stormwater Pollution Prevention Plan
SWQPA – Shoreland Water Quality Protection Act (formerly CSPA)
USC – United States Code
USFWS – US Fish and Wildlife Service
USFS – US Forest Service
USGS – US Geological Survey
WAP – NH Wildlife Action Plan
WMNF – White Mountain National Forest

APPENDIX B

Bureau of Environment
Existing Org Chart Effective 02/2015



APPENDIX C



PROGRAMMATIC AGREEMENT



CATEGORICAL EXCLUSION APPROVALS

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION & FEDERAL HIGHWAY ADMINISTRATION

February 2000
Revised May 2001
Revised July 2014

PREAMBLE

This Agreement establishes the procedures of the New Hampshire Department of Transportation (NHDOT) and the New Hampshire Division office of the Federal Highway Administration (FHWA) for approving Categorical Exclusion (CE) classifications for Federal-aid actions in accordance with the National Environmental Policy Act. These procedures comply with FHWA's environmental regulations at 23 CFR 771.

By this Agreement, FHWA concurs in advance, on a "programmatic" basis, with NHDOT's determination that projects which satisfy certain conditions in this Agreement will not result in significant environmental impacts. These projects are categorically excluded from the NEPA requirement to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

BACKGROUND

CEs are actions "that do not involve significant environmental impacts", as defined in 23 CFR 771.117 (a). Furthermore, *Categorical Exclusions*:

1. *Do not induce significant impacts to planned growth or land use for the area;*
2. *Do not require the relocation of significant numbers of people;*
3. *Do not have significant impact on any natural, cultural, recreational, historic or other resource;*
4. *Do not involve significant air, noise, or water quality impacts, or;*
5. *Do not have significant impacts on travel patterns*

In accordance with 23 CFR 771.117 (b), "any action which normally would be classified as a CE, but could involve unusual circumstances, will require the Administration (FHWA), in cooperation with the applicant (NHDOT), to conduct appropriate environmental studies to determine if the CE classification is proper." *Such unusual circumstances include:*

1. *Significant environmental impacts;*
2. *Substantial controversy on environmental grounds;*
3. *Significant impact on properties protected by section 4(f) of the DOT Act or section 106 of the National Historic Preservation Act, or;*
4. *Inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action.*

As discussed in the Council on Environmental Quality's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, significance determinations require "considerations of both context and intensity." As appropriate, other agencies will be consulted for assistance in making significance determinations.

PROGRAMMATIC CATEGORICAL EXCLUSIONS

This Agreement applies to a group of actions which the collective experience of the signatories has shown never or almost never cause significant environmental impacts and can be programmatically classified as CEs. Such actions include all those listed in 23 CFR 771.117 (c) and many of the actions listed in 23 CFR 771.117 (d), as follows:

1. Activities which do not involve or lead directly to construction, such as planning and technical studies; grants for training and research programs; research activities as defined in 23 U.S.C. 307; approval of a unified work program and any findings required in the planning process pursuant to 23 U.S.C. 134; approval of statewide programs under 23 CFR Part 630; approval of project concepts under 23 CFR Part 476; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed; and Federal-aid system revisions which establish classes of highways on the Federal-aid highway system.
2. Approval of utility installations along or across a transportation facility.
3. Construction of bicycle and pedestrian lanes, paths, and facilities.
4. Activities included in NHDOT's "highway safety plan" under 23 U.S.C. 402.
5. Transfer of Federal lands pursuant to 23 U.S.C. 317 when the subsequent action is not an FHWA action.

6. The installation of noise barriers or alterations to existing publicly owned buildings to provide for noise reduction.
7. Landscaping.
8. Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.
9. Emergency repairs under 23 U.S.C. 125.
10. Acquisition of scenic easements.
11. Determination of payback under 23 CFR Part 480 for property previously acquired with Federal-aid participation.
12. Improvements to existing rest areas and truck weigh stations.
13. Ridesharing activities.
14. Bus and rail car rehabilitation.
15. Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.
16. Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet routine changes in demand.
17. The purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities or by new facilities which themselves are within a CE.
18. Track and railbed maintenance and improvements when carried out within the existing right-of-way.
19. Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.
20. Promulgation of rules, regulations, and directives.
21. Modernization of a highway by resurfacing, restoration or rehabilitation. *Note: Reconstruction is not included in this category.*
22. Bridge Rehabilitation. *Note: Reconstruction or replacement is not included in this category.*

23. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
24. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
25. Approvals for changes in access control.
26. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
27. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
28. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
29. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.
30. Acquisition of land for hardship or protective purposes; advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

In addition, this Agreement applies to the following actions which typically do not have significant environmental impacts:

31. Bridge Painting.
32. Construction of recreational trails funded under the National Recreational Trails Funding Program.
33. Transportation Enhancement Activities.
34. Congestion Mitigation & Air Quality (CMAQ) Activities (excluding construction of park and ride facilities).

35. Scenic Byways Activities (excluding highway reconstruction and bridge reconstruction/replacement).
36. Projects entirely located within the existing operational right-of-way pursuant to 23 CFR 771.117 (c) (22). Existing operational right-of-way refers to right-of-way that has been disturbed for an existing transportation facility or is maintained for a transportation purpose, including areas maintained for clear zone requirements, signage, safety, security, and landscaping; any parking area, or rest area with direct access to a controlled access highway; and transit substations, venting structures and maintenance facilities.
37. Projects of Limited Federal Assistance pursuant to 23 CFR 771.117 (c) (23). Limited Federal Assistance includes projects less than \$5 million, or Federal Assistance less than 15% of a project with a \$30 million total estimated cost.

INDIVIDUAL CATEGORICAL EXCLUSIONS

This Agreement does not apply to the actions listed below. For these actions, documentation must be submitted to FHWA for approval of the CE classifications.

1. Modernization of a highway by reconstruction, adding shoulders, or adding auxiliary lanes (e.g. parking, weaving, turning, climbing).
2. Bridge reconstruction or replacement, or the construction of grade separation to replace existing at-grade railroad crossings.
3. Transportation corridor fringe parking facilities.
4. Construction of new truck weigh stations or rest areas.

CLASSIFICATION PROCEDURES

NHDOT proposed actions may be programmatically classified as CEs if *all* of the conditions listed below are met; otherwise, proposed actions must have individual approval of their CE classification by FHWA.

1. *AIR QUALITY* - The type of action proposed is exempt from regional and project level air quality analyses, or existing and future 1-hour CO levels are so low as to not warrant an 8-hour analysis.
2. *CULTURAL RESOURCES* - The proposed action will not adversely affect properties eligible for or listed in the National Register of Historic Places.
3. *ENDANGERED SPECIES* - The proposed action does not affect species or critical habitat of species protected by the Endangered Species Act. As appropriate, the US

Fish & Wildlife Service, National Oceanic and Atmospheric Administration, NH Fish & Game Department and NH Natural Heritage Bureau will be consulted.

4. *FLOODWAYS / FLOODPLAINS* - The proposed action will not encroach on the regulatory floodway of any water courses or water bodies in such a way that results in an increase in base flood elevation. Furthermore, there are no practical alternatives to any proposed construction in a floodplain area and all practical measures to minimize harm to floodplains are included in the proposed action. Additionally, the proposed action will not have a significant adverse impact on natural and beneficial floodplain values and will not create a significant risk to human life or property.
5. *NOISE* - The proposed action is not a Type I project.
6. *RIGHT-OF-WAY* - The proposed action does not require the acquisition of residences or businesses, nor fee simple acquisition or permanent easements to an extent that impairs the functions of the affected properties.
7. *SECTION 4(f)* - The proposed action does not require the use of any property protected by Section 4(f) of the Department of Transportation Act, other than that for which a *de minimis* impact finding has been made.
8. *SECTION 6(f)* - The proposed action does not require the use of any property protected by Section 6(f) of the Land and Water Conservation Fund Act.
9. *WATER QUALITY* - The proposed action will have negligible or no impact on surface waters.
10. *WETLANDS* - The proposed action does not require an Army Corps of Engineers Individual Permit. Furthermore, there are no practical alternatives to any proposed wetland impacts and the proposed action includes all practical alternatives to minimize wetland impacts.
11. *OTHER* - The proposed action does not result in other major issues of concern.

The following steps will be followed to programmatically classify proposed actions as Categorical Exclusions:

1. The Bureau of Environment will be responsible for conducting an interdisciplinary review of proposed actions to determine the potential environmental impacts and appropriate level of documentation and classification.
2. For actions to be classified as Programmatic Categorical Exclusions, a checklist (Appendix A), with appropriate attachments, will serve to document the above conditions are met. For actions requiring individual classification as CEs by FHWA, traditional documentation will be submitted to FHWA.

3. If a public hearing is held for a proposed action that is programmatically classified as a CE, the Bureau of Environment will review the hearing transcript and the hearing certification to confirm that the proposed action continues to qualify as a programmatic CE. A notation of this finding will be made on the checklist.
4. NHDOT will maintain a log of approved programmatic CEs for review by FHWA. A copy of the log will be provided to FHWA on a quarterly basis. Documentation (checklist and attachments, as appropriate) will be retained and accessible to FHWA for a minimum of three (3) years following completion/construction of the proposed action. Electronic files meeting Federal and State requirements may eventually replace "hard" copies.
5. When the authorization to proceed with right-of-way acquisition or construction is requested from FHWA, NHDOT will indicate whether the proposed action is a Programmatic or Individual CE and the date the classification was determined.

AGREEMENT REVISIONS AND TERMINATION

This Agreement and its attachments may be expanded, modified, or terminated by mutual consent of the Division Administrator, FHWA, and the Commissioner of NHDOT, or designees, at any time. A joint FHWA/NHDOT process review will be conducted approximately five (5) years from the date of execution of this Agreement. This review may result in recommendations for revisions. It is anticipated that reviews every five (5) years will follow thereafter.

APPROVAL OF AGREEMENT

The undersigned have reviewed this Agreement and determined that it complies with the laws, regulations and policies applicable to FHWA and NHDOT. Accordingly, it is hereby approved and becomes effective on the last date noted below.



Christopher D. Clement, Senior
Commissioner
New Hampshire Department of Transportation



Date



Patrick A. Bauer
New Hampshire Division Administrator
Federal Highway Administration



Date

Appendix A

Categorical Exclusion Programmatic Determination Checklist

**Follow-up Action for Programmatic Exclusions
For Projects Requiring a Public Hearing**

&

Categorical Exclusion Non-Programmatic Environmental Impact Summary



CATEGORICAL EXCLUSION PROGRAMMATIC DETERMINATION CHECKLIST

Action/Project Name: _____
Federal Project Number: _____

State Project Number: _____
CE Action Number: _____

Description of Project:

PROGRAMMATIC CATEGORICAL EXCLUSION (CE) CRITERIA¹

	NO	YES	
1a <i>Air Quality</i> – Is the proposed action a non-CMAQ project requiring a conformity determination?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, then... See Sec. 1 below
1b <i>Air Quality</i> – Does the proposed action require an 8-hour CO analysis?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 1 below
2 <i>Cultural Resources</i> – Does the proposed action have an adverse effect on properties eligible for or listed in the National Register of Historic Places?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 2 below
3 <i>Endangered Species</i> – Does the proposed action affect species and critical habitat of species protected by the Endangered Species Act, as determined through consultation with USFWS, NHF&G, NOAA, and /or NHNHB, as appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 3 below
4a <i>Floodways</i> – Does the proposed action encroach on the regulatory floodway of water courses or water bodies, resulting in an increase in base flood elevation?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 4 below
4b <i>Floodplains</i> – Does the proposed action have a significant adverse impact on natural and beneficial floodplain values, or create a significant risk to human life or property? Does the proposed action include all practical measures to minimize harm to floodplains?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 4 below
5 <i>Noise</i> – Is the proposed action a Type I highway project?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 5 below
6 <i>Right-of-Way</i> – Does the proposed action require the acquisition of residences or businesses, or require fee simple acquisition or permanent easements to an extent that impairs the functions of the affected properties?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 6 below
7 <i>Section 4(f)</i> – Does the proposed action require the use of any property protected by Section 4(f) of the 1966 USDOT Act, other than that for which a <i>de minimis</i> impact finding has been made?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 7 below
8 <i>Section 6(f)</i> – Does the proposed action require the use of any property protected by Section 6(f) of the LWCF Act?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 8 below
9 <i>Water Quality</i> – Does the proposed action have more than a negligible impact on surface waters?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 9 below
10 <i>Wetlands</i> – Does the proposed action require an Army Corps of Engineers Individual Permit?	<input type="checkbox"/>	<input type="checkbox"/>	See Sec. 10 below
11 <i>Other</i> – Do any of the above conclusions benefit from more detailed explanation or are there other major issues of concern?	<input type="checkbox"/>	<input type="checkbox"/>	See below

⊗ If the answer to all of the above questions is **NO**, the proposed action **qualifies for classification as a Programmatic Categorical Exclusion**. The Programmatic Determination Checklist, Detailed Discussion of Programmatic Criteria, and Environmental Commitments should be completed, as well as the Post-Hearing Classification, as applicable

⊗ If the answer to any of the above questions is **YES**, the proposed action **does not qualify for classification as a Programmatic Categorical Exclusion**. In such cases, if the impact(s)/effect(s) leading to the disqualification are not significant; the proposed action may be processed as an Individual CE and the remainder of this form (Non-Programmatic Environmental Impact Summary) should be filled out as appropriate.

¹ See *Detailed Instructions* for further explanations of the questions and documentation requirements.

DETAILED DISCUSSION OF PROGRAMMATIC CE CRITERIA

- 1a & 1b. Air Quality** – *Is the proposed action a non-CMAQ project requiring a conformity determination?*
- 2. Cultural Resources** – *Does the proposed action have an adverse effect on properties eligible for or listed in the National Register of Historic Places?*
- 3. Endangered Species** – *Does the proposed action affect species and critical habitat of species protected by the Endangered Species Act, as determined through consultation with USFWS, NHF&G, NOAA, and /or NHNHB, as appropriate?*
- 4a. Floodways** – *Does the proposed action encroach on the regulatory floodway of water courses or water bodies, resulting in an increase in base flood elevation?*
- 4b. Floodplains** – *Does the proposed action have a significant adverse impact on natural and beneficial floodplain values, or create a significant risk to human life or property? Does the proposed action include all practical measures to minimize harm to floodplains?*
- 5. Noise** – *Is the proposed action a Type I highway project?*
- 6. Right-of-Way** – *Does the proposed action require the acquisition of residences or businesses, or require fee simple acquisition or permanent easements to an extent that impairs the functions of the affected properties?*
- 7. Section 4(f)** – *Does the proposed action require the use of any property protected by Section 4(f) of the 1966 USDOT Act, other than that for which a de minimis impact finding has been made?*
- 8. Section 6(f)** – *Does the proposed action require the use of any property protected by Section 6(f) of the L&WCF Act?*
- 9. Water Quality** – *Does the proposed action have more than a negligible impact on surface waters?*
- 10. Wetlands** – *Does the proposed action require an Army Corps of Engineers Individual Permit?*
- 11. Other** – *Do any of the above conclusions benefit from more detailed explanation or are there other major issues of concern? (Other issues of concern include contamination, conservation lands, invasive plants, etc.)*

ENVIRONMENTAL COMMITMENTS

CLASSIFICATION DETERMINATION

- The proposed action qualifies for a Programmatic Categorical Exclusion.

- The proposed action does not qualify for a Programmatic Categorical Exclusion.

Prepared by: _____
Name, Title _____ Date _____

Approval
Recommended By: _____
Project Management Section Chief
NHDOT Bureau of Environment _____ Date _____

Approved by: _____
Administrator _____ Date _____
NHDOT Bureau of Environment

Note: Post-hearing follow-up actions, if any, and their disposition, are indicated on the next page.

LIST OF EXHIBITS

FOLLOW-UP ACTION FOR PROGRAMMATIC CATEGORICAL EXCLUSIONS FOR PROJECTS REQUIRING A PUBLIC HEARING

Action/Project Name: _____

State Project Number: _____

Federal Project Number: _____

Was a Public Hearing held? Yes No (if no, you do not need to complete this page)

If Yes, date hearing transcript and certification reviewed: _____

As a result of the Public Hearing, have changes to the proposed action, if any, resulted in impacts/effects that do not meet the Programmatic Categorical Exclusion criteria? Yes No

If the answer to the above question is **YES**, the proposed action **no longer qualifies for classification as a Programmatic Categorical Exclusion**. In such cases, if the impact(s)/effect(s) leading to the disqualification are not significant, the proposed action may be reprocessed as an Individual CE, requiring FHWA's concurrence.

If the answer to the above question is **NO**, the proposed action continues to **qualify for classification as a Programmatic Categorical Exclusion**.

POST - HEARING CLASSIFICATION DETERMINATION

The proposed action continues to qualify as a Programmatic Categorical Exclusion.

The proposed action no longer qualifies as a Programmatic Categorical Exclusion.

If it no longer qualifies, list reasons: _____

Prepared by: _____
Name, Title

Date

Approval
Recommended By: _____
Project Management Section Chief
NHDOT Bureau of Environment

Date

Approved by: _____
Administrator
NHDOT Bureau of Environment

Date



CATEGORICAL EXCLUSION NON-PROGRAMMATIC ENVIRONMENTAL IMPACT SUMMARY

Action/Project Name: _____
Federal Project Number: _____

State Project Number: _____

Description of Project:

Project Purpose and Need:

Alternatives Considered:

Alt. No. 1 _____

Alt. No. 2 _____

Alt. No. 3 _____

CONTACT LETTERS SENT & REPLIES RECEIVED

AGENCY/ORGANIZATION	CONTACT	LETTER SENT	REPLY REC'D

IMPACT ASSESSMENT SUMMARY

1. Air Quality

Is project located in ozone nonattainment area? Yes No
 Is project located in carbon monoxide nonattainment area? Yes No
 Is project included in conformity determinations? Yes No Year
 Is project exempt from conformity determination? Yes No
 Is project exempt from CO analysis? Yes No
 Exemption Code (from most recent conformity document):
 Has project changed since the conformity analysis? Yes No

 Is project exempt from NEPA requirement to consider air quality? Yes No

For Projects Requiring a Carbon Monoxide Microscale Analysis:

Maximum Predicted 1-Hour Concentrations (ppm):

	YEAR	CONCENTRATIONS			Yes	No
Current Year	()	___	to ___	NAAQS Violations?	<input type="checkbox"/>	<input type="checkbox"/>
Opening Year	() build	___	to ___	NAAQS Violations?	<input type="checkbox"/>	<input type="checkbox"/>
Opening Year	() no-build	___	to ___	NAAQS Violations?	<input type="checkbox"/>	<input type="checkbox"/>
Design Year	() build	___	to ___	NAAQS Violations?	<input type="checkbox"/>	<input type="checkbox"/>
Design Year	() no-build	___	to ___	NAAQS Violations?	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

2. Historic/Archaeological Resources (Section 106 or RSA 227-C:9)

Have you identified, and invited, parties to consult in the review pursuant to 36 CFR 800.3(f)? Yes No
 Explain _____

List of Consulting Parties confirmed by FHWA _____

Historic Resources Investigated? Yes No National Register Eligible? Yes No
 Comments _____

Archaeological Resources Investigated? Yes No National Register Eligible? Yes No
 Comments _____

Findings: No Historic Properties Affected No Adverse Effect Adverse Effect

Agency Comments: _____

 _____ Review Completed: _____

Advisory Council Consultation Comments (when Adverse Effects are found): _____

_____ Review Completed: _____

Mitigation (Describe): _____

3. Threatened or Endangered Species/Natural Communities

State-Listed Threatened or Endangered species in project area? Yes No
Exemplary Natural Community in project area? Yes No
Federally-Listed Threatened or Endangered species in project area? Yes No
Section 7 consultation necessary? Yes No

Comments from NH Natural Heritage Bureau: _____

Comments from USFWS and/or NOAA: _____

Mitigation (Describe): _____

4. Floodplains or Floodways

Does the proposed project encroach in the floodplain? Yes No Acreage _____
Volume _____

Describe: _____

Does the proposed project encroach in the floodway? Yes No Acreage _____
Volume _____

Does the proposed project cause an increase in base flood elevation? Yes No

Describe: _____

Coordination With FEMA Required? Yes No

CLOMR Required? Yes No

Comments from NH Floodplain Management Program: _____

Does the project require compensation for loss of flood storage? Yes No

Comments from US Army Corps of Engineers: _____

Mitigation (Describe): _____

5. Noise

Is project a Type I Highway Project? Yes No
 Are There Receptors Present? Yes No # of Residential ____ # Of Commercial ____

Year		Range of Noise Levels (dBA Leq)		Noise Abatement Criterion Impacts			
		Residential (R)	Commercial (C)	# Approaching		# At or Exceeding	
_____	No-Build	_____ to _____	_____ to _____	Res,	Comm	Res,	Comm
_____	Build	_____ to _____	_____ to _____	Res,	Comm	Res,	Comm
_____	No-Build	_____ to _____	_____ to _____	Res,	Comm	Res,	Comm
_____	Build	_____ to _____	_____ to _____	Res,	Comm	Res,	Comm

Will completed project increase noise levels 3 dBA or more? Yes No
 15 dBA or More? Yes No

Are mitigation measures included in project? Yes No
 Explain: _____

Has the municipality received a copy of the traffic noise assessment? Yes No

6. Right-of-Way

Is additional ROW required? Yes No Acreage _____
 Are improved properties acquired? Yes No Acreage _____
 Displacement: Rental Units ____ Private Homes ____ Businesses ____
 Relocation Report received from the Bureau of Right-of-Way? Yes No

Relocation services to be provided? _____

Properties available for relocation? _____

Public Land (Federal State, or Municipal) Involvement? Yes No . (See Section 7 below.)

7. Section 4(f) Resources

Public Parkland Impacts? Yes No Temporary Permanent
 Public Recreational Area Impacts? Yes No Temporary Permanent
 Public Wildlife/Waterfowl Refuge Impacts? Yes No Temporary Permanent
 Historic Properties Impacted? Yes No Temporary Permanent
 LCIP Recreational Land? Yes No Temporary Permanent

Acquisition required? Yes No Area

Comments: _____

Non-acquisition use of 4(f) property (23 CFR 771.135(p)):

Noise Level Increase	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Visual Intrusion	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Access Restriction	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Vibration Impacts	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Ecological Intrusion	Yes <input type="checkbox"/>	No <input type="checkbox"/>			

Programmatic 4(f) Evaluation 4(f) Evaluation *De minimis* 4(f) Finding

For impacts to recreational 4(f) resources, obtain a statement of significance from official with jurisdiction:
 Date Requested: ____ Date Received: _____

8. Section 6(f) Resources

Are there impacts to any properties acquired or improved with funds made available through Section 6(f) of the Federal Land and Water Conservation Fund Act? Yes No Temporary Permanent

Recommendation received from State Liaison Officer (NH Div of Parks & Recreation)? Yes No
 Coordination with the US Department of the Interior necessary? Yes No

Comments: _____

9. Water Quality/Streams, Rivers, and Lakes

Aquifer present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Drinking Water Source Protection Area present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Wellhead Protection Area present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Public Water Supply present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Groundwater Impacts?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Surface Water Impacts?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Surface Water Impairments?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If yes, list: _____
Outstanding Resource Waters present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Water Quality Certificate Required?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Will the project disturb >100,000 sq. ft. of land (50,000 sq. ft. if within protected shoreland), or any land with a grade of 25% or greater within 50' of a surface water? Yes No
 If yes, project must comply with the NHDES Alteration of Terrain regulations. Describe compliance: _____

Will the project disturb greater than 1 acre of land? Yes No
 If yes, project must comply with the EPA NPDES Construction General Permit, which requires preparation of a SWPPP.

Existing Impervious Surface in project area: _____
 Proposed Impervious Surface in project area: _____

Will permanent Best Management Practices be installed for treatment of stormwater runoff? Yes No

Coordination Required on:	Public Waters Access?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Shoreland Protection?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Lakes Management?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Wild and Scenic River? Yes No
 NH Designated River? Yes No

Comments: _____

10. Wetlands

Will this project impact lands under the jurisdiction of the NH Wetlands Bureau? Yes No

Type of permit required: Expedited Minimum Minor Major
 Will the project impact Prime Wetlands? Yes No

Does this project qualify under the ACOE Programmatic General Permit? Yes No

ACOE Individual Permit required? Yes No

Landform Type	USFWS Classification	Permanent Impacts (sf)	Temporary Impacts (sf)
	Total		
Non-Wetland Bank <small>(Jurisdictional land adjacent to lakes, ponds, streams and rivers)</small>	N/A		
Upland Portion of the Tidal Buffer Zone <small>(Land within 100' of the highest observable tide line)</small>	N/A		
Prime Wetland Buffer <small>(Land within 100' of a Prime Wetland)</small>			
	Total		

Estimated length of permanent impacts to banks _____ ft.
 Estimated length of permanent impacts to channel _____ ft.
 Estimated volume of impacts in Public Waters _____ cu. yd.
 If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be rerouted _____ ft.
 If waterfront project, indicate total length of shoreline frontage _____ ft.
 If wall, riprap, beach, or similar project, indicate length of proposed shoreline impact _____ ft.

Describe Mitigation: _____

Comments: _____

11. Conservation Lands

Will land or easements obtained through the LCIP be impacted? Yes No
(Contact the LCIP Coordinator at the NH Office of State Planning)

Has an application been made to CORD demonstrating compliance with RSA 162-C:6? Yes No

Has the Land & Community Heritage Investment Program (LCHIP) been contacted about the project? Yes No

Will any LCHIP property be impacted by the project? Yes No

Does any other conservation land exist in the project area? Yes No

If so, describe impacts and coordination: _____

Comments: _____

12. Wildlife and Fisheries

Does the project impact Highest Ranked Habitat as identified by the Wildlife Action Plan? Yes No

Does the project impact Essential Fish Habitat? Yes No

Does the project involve stream crossings? (Env-Wt PART 900) Yes No

If yes, describe how the NHDES Stream Crossing Rules will be addressed: _____

Comments from State, Federal, or private agency: _____

Mitigation (Describe): _____

13. Agricultural Land

Does the project impact agricultural land? Yes No Active farmland? Yes No

Does project area contain prime, unique, statewide or locally important farmland soils? Yes No

Completion of Form AD-1006 or Form CPA-106 Required? Yes No

Comments: _____

14. Coast Guard

Does the project involve work in navigable waters? Yes No

Does the project impact a historic bridge? Yes No

Does the project require a Coast Guard Permit? Yes No

Determination of FHWA and/or Coast Guard: _____

Comments: _____

15. Hazardous/Contaminated Materials

Does the project area include sites from NHDES OneStop GIS Database? Yes No

ISA completed and attached? Yes No Additional investigation required? Yes No
Remediation required? Yes No

Comments: _____

16. Public Participation

Initial Contact Letters sent to local officials? Yes No Date _____
Public Informational Meeting? Yes No Date _____
Public Hearing Required? Yes No Date _____

Comments: _____

17. Social and Economic Impacts

Is the project consistent with local and regional land use plans? Yes No

Describe: _____

Neighborhood and community impacts? Yes No
 Churches Handicapped
 Schools Low Income Housing
 Elderly Emergency Service Facilities/Vehicles
 Minorities Environmental Justice (Executive Order 12898)

Describe _____

Impacts to local businesses? Yes No Temporary Permanent

Describe: _____

18. Environmental Justice

Does the area affected by the proposed action contain EJ (minority, elderly, limited English proficiency, and/or low-income) populations? Yes No

Are the anticipated project impacts resulting from the proposed action likely to fall disproportionately on EJ populations?

Yes No

Comments: _____

19. Traffic Patterns

Temporary detour required? Yes No Length
Temporary bridge required? Yes No Impacts? Yes No

Describe: _____

Permanent changes to traffic patterns? Yes No

Describe: _____

20 Construction Impacts

Describe: _____

21 Invasive Species

Does the project area contain invasive species prohibited under RSA 430:55 or RSA 487:16-a? Yes No

If yes, will an Invasive Species Control and Management Plan be required during construction? Yes No

Comments: _____

22 Coastal Zone

Is the project located in the Coastal Zone? Yes No

Has an Intergovernmental Consistency Review been completed to determine consistency with the Coastal Zone Management Act? (16 U.S.C. 1451-1464) Yes No

Comments: _____

23. Field Inspection Comments:

24. Coordination

Meeting	Date	Comments

25. Environmental Mitigation and/or Commitments:

Note: When appropriate, more detailed descriptions of resources and an explanation of the impact analysis should be attached to this form.

LIST OF EXHIBITS

Prepared by: _____
Name, Title Date

Reviewed by: _____
Project Management Section Chief
NHDOT Bureau of Environment Date

Accepted by: _____
Administrator
NHDOT Bureau of Environment Date

ABBREVIATIONS/ACRONYMS USED IN THIS DOCUMENT

ACOE	Army Corps of Engineers
CE	Categorical Exclusion
CLOMR	Conditional Letter of Map Revision
CMAQ	Congestions Mitigation & Air Quality
CO	Carbon Monoxide
CORD	Council on Resources and Economic Development
dBA	Decibels
EJ	Environmental Justice
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
ISA	Initial Site Assessment
LCHIP	Land & Community Heritage Investment Program
LCIP	Land Conservation Investment Program
LWCF	Land & Water Conservation Fund
NEPA	National Environmental Policy Act
NHDES	New Hampshire Department of Environmental Services
NHF&G	New Hampshire Fish and Game Department
NHNHB	New Hampshire Natural Heritage Bureau
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PPM	Parts Per Million
ROW	Right-of-Way
SWPPP	Storm Water Pollution Prevention Plan
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service

Activities that qualify for Programmatic Categorical Exclusion

CE Action Number	Activity Description
1	Activities which do not involve or lead directly to construction, such as planning and technical studies; grants for training and research programs; research activities as defined in 23 U.S.C. 307; approval of a unified work program and any findings required in the planning process pursuant to 23 U.S.C. 134; approval of statewide programs under 23 CFR Part 630; approval of project concepts under 23 CFR Part 476; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed; and Federal-aid system revisions which establish classes of highways on the Federal-aid highway system.
2	Approval of utility installations along or across a transportation facility.
3	Construction of bicycle and pedestrian lanes, paths, and facilities.
4	Activities included in NHDOT's "highway safety plan" under 23 U.S.C. 402.
5	Transfer of Federal lands pursuant to 23 U.S.C. 317 when the subsequent action is not an FHWA action.
6	The installation of noise barriers or alterations to existing publicly owned buildings to provide for noise reduction.
7	Landscaping.
8	Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.
9	Emergency repairs under 23 U.S.C. 125.
10	Acquisition of scenic easements.
11	Determination of payback under 23 CFR Part 480 for property previously acquired with Federal-aid participation.
12	Improvements to existing rest areas and truck weigh stations.
13	Ridesharing activities.
14	Bus and rail car rehabilitation.
15	Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.
16	Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet routine changes in demand.
17	The purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities or by new facilities which themselves are within a CE.
18	Track and railbed maintenance and improvements when carried out within the existing right-of-way.
19	Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.
20	Promulgation of rules, regulations, and directives.
21	Modernization of a highway by resurfacing, restoration or rehabilitation. Note: Reconstruction is not included in this category.
22	Bridge Rehabilitation. Note: Reconstruction or replacement is not included in this category.
23	Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
24	Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
25	Approvals for changes in access control.
26	Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
27	Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
28	Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
29	Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.
30	Acquisition of land for hardship or protective purposes; advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.
31	Bridge Painting.
32	Construction of recreational trails funded under the National Recreational Trails Funding Program.
33	Transportation Enhancement Activities.
34	Congestion Mitigation & Air Quality (CMAQ) Activities (excluding construction of park and ride facilities).
35	Scenic Byways Activities (excluding highway reconstruction and bridge reconstruction/replacement)
36	Projects entirely located within the existing operational right-of-way pursuant to 23 CFR 771.117(c)(22)
37	Projects of Limited Federal Assistance pursuant to 23 CFR 771.117(c)(23). Limited Federal Assistance is defined as any project that (A) receives less than \$5,000,000 in Federal funds or (B) has a total estimated cost of less than \$30,000,000, with Federal funds comprising less than 15 percent of the total estimated cost of the project.

Actions that do not qualify for Programmatic Categorical Exclusion

Modernization of a highway by reconstruction, adding shoulders, or adding auxiliary lanes (e.g. parking, weaving, turning, climbing).
Bridge reconstruction or replacement, or the construction of grade separation to replace existing at-grade railroad crossings.
Transportation corridor fringe parking facilities.
Construction of new truck weigh stations or rest areas.

s:\environment\projects\programmatic ce\2014 update\prog ce tracking form 2014 final.docx

APPENDIX D

Green Sheet

REQUEST FOR ENVIRONMENTAL DOCUMENTATION

(submitted to BOE when scope is set and formal documentation is needed)

Project Name: _____ Project Type: _____
State #: _____ Route Name/No.: _____
Federal #: _____ Tentative Public Info date: _____
Lead Person: _____ Tentative Hearing Date: _____
Included in the STIP: Yes No (Non-Federal only) Tentative Advertising Date: _____
Grouped/parent project name (if applicable): N/A Tentative On-Shelf Date: _____
PE funds available: Yes No _____

Attachments: Please note the availability (or expected date of availability) of the following. If currently available, please attach to this form.

Project Location Map: Yes No _____ Traffic Data: Yes No _____
As Built Plans: Yes No _____ Accident Data: Yes No _____
Design Plans: Yes No _____ Survey Request: Yes No _____
TE/CMAQ Application: Yes No _____ Geotech/M&R Request: Yes No _____
Notes/Other (specify): _____

Location (include cities & towns, route numbers/road names, description of project limits, project length): _____

Purpose & Need (include as appropriate: condition of pavement, geometric deficiencies, bridge deficiencies (with sufficiency ratings) safety deficiencies, local or political sentiment, project origin, accident history, capacity problems, etc.): _____

Proposed Action (include project specifics: geometric modifications, roadway typicals, bridge descriptions, lane usage, traffic signal installations, right-of-way involvement, guardrail modification, bridge deck repair, etc.): _____

Alternatives to the Proposal (list ALL feasible alternatives, including: the no-build option, the reconstruction option, and the Department's selection preference): _____

Constraint Considerations (list known engineering and environmental constraints: wetlands, shorelands, stream crossings, historic structures, legislation, public lands, asbestos disposal sites, known contamination, etc.): _____

Bridges & Contaminated Materials:

Bridge impacts/work anticipated (including bridge resurfacing): Yes No
List all bridges in project area (include years of construction and rehabilitation): _____
List bridges that potentially contain asbestos, lead paint, or treated timber: _____
Indicate reason(s) for suspecting the presence of asbestos, lead paint, or treated timber (i.e.: year constructed, year rehabilitated, on NH/VT border, etc.): _____
Location(s) of presumed asbestos, lead paint, or treated timber (include item numbers i.e.: 403.911, 533 etc or utilities such as Transite pipe): _____

Date: _____ Requested By: _____ Bureau: _____

APPENDIX E



Bureau of Environment Environmental Review Checklist

Today's Date: ___/___/___

Project Name: _____

Federal Number: _____

State Number: _____

Hearing Date: ___/___/___

Advertising Date: ___/___/___

On-Shelf Date: ___/___/___

Project Mgr.: _____ Designer: _____ Environmental Mgr.: _____

Project Description: _____

Note: The issues highlighted below may require an approval, review or permit by other agencies. As such, the amount of time required to address these issues is dependent upon others' schedules.

Check appropriate boxes:

Yes No Unk. **FLAG**

WETLAND PERMITTING

NWI Map: (<http://granitview.unh.edu/>)

DES Permit (Unknown/ Routine Roadway/ Minimum/ Minor/ Major) **circle one**

ACOE Permit (None/ SPGP/ Individual) **circle one**

Stream Crossing(s) (Name/Tier/Watershed): _____
(Name/Tier/Watershed): _____
(Name/Tier/Watershed): _____
(Name/Tier/Watershed): _____

(http://water.usgs.gov/osw/streamstats/new_hampshire.html)

Prime Wetlands (Direct Impacts/ 100' Buffer Impacts) **circle all that apply**

Criteria for Shoreline Stabilization

FHWA Wetlands Finding Required (EO 11990)

Mitigation Required

Type (Creation/ Preservation/ Restoration/ ARM/ Other) **circle all that apply**

If "Other," please list: _____

Mitigation information put into Mitigation Database

Notes: _____

SHORELAND PERMIT

SWQPA Waterbody: _____

(http://des.nh.gov/organization/divisions/water/wetlands/cspa/documents/consolidated_list.pdf)

Permit Type: SWQPA Permit or Permit By Notification **circle one**

Notes: _____

Yes No Unk. FLAG

Red Flags:

- *Structures in APE over 50 years old
- *Historic Districts
- *Work in undisturbed areas
- *Work near waterbodies/watercourses
- *Work within 25' of cemeteries
- *Franconia Notch Pkwy
- *Robert Prowse Memorial Bridge on I93 in Londonderry
- *Railroad lines

CULTURAL/ HISTORIC RESOURCES (SECTION 106)

Define Area of Potential Effect

Does project qualify under the Program Comment for Post-1945 Bridges? **Yes / No / NA**

RPR form (2 copies) OR Project Info w/Programmatic Agreement Certification Form given to the Cultural Resource Program, with Program Comment Recordation Form if appropriate

Project Effect (No Historic Properties/ No Adverse/ Adverse)

Signed Memo or Certification Form Rec'd

Mitigation Required

Stonewalls in project area (Stonewall form required)

Coordinate with the Cultural Resource Program if any cemeteries are located within 25' of any proposed work

Notes: _____

Red Flags:

- *Construction access/staging
- *Parks, boat launches, trailheads/trails, rail trails
- *Temporary or permanent impacts

SECTION 4(f)

Type (Recreational or Park/ Historic/ Fish or Waterfowl Refuge) **circle all that apply**
Document Type (*de minimis*/ Programmatic 4(f)/ Individual 4(f) Evaluation)

Resource(s): _____

Notes: _____

Letter needed from Official(s) with Jurisdiction

COASTAL ZONE CONSISTENCY (Flow chart (*S:|CZMA*))

Intergovernmental Review (<http://www.nh.gov/oep/planning/services/irp/index.htm>)
(<http://des.nh.gov/organization/divisions/water/wmb/coastal/categories/overview.htm>)

Notes: _____

Contact Letter sent to DES Coastal Program
Reply: _____

ESSENTIAL FISH HABITAT

Within EFH waters (Waterbody: _____)
Species: _____

Life Cycle Stages: _____
(<http://www.nero.noaa.gov/hcd/>)

EFH Assessment Worksheet required

Notes: _____

Red Flags:

- *AOT thresholds for stormwater treatment
- *Increases in impervious surface when a Corps permit is required
- *Chloride-impaired watersheds
- *ORW; Class A Waters
- *MS4 Community
- *Individual Federal Permits (WQC trigger)

WATER QUALITY (w/in 1 mile of project area)

Project reviewed by BOE Water Quality Program Manager

Is the project subject to AOT requirements? (see DOT Flowchart on [S drive](#))

Impairments: _____

Outstanding Resource Waters: _____

Class A Waters: _____

Water Quality Certificate required MS4 Community

Notes: _____

Yes No Unk. FLAG

WATER SUPPLY/ AQUIFERS

(<http://des.nh.gov/onestop/index.htm><http://www2.des.state.nh.us/gis/onestop/register.asp>)

DWSPA Wellhead Protection Area Aquifer Public Water Supply

Notes: _____

Contact Letter sent to DES Drinking Water and Groundwater Bureau

Reply: _____

US COAST GUARD ISSUES

Navigable Water: _____

Coordination Required (USCG Permit/Construction Oversight) **circle one**

Notes: _____

Contact Letter sent to USCG (through FHWA)

Reply: _____

CONTAMINATION

DES Listed Sites within 1000' of the project area:

(DES OneStop – <http://www2.des.state.nh.us/gis/onestop/register.asp>)

Project reviewed with Contamination Program Manager

Will Site Screening/RASCAL survey be completed by the Contamination Program?

Are monitoring wells located in project area? (Yes/ No) **circle one**

Is there a bridge on the project known to contain lead paint? (Yes/ No)

Asbestos

Bridge(s) in project flagged for ACM: _____

Any projects in Nashua or Hudson must be reviewed with Contamination Program due to known asbestos disposal sites.

Are asbestos utilities located in the project area?

Notes: _____

INVASIVE SPECIES

Species in project area: _____

Notes: _____

CONSERVATION LANDS (<http://granitview.unh.edu/>)

CLS (LCIP) Lands (<http://www.nh.gov/oep/planning/programs/clsp/index.htm>)

LCHIP Lands (<http://www.lchip.org/>)

Other: _____

Notes: _____

Contact letter sent to CLS program

Reply: _____

Red Flags:
*ACM on bridges or asbestos utilities
*LUST sites in or near project area
*Deep excavation or dewatering activities
*ROW acquisition
*Monitoring wells in project area

Red Flags:
*Work outside ROW (temporary or permanent)
*Potential for Section 4(f) impacts

Yes No Unk. FLAG

Red Flags:
*All stream crossings
*Perched outlets/inlets
*Stone outlet protection in stream channels
*TOY concerns with in-stream work

NH FISH & GAME/ US FISH & WILDLIFE SERVICE ISSUES

- Coordination completed on concerns flagged by NHB review
- Fish passage
- Wildlife Concerns: _____
 Time of Year Restriction: _____
- Highest Ranked Habitat (WAP): _____

Notes: _____

RARE, THREATENED, & ENDANGERED SPECIES

- Review DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/default.aspx
OR NHB Screening Layer (only if project qualifies under the Data Sharing Agreement): <S:\Environment\Rare Species\Data Sharing\NHB Screening Layer>
- Review: <http://ecos.fws.gov/ipac/>
- Coordinate with NOAA Protected Resource Division (tidal waters)
- State-listed Species: _____
- Federally-listed Species: _____
- Exemplary Natural Communities: _____
- Obtain NHB memo (File #: _____)
- Obtain USFWS memo (<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm>)
- ESA Section 7 Consultation required

Notes: _____

Red Flags:
*Adding fill in floodplain or floodway
*Change in bridge dimensions

FLOODPLAINS/ FLOODWAYS

(<http://granitview.unh.edu/>) OR (<http://goo.gl/DCoeO>)

- FIRMette printed
- Coordination with FEMA Required
- Is the project located within a regulatory floodway?
- Is the project located within a floodplain?
(Zone A/ Zone AE/ Other) **circle all that apply**
- Any **increase in Base Flood Elevation** or any **fill in the floodplain** requires additional coordination with OEP

Notes: _____

Contact Letter sent to OEP Reply: _____

Red Flags:
*Any work in segments classified as Natural

NH DESIGNATED RIVERS

Name: _____ LAC Contact: _____

Designation(s) in project area: _____

(<http://des.nh.gov/organization/divisions/water/wmb/rivers/designriv.htm>)

Notes: _____

Contact Letter sent to LAC Reply: _____

WILD & SCENIC RIVERS (Lamprey River or Wildcat River)

(<http://www.rivers.gov>)

River Administering Agency: _____ Classification: _____

- Section 7 Determination Required

Notes: _____

Red Flags:
*Work outside ROW (temporary or permanent)
*Potential for Section 4(f) impacts

SECTION 6(f)

Name: _____ Use: _____

Notes: _____

Contact Letter sent to LWCF Program Reply: _____

Yes No Unk. **FLAG**

FARMLAND SOILS (FPPA)
(<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/>)
 Form AD-1006 or CPA-106 required
Notes: _____

AIR/ NOISE ANALYSES
(Air/ Noise/ Both) **circle one** Request review from Air & Noise Program Mgr
<S:\Environment\Air & Noise>)
Notes: _____

ENVIRONMENTAL JUSTICE
Notes: _____

WHITE MOUNTAIN NATIONAL FOREST
 Contact WMNF (send email to Forest Engineer)
 Regional Forester Sensitive Species: _____
 Candidate Wild & Scenic Rivers: _____
 Send draft NEPA document to Forest Engineer (allow 30 days for review)
Notes: _____

Red Flags:
*Non-programmatic projects
*Impacts outside easement
*Stream crossings
*Clearing

NATURAL RESOURCE AGENCY COORDINATION MEETING(S)
Dates: _____
AIR (<http://www.nh.gov/dot/org/projectdevelopment/environment/units/project-management/nracmeetings.htm>)
Notes: _____

CULTURAL RESOURCE AGENCY COORDINATION MEETING(S)
Dates: _____
Notes: _____

ENVIRONMENTAL DOCUMENT TYPE
 NEPA Classification
Type (Programmatic CE/ Tracking Form/ Individual CE/ EA) **circle one**
 Non-classification
Type (Short Form/ Non-Fed Tracking Form/ Env. Study) **circle one**
DUE BY: _____

PUBLIC INVOLVEMENT
 Context Sensitive Solutions Project
 Public Informational Meeting(s): _____
 Public Officials Meeting(s): _____
 Public Hearing: _____
Notes: _____

APPENDIX F

**NHDOT Bureau of Environment
Summary of Initial Environmental Review**

Project Name and Number: [Click here to enter text.](#)

Environmental Manager: [Click here to enter text.](#)

Date: [Click here to enter text.](#)

The resources and concerns listed below are those that are most likely to impact scope, scheduling, and/or funding. This summary is not meant to include every resource or concern that the Environmental Manager must address as the environmental review progresses.

The results of this initial environmental review are preliminary. Further field reviews and input from resource agencies and other stakeholders may identify additional environmental concerns and needs. The Environmental Manager will keep the design team informed as information is obtained.

Wetlands

Delineation Required? [Choose an item.](#)

Anticipated completion: [Click here to enter text.](#)

Stream Crossing Assessment Required? [Choose an item.](#) **Anticipated completion:** [Click here to enter text.](#)

Consultant needed? [Choose an item.](#)

Note – If a consultant is needed, the Environmental Manager will coordinate with the Wetlands Program to determine funding needs. Also note, wetland delineations and stream assessments cannot be completed in the winter.

Anticipated DES Permit: [Choose an item.](#)

Anticipated Army Corps Permit: [Choose an item.](#)

*Note – Application submittal should be timed such that the permit is issued at least one month prior to advertising. Please allow one to two months for inter-bureau coordination of the draft application package, plus another three months for DES review of final application submittal, for a total of **up to 5 months required for wetland permitting.** The need for an Individual Permit from the Army Corps triggers the need for a Water Quality Certificate from DES, a process that may add several months to permitting.*

Other considerations? (Prime wetlands, mitigation, etc): [Click here to enter text.](#)

Comments: [Click here to enter text.](#)

Shoreland Protection

Shoreland jurisdiction in project area (waterbody): [Click here to enter text.](#)

Anticipated Permit: [Choose an item.](#)

*Note – Application submittal should be timed such that the permit is issued at least one month prior to advertising. Please allow one to two months for inter-bureau coordination of the draft application package, plus another one month for DES review of final application submittal, for a total of **up to 3 months required for shoreland permitting.***

Cultural Resources

Potential historic resources in project area (type and location): [Click here to enter text.](#)

Individual Inventory Form(s) anticipated? [Choose an item.](#)

Archaeological survey anticipated? [Choose an item.](#)

Note – If Inventory Forms and/or archaeological surveys are needed, the Environmental Manager will continue to coordinate with the Cultural Resource Program to determine funding needs. Also note, archaeological surveys cannot be completed when the ground is frozen.

Comments: [Click here to enter text.](#)

Section 4(f)

Potential 4(f) resources in project area (type and location): [Click here to enter text.](#)

Is need for Section 4(f) Evaluation anticipated? Choose an item.

Note – An Individual Section 4(f) Evaluation requires the evaluation of alternatives that AVOID 4(f) resource(s). Completion and distribution of a draft evaluation is required, with a 45-day comment period.

Water Quality

Is the need for permanent stormwater treatment anticipated? Choose an item.

If yes, explain why: [Click here to enter text.](#)

If unknown, explain what additional information is needed to make determination: [Click here to enter text.](#)

Note – If permanent treatment measures must be considered, the Environmental Manager will schedule a meeting with the Water Quality Program Manager and design team to discuss.

Conservation Lands

Conservation Lands located in or near project (type and location): [Click here to enter text.](#)

Comments: [Click here to enter text.](#)

Plants, Wildlife, and Fisheries

Rare species or exemplary natural communities present in project area (type & location): [Click here to enter text.](#)

Anticipated NH Natural Heritage Bureau concerns: [Click here to enter text.](#)

Anticipated NH Fish & Game concerns: [Click here to enter text.](#)

Anticipated US Fish & Wildlife concerns: [Click here to enter text.](#)

Anticipated National Marine Fisheries Service concerns: [Click here to enter text.](#)

Comments: [Click here to enter text.](#)

Contamination

Known remediation sites in project area (type and location): [Click here to enter text.](#)

Anticipated concerns: [Click here to enter text.](#)

Consultant needs: [Click here to enter text.](#)

Comments: [Click here to enter text.](#)

Note – If hazardous material coordination and/or investigations are needed, the Environmental Manager will continue to coordinate with the Contamination Program to determine funding needs.

Floodplains/Floodways

Regulatory Floodway in project area (waterbody): [Click here to enter text.](#)

Floodplains in project area: [Click here to enter text.](#)

Anticipated concerns: [Click here to enter text.](#)

Comments: [Click here to enter text.](#)

Other Considerations: [Click here to enter text.](#)

Please continue to keep the Environmental Manager informed as the project develops, especially regarding scope changes, scope refinement, alternatives analysis, plan development, funding changes, and schedule changes.

APPENDIX G

Air and Noise Request for Project Review

Requested By: _____

Date: _____

Project Name: _____

Project Number: _____

Federal Number: _____

Project Manager: _____

Advertising Date: _____

Hearing Date: _____

Target Date for completion of Environmental Review: _____

Target Date for completion of Air & Noise Review: _____

Anticipated type of environmental documentation: - Choose -

Project Description: _____

Project location map is attached: Yes No

Project plans are attached: Yes No

Air Quality:

- Check the Statewide Transportation Improvement Program (STIP) (Found on the NHDOT Bureau of Planning's Website).
 - Choose one:
 - The project is individually listed in the STIP and the project description in the STIP appears to be accurate:
 - Approval date: _____ Amendment Date: _____
 - The project is funded by a program included in the STIP (i.e.; HSIP, GRR, IPPP, MOBRR, etc.) Which program? _____
 - The project has not been included in the STIP or the project description in the STIP is not accurate. Explain why (check with the Project Manager): _____
 - Is the project listed in the STIP as "Regionally Significant"?
 - No Yes (See Jon immediately)
- Is the project located in Manchester or Nashua?
 - No
 - Yes (See Jon immediately if the project involves any type of intersection work.)
- Does the project involve the installation of a traffic signal, alterations to the timing of an existing traffic signal or the installation of a roundabout?
 - No
 - Yes. Provide the following:
 - Level of Service (LOS) for each movement under the existing conditions, build conditions and design year conditions.
 - Intersection wide LOS under the existing conditions, build conditions and design year conditions. (Provide as much as possible.)

Noise:

- Does the project involve:
 - The construction of a roadway in a new location? Yes No
 - The addition of one or more through-traffic lane(s)? Yes No
 - Addition of an auxiliary lane (not a turning lane)? Yes No
 - Substantial changes to the vertical or horizontal alignment of the existing roadway?
 Yes No
 - Removal of shielding (vegetation or topography) between the roadway and a receptor?
 Yes No
 - Are there any known or anticipated noise concerns within or adjacent to the project area?
 Yes No
- If you answered yes to any of the above questions please provide the following:
 - Existing and design year AM and PM Peak Hour traffic volumes for each roadway within the project area.
 - % Trucks for the existing and design year AM and PM Peak Hour for each roadway within the project area.
 - Traffic signal timing (existing and proposed) for each movement. (Must include Green, yellow and red time for each movement.)
 - Plan indicating the land use of each property within and adjacent to the project area (Residential, Commercial, Recreational, Undeveloped). (If a property has multiple tenants, the number of tenants should also be indicated.)
 - Provide a copy of or indicate the location of a MicroStation or CADD drawing showing the existing and proposed conditions within and adjacent to the project area. Drawing location:

APPENDIX H

Data Sharing Agreement for the Release of NH Natural Heritage Bureau Data to

**Kevin Nyhan, Administrator,
Bureau of Environment**

New Hampshire Department of Transportation
Affiliation

Name of recipient (contact person)

Project name: NH Natural Heritage Bureau data layer for non-permit projects

Purpose and justification for the data request:

The Data Sharing Agreement with the NH Natural Heritage Bureau is intended to be used only for the following types of projects:

1. **Resurfacing** – *Paving within existing pavement limits*
2. **Signage** – *Installation or replacement of u-post signage, and replacement of overhead signs in the same location*
3. **Guardrail** – *In-kind replacement of existing guardrail in same location with no lengthening; projects that propose permanent concrete barrier cannot be reviewed under this agreement*
4. **Rumble strips** – *Installing new centerline or shoulder rumble strips on existing pavement.*
5. **Signals** – *Replacement or repair of existing signals*
6. **Roadway striping** – *Painting white or yellow lines or other markings on existing paved surfaces*

General conditions that must apply to the above projects in order to qualify under the data sharing agreement:

- *Projects must have minimal or no land disturbance.
- *Projects must not impact land beyond more than 15 feet from the existing edge of pavement.
- *Projects must be located within existing State right-of-way.
- *Projects cannot require a wetlands permit or coverage under the CGP.
- *Projects cannot impact wetlands.
- *Project must not change the footprint of pavement.
- *All work must be done according to NHDOT Standard Specifications and construction plans. Any changes to the scope of work must be reviewed by the Bureau of Environment to determine if the project still qualifies under the data sharing agreement and if any further coordination with NHFG or NHB is required.

The following NH Natural Heritage Bureau (NHNHB) data will be provided to the recipients, subject to the following Terms and Conditions. ('Elements' are species, natural communities, or ecological systems).

Geographic area: The area identified in a shapefile provided by the NHDOT.
Dates: Records last observed extant within 20 years for species records, or 40 years for exemplary natural communities.
Elements: All rare species and exemplary natural communities tracked by NHNHB.
Element-level attributes: _____
Occurrence-level attributes: _____
Other: Accompanying information:
1) Plant species and exemplary natural communities: Whether to contact NHNHB for a review.
2) Animal species: mapped location; element name and listing status; occurrence mapping precision and year last observed.

The recipient agrees to abide by the terms specified below:


1. The signatory will only use these data to screen the above referenced project types in order to avoid or

minimize impacts to rare species and exemplary natural communities or natural community systems

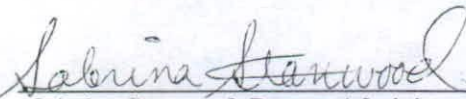
- a) The signatory will check all project locations against a GIS layer provided by NHNHB.
 - b) The DOT will contact NHNHB (plant species and natural communities or ecological systems) and/or NHF&G (animal species), whenever a project occurs within the area delimited by the shapefile. In these instances,
 - c) NHNHB and/or NHF&G will provide recommendations for avoiding or minimizing impacts for individual projects within 5-10 business days.
 - d) The DOT will ensure that staff and sub-contractors of the signatories of this agreement working on-site are fully informed of the location of sensitive areas and recommendations for avoiding or minimizing impacts.
 - e) The Notification screening layer shapefile will be updated annually or more frequently as deemed necessary by NHNHB to support avoidance or minimization efforts.
2. The NHNHB data are continually being revised and expanded. The recipients acknowledge that the data are time-limited, and that the data provided in this release will, therefore, become outdated. Should a discrepancy develop between the data provided to the recipients and the data in the NHNHB databases, the data in the NHNHB databases are the correct data.
 3. NHNHB has data use license fees to help support the maintenance of the database. Rates for one year of access to the data are \$0.50 per record for "screening" data. Processing time is charged at \$60/hour. The estimated cost (based on shapefiles sent to NHNHB) of the license under this agreement is \$218.75. This includes a 50% discount in the per-record fee, applied in the second year of an agreement.
 4. The NHNHB makes no warranty as to the fitness of the data for any purpose, nor that the data are necessarily accurate or complete. The recipients agree to notify NHNHB in writing (including email) of any errors or problems discovered in the data provided by NHNHB.
 5. The recipients acknowledge that staff at NHNHB (plants and natural communities) and the NH Fish & Game (NHFG) NonGame and Endangered Species Program (animals) are uniquely qualified to interpret the significance of NHNHB records.
 6. Site-specific or comprehensive surveys for rare species and significant natural communities have not been conducted for the entire state, and relatively few known locations have been visited in the last year. The data provided in this release cannot be relied on as a definitive statement of the presence or absence of rare species or significant ecological communities at given locations and will never be substituted for on-site surveys that may be required for environmental assessment or conservation planning.
 7. Use and analysis of geographic data is limited by the scale at which the data are collected and mapped. The locations in the data provided are at a scale of 1:24,000 – the recipients acknowledge that use of the data (by zooming or enlarging) at a scale greater than 1:24,000 (i.e. 1:12,000) may be subject to error.
 8. The data provided in this release will reside exclusively on the GIS systems of the following named users:
NHDOT Bureau of Environment staff
- The provided data will not be copied, distributed, or made accessible in any digital, electro/magnetic or machine-readable form to other parties. By signing this agreement, the user affirms the ability to maintain the data in a secure environment. Any requests to the recipient by other parties for these digital data will be referred directly to the NHNHB.
9. The data provided in this release will not be modified in any way except as needed to make them compatible with the recipients' geographic information systems.

10. Any publications, reports or maps provided or made available to anyone other than staff of the signatories to this agreement that are derived from the data provided in this release will
 - a) not show, describe or otherwise depict specific information about the precise location of Natural Heritage element occurrences, unless at a scale of 1:100,000 or greater (e.g., entire state of NH on a 8 x 11 inch map).
11. The recipient will provide the NHNHB, on request, with a list of any reports or printed materials prepared using the NHNHB data provided through this agreement, and will provide, without charge, a copy of such material if requested by the NHNHB.
12. The recipient agrees to provide NHNHB with basic documentation of any rare species or exemplary natural communities found or otherwise discovered during the course of this project that are not in the data received, unless prohibited from doing so by other agreements. The recipient will use suitable reporting forms as provided by NHNHB.
13. The digital data provided is to be accessed only by the named users of this agreement, and only for the described purposes of the project specified above. Access and use for other purposes, including by the named user, will be made only with prior expressed, written consent of the NHNHB and in accordance with NH RSA 217-A.
14. The recipients agree to delete all NHNHB digital data provided under this Agreement from their computer systems at the end of the current project, on or before **one year** from the date the Agreement is fully signed.
15. Access to NHNHB digital data as described under this Agreement does not eliminate the need to consult with the US Fish & Wildlife Service and/or to submit an Environmental Review request through the NHNHB when state and federal permitting requires such documentation.
16. **Non-compliance with any provision of the agreement by any recipient may result in the immediate withdrawal of authority to use the digital data provided by NHNHB, and may result in the denial of all future data release requests by the recipient.**
17. Questions regarding this data release, data interpretation or the above guidelines will be directed to the New Hampshire Natural Heritage Bureau, New Hampshire Department of Resources and Economic Development, PO Box 1856, 172 Pembroke Road, Concord, NH, 03302-1856; (603) 271-2215.

I have read and agree to the Terms and Conditions of this Agreement.

Signature: 
 Name: Jeff Brillhart, P.E., Acting Commissioner,
 New Hampshire Department of
 Transportation

Date: 1/16/15

Signature: 
 Name: Sabrina Stanwood, Bureau Administrator
 New Hampshire Natural Heritage Bureau

Date: 01/21/2015

APPENDIX I

Programmatic Floodplain Finding for Categorical Exclusions

Federal Highway Administration – New Hampshire Division
New Hampshire Department of Transportation

Introduction

This floodplain finding is made on a program-wide basis and has been prepared for transportation improvement projects which are classified as a categorical exclusion (CE). It satisfies the requirements of Executive Order 11988 (EO) entitled Floodplain Management and the policies and procedures of the Federal Highway Administration (FHWA) regarding the impact of projects on floodplains and floodways found in Location and Hydraulic Design of Encroachments on Floodplains (23 CFR 650A). No individual floodplain finding needs to be prepared for such projects. An individual floodplain finding shall be made for all Environmental Assessments (EA) and Environmental Impact Statements (EIS).

Background

The EO states that each Federal agency “shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities”. The regulation that sets forth the policy and procedures of the EO is Floodplain Management and Protection of Wetlands (44CFR §9) which is under the authority of the Federal Emergency Management Agency (FEMA). FEMA is also the Federal agency responsible for administering the National Flood Insurance Program (NFIP).

The EO requires all Federal agencies to evaluate the potential effects of their activities on floodplains and to avoid actions located in or adversely affecting floodplains unless there is no practicable alternative. FHWA policy and procedures located at 23 CFR 650A apply to all encroachments and to all actions which affect base floodplains, except for repairs made with emergency funds (23 CFR part 668) during or immediately following a disaster. 23 CFR 650A defines an action as “any highway construction, reconstruction, rehabilitation, repair, or improvement undertaken with Federal or Federal-aid highway funds or FHWA approval.” This definition essentially requires an evaluation of floodplain impacts for all projects (including CEs).

New Hampshire evaluates potential floodplain impacts on a project-by-project basis through initial reviews of NFIP floodplain mapping. If appropriate, these reviews are supplemented by follow-up coordination with local officials and the State and Federal entities responsible for administration of the NFIP (FEMA, NH Office of Emergency Management (NHOEM) and NH Office of State Planning (NHOSP)) to ensure compatibility with local floodplain management programs, to determine the extent of hydraulic analysis required and to determine the significance of floodplain encroachment. Floodplain impacts are also addressed at monthly meetings with one or more of the agencies noted above, as well as other resource agencies (US Army Corps of Engineers, US Environmental Protection Agency, US Fish & Wildlife Service, NH Fish & Game Department and NH Department of Environmental Services). The New Hampshire Department

Programmatic Floodplain Finding for Categorical Exclusion
(continued)

of Transportation and the FHWA Environmental Program Manager meet monthly with these resource agencies to discuss wetland, floodplain and other natural resource impacts and practicable avoidance alternatives. If avoidance is not practicable, then measures to minimize harm are considered and incorporated into the project. 23 CFR 650A requires FHWA to make a formal floodplain finding for all projects. The New Hampshire Division will make a formal floodplain finding for all EAs and EISs. This formal floodplain finding will be made in the Final EA/Finding of No Significant Impact or Final EIS/Record of Decision.

Finding:

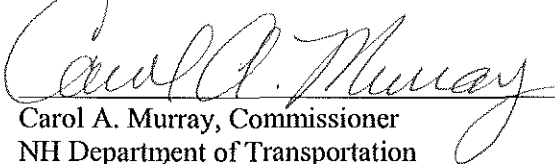
In accordance with Executive Order 11988 and 23 CFR 650A, the FHWA New Hampshire Division finds for all Federal-aid projects classified as a categorical exclusion that:

- (1) there will be no practicable alternative to the proposed construction in floodplains, and
- (2) the proposed project will include all practicable measures to minimize harm to the involved floodplains which may result from such use.

Any Federal-aid transportation project requiring the preparation of an EA or EIS shall require an individual floodplain finding within the text of the document.

APPROVAL OF PROGRAMMATIC FLOODPLAIN FINDING

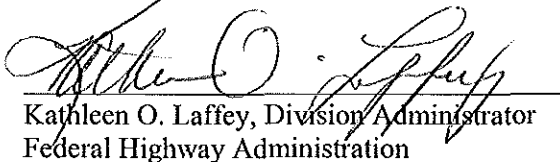
The undersigned have reviewed this Programmatic Floodplain Finding and determined that it complies with the laws, regulations and policies applicable to FHWA and NHDOT. Accordingly, it is hereby approved and becomes effective on the last date noted below.



Carol A. Murray, Commissioner
NH Department of Transportation



Date



Kathleen O. Laffey, Division Administrator
Federal Highway Administration

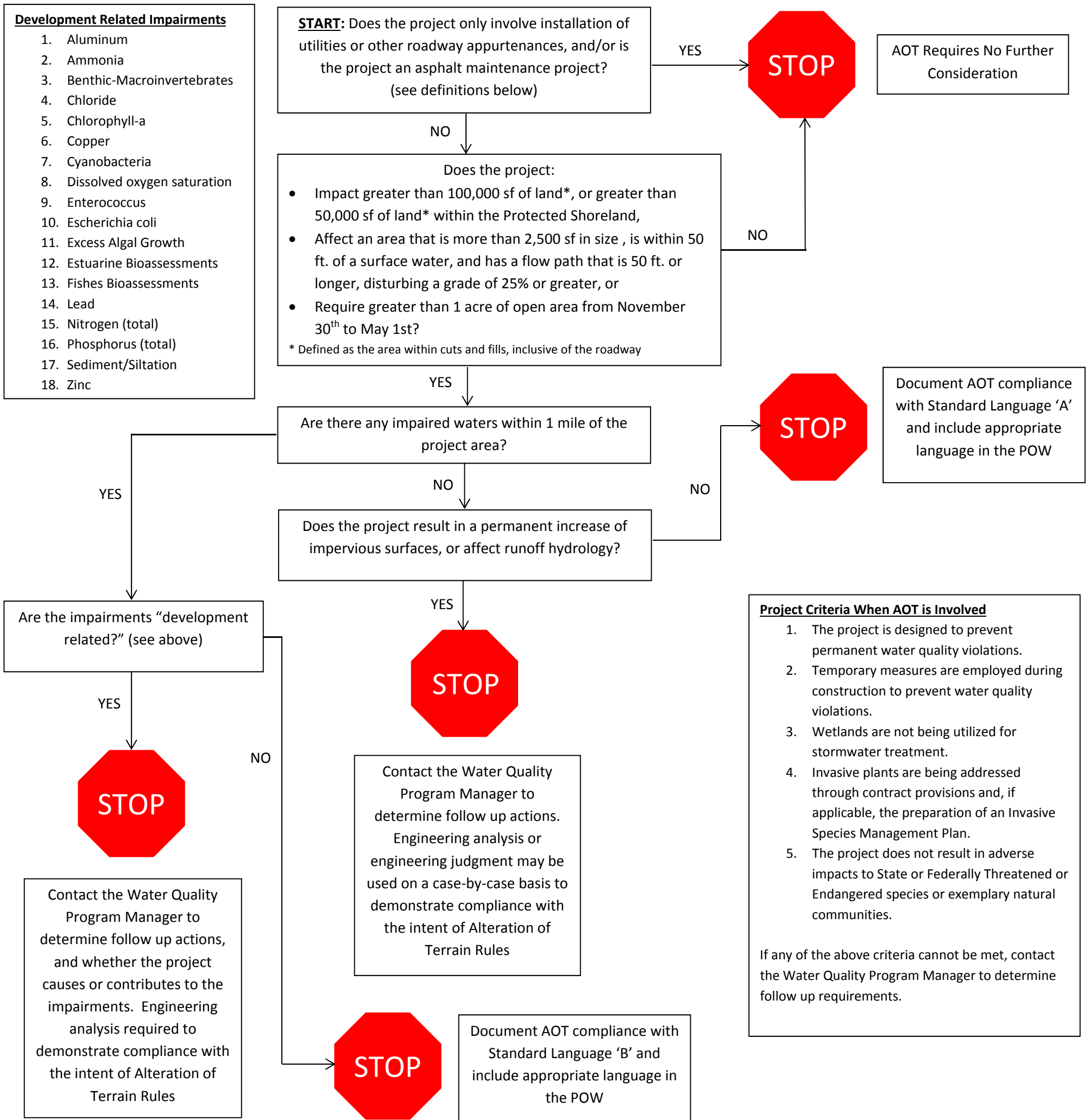


Date

APPENDIX J

ALTERATION OF TERRAIN (AOT) PROCESS FOR NHDOT PROJECTS

December 16, 2014 (1st revision)



- Project Criteria When AOT is Involved**

 1. The project is designed to prevent permanent water quality violations.
 2. Temporary measures are employed during construction to prevent water quality violations.
 3. Wetlands are not being utilized for stormwater treatment.
 4. Invasive plants are being addressed through contract provisions and, if applicable, the preparation of an Invasive Species Management Plan.
 5. The project does not result in adverse impacts to State or Federally Threatened or Endangered species or exemplary natural communities.

If any of the above criteria cannot be met, contact the Water Quality Program Manager to determine follow up requirements.

Definition of Installation of Utilities or Other Roadway Appurtenances for AOT

Installation of utilities or other roadway appurtenances includes culvert, signage, and/or guardrail installation whether done by itself, or in combination with an asphalt maintenance project as defined below, provided that the excavation and installation of any culvert, sign or guardrail is completed within the same day.

Definition of Asphalt Maintenance Projects for AOT

Asphalt maintenance projects are those projects that are designed to perpetuate the service life of a roadway by applying cost-effective treatments to the surface or near-surface of structurally sound pavements. Examples include crack sealing, chip sealing, slurry or micro-surfacing, or hot-mix asphalt overlays. Asphalt maintenance also can consist of structural enhancements that extend service life or improve load carrying capacity, such as reclamation or structural overlays. Asphalt maintenance may require a raise in the grade of the existing road by as much as approximately 12 inches. It is recognized that in instances where the grade is raised, there will be an accompanying application of pervious crushed gravel for shoulder leveling, or other pervious materials for elimination of pavement edge lips. Asphalt maintenance for the purposes of AOT compliance does not include activities that widen existing asphalt surfaces, or require application of pavement where it does not currently exist.

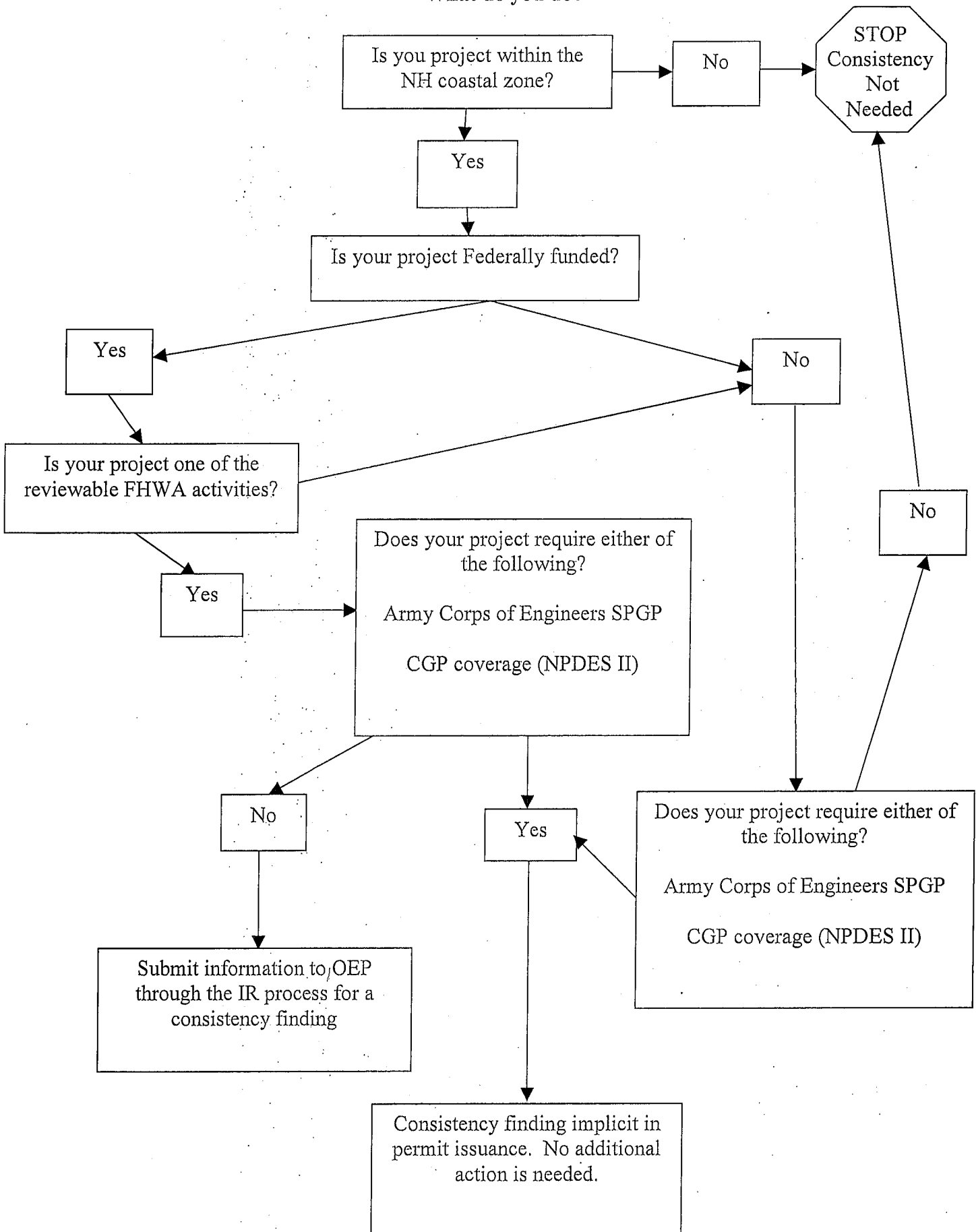
Standard AOT Compliance Language

'A' DOT has designed this project so as to prevent or control erosion in accordance with contract provisions, engineering standards, guidelines, or best management practices (BMPs) and regulatory standards as outlined in the Terrain Alteration Permit Exemption dated July 8, 2011. As appropriate, the project includes channel protection measures at drainage outfalls, and results in no change in peak runoff.

'B' DOT has designed this project so as to prevent or control erosion in accordance with contract provisions, engineering standards, guidelines, or best management practices (BMPs) and regulatory standards as outlined in the Terrain Alteration Permit Exemption dated July 8, 2011. As appropriate, the project includes channel protection measures at drainage outfalls, and results in no increase in peak runoff. Although waterbodies in the project area have been identified as impaired pursuant to the NH 303(d) list, impairments are not development related and highway runoff does not cause or contribute to the impairment.

APPENDIX K

What do you do?



APPENDIX L

Project Timeline

Below is an abbreviated timeline of the environmental review process for a project that originates in Preliminary Design or Bridge Design. Programmatic-type projects such as resurfacing projects that originate in Final Design, and other projects that do not require a Public Hearing, would follow the same general steps but without the need for a draft environmental document.

Projects progress through the following steps in approximately the order listed. The number of resource agency coordination meetings that are necessary during project development will vary depending on the project's scope, the resources present in the project area, and proposed impacts on these resources.

More details on the environmental aspects of this timeline can be found throughout this manual. More details on design phases and meetings can be found in the Bridge Design and Highway Design manuals.

1. Request for Environmental Documentation ("Green Sheet") provided to BOE by Design Bureau
2. Initial environmental review; potential concerns shared with Design Bureau
3. Field review/resource delineation
4. Request for Project Review (RPR) package sent to SHPO, if necessary, and the need for inventory forms/archaeological survey determined
5. Cultural Resource Coordination Meeting(s) as needed, following receipt of comments from DHR on RPR (scheduled by Environmental Manager)
6. Need for stormwater treatment determined through coordination with Water Quality Program
7. Natural Resource Agency Coordination Meeting for initial feedback on potential concerns (scheduled by Environmental Manager)
8. Public Informational Meeting (scheduled by Design)
9. Complete draft NEPA document/4(f) Evaluation (requires a fully executed Section 106 effect memo and Memorandum of Agreement, if applicable); Document submitted to FHWA for initial concurrence on NEPA classification
10. Public Hearing (scheduled by Design)
11. Following Hearing, upon receipt of the Report of the Commissioner, complete final NEPA document/4(f) Evaluation, addressing comments from Public Hearing if necessary; final document sent to FHWA for reaffirmation of the NEPA classification
12. Turnover to Final Design (scheduled by Design)
13. Natural Resource Agency Coordination Meeting to discuss proposed wetland impacts, the need for wetland mitigation, and stormwater treatment
14. Slope and Drain finalized by Design Bureau
15. Natural Resource Agency Coordination Meeting to discuss proposed wetland impacts and, if necessary, proposed mitigation (scheduled by Environmental Manager)
16. Finalize permanent stormwater treatment BMPs, if applicable
17. Erosion Control Plan prepared; coordination meeting may be scheduled to discuss construction methods with Design, Construction, Environmental Manager, and Environmental Coordinator.
18. Permit applications submitted
19. Preliminary Plan Coordination (60%) Meeting (scheduled by Design)
20. Resolve how contamination issues will be addressed during construction, if applicable
21. Resolve air and noise issues, if applicable
22. Coordinate with Final Design on environmental language for Prosecution of Work
23. Submit NPDES Special Attention and Summary of Environmental Issues to project engineer prior to Pre-Advertisement Meeting
24. Pre-Advertisement (90%) Meeting (scheduled by Design)

25. Final Design sends PS&E Checklist to Environmental Manager (checklist includes all necessary components of the Plan, Specifications & Estimate Package that must be submitted to FHWA for approval)
26. Permits received prior to advertising
27. Project Advertisement (typically with 3-week bid period)
28. Bid Opening
29. Successful bid approved by Governor and Council (G&C) (projects are typically approved approximately one month after bid opening)
30. In-lieu fee submitted to DES upon G&C approval, if applicable
31. Pre-Construction Meeting (attended by Environmental Coordinator and, occasionally, Environmental Manager)
32. Environmental Pre-Construction Meeting (typically only needed for projects with Major impact wetland permit; organized by Environmental Coordinator and attended by Environmental Manager)
33. Review and approval of SWPPP and Invasive Species Control and Management Plan
34. Construction begins

APPENDIX M

Programmatic Wetland Finding for Categorical Exclusions

Federal Highway Administration - New Hampshire Division
New Hampshire Department of Transportation

Introduction

This wetland finding is made on a program-wide basis and has been prepared for transportation improvement projects, which are classified as a categorical exclusion (CE). It satisfies the requirements of Executive Order 11990 (EO) entitled Protection of Wetlands and U.S. Department of Transportation Order 5660.1A (DOT Order) entitled Preservation of the Nations Wetlands. No individual wetland finding needs to be prepared for such projects. An individual wetland finding shall be made for all Environmental Assessments (EA) and Environmental Impact Statements (EIS).

Background

The EO states that each Federal agency “to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making the finding, the head of the agency may take into account economic, environmental and other pertinent factors.”

The EO defines “new construction” to include “draining, dredging, channelizing, filling, diking, impounding, and related activities.” This EO essentially required a wetland finding for all federal undertakings which had virtually any impact to a wetland. DOT Order 5660.1A, issued on August 24, 1978 clarified “new construction” by excluding only “routine repairs and maintenance of existing facilities”.

The DOT Order states, “In carrying out any activities (including small scale projects which do not require documentation) with a potential effect of wetlands, operating agencies should consider the following factors ...”. This requires USDOT agencies to consider the effects on wetlands for all projects (including CEs).

New Hampshire considers these effects through the wetland permitting process and monthly meetings with resource agencies (US Army Corps of Engineers (ACOE), US Environmental Protection Agency, US Fish & Wildlife Service, New Hampshire Fish and Game Department & New Hampshire Department of Environmental Services). The New Hampshire Department of Transportation and the FHWA Environmental Program Manager meet monthly with these resource agencies to discuss wetland impacts and practicable avoidance alternatives. If avoidance is not practicable, then practicable measures to minimize harm are considered and included in the project.

Programmatic Wetland Finding for Categorical Exclusions
(continued)

The DOT Order requires USDOT agencies to make a formal wetland finding for all projects. The New Hampshire Division will make a formal wetland finding for all EAs and EISs. This formal wetland finding will be made in the Final EA/Finding of No Significant Impact or Final EIS/Record of Decision.

Finding:

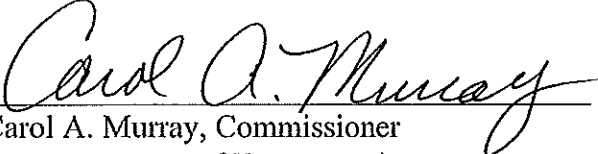
In accordance with Executive Order 11990, and based upon the above procedures for acquiring ACOE permits, the FHWA New Hampshire Division finds for all Federal-aid projects classified as a categorical exclusion with an ACOE permit that:

- (1) there will be no practicable alternative to the proposed construction in wetlands, and
- (2) the proposed project will include all practicable measures to minimize harm to the involved wetlands which may result from such use.

Any Federal-aid transportation project requiring the preparation of an EA or EIS shall require an individual wetland finding within the text of the document.

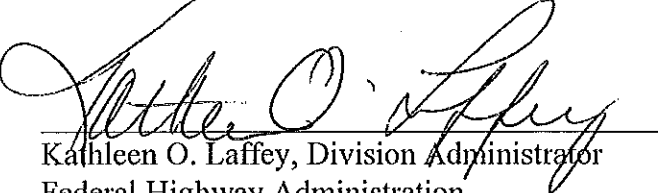
APPROVAL OF PROGRAMMATIC WETLAND FINDING

The undersigned have reviewed this Programmatic Wetland Finding and determined that it complies with the laws, regulations and policies applicable to FHWA and NHDOT. Accordingly, it is hereby approved and becomes effective on the last date noted below.



Carol A. Murray, Commissioner
NH Department of Transportation

9/26/01
Date



Kathleen O. Laffey, Division Administrator
Federal Highway Administration

9/13/01
Date

APPENDIX N

NHDOT Cultural Resources Project Review Procedures

1. Initiate the Review Process with either the Request for Project Review or Section 106 Programmatic Agreement Appendix A or B forms (to only be used with FHWA undertakings). Forms are to be submitted to the NH DOT Cultural Resources Staff.
 - a. If submitting the RPR please follow NHDHR instructions and be sure to include the following:
 - i. Map identifying the area of potential effect (APE)
 - ii. Project narrative that describes the project and potential impacts. Narrative should include concerns relating to potential archaeologically sensitive areas and any architectural/structural concerns
 - iii. Photos, including a photo key
 - iv. Self-addressed stamped envelope (in-house NHDOT projects do not need to supply a SASE)
 - b. Transportation RPRs are to be reviewed by NHDOT staff first, and will then be submitted to NHDHR
 - c. If submitting Appendix A or B certification forms, they will be reviewed by NHDOT CR staff and comments/approved forms will be returned via email.
2. If it is determined by NHDOT CR staff, NHDHR and/or the federal agent there are no cultural resources concerns, an effect memo can be written, ending the Section 106/cultural resources review process.
 - a. If using the Programmatic Agreement, approved Appendix A and B certification forms act as the Section 106 project effect determination.
 - b. Otherwise, please see #7 below
3. If there are potential concerns, either additional information can be submitted (as requested in the RPR response) or the project is presented at the Cultural Resource Agency Coordination meeting.
 - a. Cultural Resources Agency Meetings:
 - i. Please adhere to the monthly meeting schedule posted on the NHDOT Environment website for meeting agenda requests and submission deadlines.
 - ii. Meeting minutes are prepared by the project presenter and submitted to DOT Cultural Resources staff, no later than one week after the meeting.
 - iii. Purpose of the meetings is to review project impacts, discuss alternatives (if appropriate), review Section 106 effects, discuss project mitigation (if appropriate). Multiple meetings may be necessary.
4. Should survey need to occur, all forms are located on NHDHR's website.
 - a. Forms for above ground resources that may be requested
 - i. Individual Inventory form
 - ii. Area Forms
 1. Town/City-wide Area Form
 2. Project Area Form
 3. Historic District Area Form
 - iii. Culvert Survey Form
 - b. Studies that may be requested for identification and evaluation of archaeological resources
 - i. Phase IA, Archaeological Sensitivity Assessment
 - ii. Phase IB (or combination Phase IA/IB), Intensive Archaeological Investigation
 - iii. Phase II, Determination of Eligibility
 - iv. Phase III, Data Recovery (typically done as mitigation)
 - v. Archaeological monitoring
 - vi. Bibliography Form & Short Report

- c. Once survey is complete, requested information is reviewed by NHDOT Cultural Resources. Revisions are requested if necessary
5. NHDOT Cultural Resources staff sends completed forms/reports to either FHWA and/or NHDHR. If FHWA is the lead federal agent, all documentation and eligibility recommendations are sent to FHWA first, who will then forward along their findings to NHDHR.
 - a. When sending information to FHWA/NHDHR, please ensure all project numbers are included on the transmittal
 6. NHDHR reviews inventory forms at their twice monthly Determination of Eligibility meetings. The archaeological studies are not reviewed at a formal meeting.
 - a. If any additional information is needed, NHDHR will contact NHDOT (either by the RPR response or a detailed letter).
 - b. After NHDHR review, NHDOT will receive the Determination of Eligibility (DOE) sheet and/or archaeological review sheet
 7. When project effects have been determined, they are memorialized in a Cultural Resources Effect Memo.
 - a. For No Historic Properties Affected, No Adverse Effect, or Adverse Effect findings:
 - i. Local Public Agency (LPA) project sponsors fill out the Cultural Resources Effect Memo (found on the NHDOT website). Memo should be emailed to NHDOT CR staff for review.
 - ii. LPA memo's should describe the project and any impacts (or lack of impacts) to cultural resources.
 - iii. NHDOT CR staff will complete the memo for in-house NHDOT projects at the request of the Environmental Manager. Please allow enough time for the CR staff to prepare the memo.
 - b. NHDOT CR staff will be responsible for distributing the memo for signatures to achieve a fully executed memo.
 8. When the project results in an Adverse Effect and requires a Memorandum of Agreement (MOA)
 - a. If an LPA project, the LPA sponsor drafts the MOA. Please ask DOT CR staff for examples if necessary.
 - b. NHDOT CR staff draft the MOA for in-house projects. Please allow enough time for the CR staff to draft the MOA.
 - c. NHDOT CR staff will be responsible to transmitting the memo for signature.
 - d. Mitigation to be included in the MOA is typically discussed at the monthly CR Agency meeting. Mitigation examples include:
 - i. NH Historic Property Documentation (either full report or outline format), including large format photography.
 - ii. Context documents, monographs, reports, etc.
 - iii. Public outreach:
 1. Interpretive signs
 2. State Historic Markers
 3. Books, pamphlets, brochures, videos, websites

S:\Environment\CULTURAL\CR guidance-checklist\Project Procedures 2-2-2015.docx

Appendix J

DRAFT Operations and Maintenance (O&M) Plan

DRAFT Operations and Maintenance (O&M) Plan



June 2019

Revision 0

1.0 INTRODUCTION

This Draft Operations and Maintenance (O&M) Plan describes the Department's programs and procedures to address the Good Housekeeping and Pollution Prevention requirements of Minimum Control Measure No. 6 (MCM 6) of the 2017 New Hampshire Small Municipal Separate Storm Sewer Systems (MS4) General Permit that became effective on July 1, 2018.

The 2017 MS4 Permit (Sec. 2.3.7) requires an O&M Plan to be completed within 2 years of the effective date, or by July 2020, and include an inventory of facilities (e.g., roadways, park and rides, rest areas, service centers, maintenance sheds and office buildings) in the Urbanized area. MCM6 involves use of good housekeeping and pollution prevention measures at Department-owned facilities to minimize the potential for pollutants to be exposed to stormwater as well as maintain the roadway related stormwater infrastructure within the regulated urbanized area.

This Draft O&M Plan is intended to guide Department personnel in utilizing good housekeeping and pollution prevention measures consistent with the MS4 permit for roadway operations, building and grounds, material storage, equipment maintenance and maintaining stormwater infrastructure. The O&M Plan will include an employee training component and a process to review and assess operations and report on progress in each future annual report. The employee training can be incorporated into the Environmental Management System (EMS) Environment and Safety Training, managed by the Occupational Safety and Health section within the Bureau of Environment. This training is currently required for all highway maintenance personnel.

1.1 Related Department Policies and Programs

The Department has already developed several internal documents and guidance manuals that describe best practices and policies to perform good housekeeping and pollution prevention measures at its facilities. The documents include specific work instructions contained in its Environmental Management System (EMS); or EMS, as mentioned above, which includes an ongoing employee training program. The work instructions are referenced in this Draft O&M Plan to maintain consistency with established practices and implementation tools while meeting the good housekeeping activities required by the MS4 permit.

In 2017, the Department updated its Environmental Policy-Procedure (EIP-1) to consolidate, coordinate and better communicate its environmental review and protection policies and procedures across its various divisions, bureaus and districts. The Department revised its Maintenance Manual in August 2018 to update the work instructions and work activity classification codes to enhance tracking of various routine, preventative and emergency maintenance activities.

In 2018, the Department developed a new guidance manual for routine roadway maintenance activities entitled "Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire." This manual describes methods to perform routine roadway maintenance activities in an environmentally-sensitive manner and serves as a resource not only for the Department but for municipalities in maintaining road infrastructure in this state. The principles behind these practices are included in the various inspection and maintenance activities described below in this document.

The MCM6 requirements pertain to the following facilities:

- Department-owned facilities and properties including maintenance facilities, material storage locations, park and rides, service-centers, rest areas and other miscellaneous facilities.
- Stormwater infrastructure within the regulated urban area including catch basins, drainage infrastructure and stormwater BMPs.

1.3 Facility Inventory

Section 2.3.7.1 of the Permit identifies four (4) principal types of permittee-owned facilities or activities that must be addressed in the O&M Plan:

- a) Buildings and Facilities
- b) Vehicle/Equipment Storage and Maintenance Facilities
- c) Parks and Open Spaces
- d) Stormwater Infrastructure Operations and Maintenance

The Department owns and operates facilities including maintenance facilities, park and ride facilities, rest areas and service centers, and parks or open space areas. The maintenance activities conducted at these facilities varies and are described in greater detail in the next section. Only facilities located in Districts 5 and 6 and the Patrol Section 414 of District 4 are located in the Urbanized Area and are, thus, subject to the MS4 Permit. Facilities maintained by the Bureau of Turnpikes in these same areas are also subject to the Permit.

The Department has established its own environmental policies that involve similar good housekeeping and maintenance practices for its facilities that lie outside of the urbanized area. The Bureau of Turnpikes is responsible for maintaining facilities along the designated toll roads including the F.E. Everett Turnpike, Interstate 95, and the Spaulding Turnpike.

Table 1.1 provides an inventory of Department facilities that are within the Urbanized Area and have Regulated Discharge (i.e., point source discharge to a Waters of the United States). Facilities are listed by District, municipality, associated outdoor activity and receiving water body. The table also indicates whether the facility has a vehicle fueling station and/or outdoor storage of bulk materials.

Table 1.1 Inventory of Department Facilities within the MS4 Urbanized Area, Associate Outdoor Activities and Receiving Water Body

Facilities	Municipality	Bulk Fuel Storage and Handling	Salt Storage and Handling	Brine Storage and Handling	Winter Sand Storage and Handling	Limited Reuse Soil Storage and Handling	Receiving Water Body
District 5							
Administration Bldg	Bedford	No	No	No	No	No	NHRIV700060804-01, SEBBINS BROOK - POINTER CLUB BROOK
PS 511	Bedford	Yes	Yes	Yes	Yes	No	NHRIV700060804-01, SEBBINS BROOK - POINTER CLUB BROOK
PS 512	Londonderry	No	Yes	Yes	Yes	Yes	NHRIV700060804-04, L. COHAS BROOK
PS 514	Salem	No	Yes	Yes	Yes	Yes	NHRIV700061102-32, HITTITYTITY BROOK - UNNAMED BROOK
PS 527	Manchester	Yes	Yes	Yes	Yes	No	NHRIV700060702-04, UNNAMED BROOKS - TO MASSABESIC LAKE
PS 528	Derry	Yes	Yes	Yes	Yes	No	NHRIV700061203-16, BEAVER BROOK
Salem Welcome Center	Salem	No	No	No	No	No	UNNAMED WETLAND NHRIV700061102-18, POLICY BROOK
I-93 Exit 2 Transportation Center ¹	Salem	No	No	No	No	No	UNNAMED WETLAND NHRIV700061102-16, POLICY BROOK
I-93 Exit 5 Transportation Center ¹	Londonderry	No	No	No	No	No	UNNAMED WETLAND NHRIV700060804-04, L. COHAS BRK
I-93 Exit 4 Transportation Center ¹	Londonderry	No	No	No	No	No	UNNAMED WETLAND
I-93 Exit 3 Park & Ride	Windham	No	No	No	No	No	NHRIV700061204-01, DINSMORE BRK
District 6							
PS 608	Epping	Yes	Yes	No	Yes	Yes	UNNAMED WETLAND
PS 611N	Kingston	No	Yes	No	Yes	No	UNNAMED WETLAND NHRIV700061401-01, LITTLE RIVER
PS 612	N. Hampton	No	Yes	Yes	Yes	No	NHRIV600030901-07, WINNICUT RIVER - UNNAMED BROOK
Hampstead Park & Ride	Hampstead	No	No	No	No	No	UNNAMED WETLAND NHRIV700061102-04, HOG HILL BROOK

Facilities	Municipality	Bulk Fuel Storage and Handling	Salt Storage and Handling	Brine Storage and Handling	Winter Sand Storage and Handling	Limited Reuse Soil Storage and Handling	Regulated Discharge
Route 125 Park & Ride	Plaistow	No	No	No	No	No	UNNAMED WETLAND NHRIV700061401-04, KELLY BROOK – SEAVER BROOK
Rte 101 Exit 7 Park & Ride	Epping	No	No	No	No	No	UNNAMED WETLAND NHRIV600030708-02, PISCASSIC RIVER - UNNAMED BROOK
I-95 Exit 3A, Portsmouth Transportation Center ¹	Portsmouth	No	No	No	No	No	UNNAMED WETLAND NHRIV600030904-07, UNNAMED BROOK- TO UNNAMED MARSH
Turnpikes							
Administration and Hooksett Tolls	Hooksett	No	No	No	No	No	NHRIV700060802-14-02, MERRIMACK R.
PS 820	Merrimack	Yes	Yes	Yes	No	No	UNNAMED WETLAND
PS 825	Hooksett	Yes	Yes	Yes	No	No	NHRIV700060802-14-02, MERRIMACK R.
PS 835	Dover	Yes	Yes	Yes	No	No	UNNAMED WETLAND
PS 840	Rochester	Yes	Yes	Yes	No	No	UNNAMED WETLAND
Bedford Tolls	Bedford	No	No	No	No	No	NHRIV700060804-01, SEBBINS BROOK - POINTER CLUB BROOK
Dover Toll	Dover	No	No	No	No	No	UNNAMED WETLAND NHEST600030903-01-03, BELLAMY RIVER SOUTH CLEMENT POINT
Hampton Tolls	Hampton	No	No	No	No	No	UNNAMED WETLAND NHRIV600030901-07, WINNICUT RIVER - UNNAMED BROOK
Merrimack Tolls, Exit 10	Merrimack	No	No	No	No	No	UNNAMED WETLAND NHRIV700061001-19, UNNAMED BRK
Merrimack Tolls, Exit 11	Merrimack	No	No	No	No	No	UNNAMED WETLAND
Exit 9 Park & Ride	Dover	No	No	No	No	No	UNNAMED WETLAND NHRIV600030405-13, TATES BROOK

Facilities	Municipality	Bulk Fuel Storage and Handling	Salt Storage and Handling	Brine Storage and Handling	Winter Sand Storage and Handling	Limited Reuse Soil Storage and Handling	Regulated Discharge
I-95 Seabrook Rest Area/ Welcome Center ¹	Seabrook	No	No	No	No	No	NHRIV600031004-10, CAINS BROOK - UNNAMED BROOK
Exit 13 Park and Ride	Rochester	No	No	No	No	No	UNNAMED WETLAND NHIMP600031003-04, CAR BARN POND
Exit 6 Park and Ride / DMV / EZ Pass	Nashua	No	No	No	No	No	UNNAMED WETLAND NHRIV700040402-08, NASHUA RIVER
I-93 NB Hooksett Rest Area ¹	Hooksett	Yes	No	No	No	No	UNNAMED WETLAND NHLAK700060802-06, UNNAMED POND
I-93 SB Hooksett Rest Area ¹	Hooksett	Yes	No	No	No	No	NHRIV700060802-23, UNNAMED BRK
Bridge Maintenance							
711	Epping	Yes	No	No	No	No	UNNAMED WETLAND NHRIV600030703-19, UNNAMED BROOK – TO LAMPREY RIVER

Notes: These facilities are maintained and operated by third party entities through lease agreements with the Department. The maintenance activities associated with these facilities include snow removal, deicing applications, sweeping and catch basin cleaning, which are handled by the 3rd Party leasee and their contractors.

2.0 Facility Operations and Maintenance

2.1 Maintenance Facilities

Activities potentially exposed to stormwater at patrol sheds or maintenance facilities include storage and handling of bulk materials (e.g., sand, deicing salt, etc.) and vehicle maintenance including vehicle fueling, replacement of vehicle fluids and washing. Spill prevention and containment measures associated with vehicle fueling, maintenance and wash water are described herein. In addition to the O&M Plan, some facilities may require a separate Stormwater Pollution Prevention Plan (SWPPP), depending on outdoor material storage or activities, to outline additional pollution prevention and inspection measures to limit stormwater exposure. The SWPPPs will need to be prepared by June 2020. In addition, inspection and maintenance of the applicable stormwater infrastructure will also apply.

The Department has existing Work Instructions for many of its vehicle and facility maintenance activities that describe various pollution prevention and good housekeeping measures that are consistent, and in many cases, go beyond the requirements included in the MS4 Permit. For instance, Department personnel already conduct monthly inspections at maintenance facilities and vehicle storage locations, which goes beyond what is required by the MS4 permit.

The **Department's Monthly Facility Inspection Form (currently being revised) will be used to document** inspection results for MS4 purposes as well. The Monthly Facility Inspection Form is currently being revised to be consistent with MS4 Permit requirements.

2.2 Vehicles and Equipment

2.2.1 Vehicle Maintenance / Fueling

Best practices for vehicle maintenance particularly for draining, replacement and handling of fluids are currently described in the following Work Instructions (planned future updates);

- **Wastewater Handling and Disposal (BHM-EMS-WI-001)**
- **Storage of Used Oil and Oil Filters (GN-EMS-WI-001)**

Per BHM-EMS-WI-001, oil/water separators are inspected monthly with observations documented on the Facility Monthly Inspection Form. Vehicle maintenance involving draining and replacement of fluids is done indoors using appropriate collection and containment equipment. Waste oil and used oil filters are stored in appropriate containers that limit spill potential according to the Work Instructions. Used Oil stored for Recycling in containers of 5 gallons or more are inspected as part of the facility weekly inspection.

Fueling stations and areas where vehicles are parked outdoors are inspected weekly by the patrol shed foreman to detect any fluid spills or leaks. Weekly facility inspection sheets are submitted to the Safety and Environmental Officer for filing (per current Department Policy). If a leak is detected, a corrective action form will be completed and submitted.

2.2.2 Vehicle Washing

Both the Division of Highway Operations and Bureau of Turnpikes have established the Work Instructions to establish pollution prevention measures associated with vehicle washing. Department personnel should be familiar with the provisions included in the work instructions and proper vehicle washing operations either through initial new employee training or through annual refresher training.

- **Vehicle Washing (BHM-EMS-WI-007)**
- **Turnpikes (TURN-EMS-004- Vehicle Washing)**

The provisions included in these Work Instructions are consistent with the MS4 permit requirements. Vehicle beds should be swept prior to washing and washing should be done in a manner that minimizes the release of wash water and related pollutants to nearby water bodies. No washing should be done within 50 feet of a catch basin, ditch, wetland or water body consistent with the work instructions;

Vehicle washing locations, which are registered with NHDES, are inspected as part of the facility inspections to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters.

2.3 Wastewater Handling and Disposal

2.3.1 Floor Drains / Holding Tanks

Floor drains, sumps, and holding tanks are **inspected monthly**. Inspections look for leaks, and evaluate the storage capacity, solids amount, and environmental conditions to determine if cleaning is necessary.

- **Wastewater Handling and Disposal (BHM-EMS-WI-001)**

2.3.2 Oil/Water Separators

Oil/water **separators shall be inspected monthly** to determine the presence of leaks, oil absorbent material levels, and other maintenance issues. Inspections will be conducted and documented in an inspection log, completed by the facility foreman.

- **Wastewater Handling and Disposal (BHM-EMS-WI-001)**

2.3.3 Septic Tanks

Only one facility in the Urbanized Area is serviced by an onsite septic system and the pumping schedule is maintained by the Patrol Shed Foreman.

2.4 Material Storage

The Department handles and stores certain materials outdoors that may be exposed to stormwater. Materials such as road salt, winter sand mixed with salt, excavated soils and asphalt grindings may be stored and handled in designated storage locations. Road salt is stored inside under cover but the loading and unloading may occur outside.

The Department storage and handling practices of these materials are described in the following Work Instructions;

- **Salt & Anti-icing Chemical, Storage & Handling Work Instructions (BHM-EMS-WI-006)**
- **Fuel & Chemical, Storage and Handling Work Instructions (BHM-EMS-WI-006)**

Spill prevention, response planning and procedures for petroleum storage and handling include the equipment, facilities, operating procedures, control measures and response procedures to prevent and minimize effects of petroleum releases and to minimize impacts in the event of a release. The following Work Instruction outlines the procedures in detail:

- **Spill Prevention and Cleanup Work Instructions (BHM-EMS-WI-006)**

DRAFT

3.0 Stormwater Infrastructure Operations and Maintenance

This section describes the Department's practices to maintain and operate its stormwater infrastructure along roadways and other facilities within the regulated urbanized area to meet the MS4 permit requirements. The practices include catch basin cleaning, street sweeping, trash and litter cleanup, ditch maintenance, winter maintenance / deicing activities and inspection and maintenance of stormwater treatment best management practices (BMPs).

It is worth noting that some of these same activities are conducted in conjunction with of the Department's routine facility maintenance discussed in Section 2 of this document.

3.1 Catch Basin Cleaning

There are approximately 2,500 catch basins located within the MS4 regulated area along roadways and at other Department facilities. Catch basin cleaning will be conducted in Routine and High Priority Areas to reduce discharge of pollutants from the MS4.

- **Limited Reuse Soils (LRS) Management Work Instructions (DOPS-EMS-WI-008)**

Routine Cleaning

- Catch basins are cleaned every year at various locations on a rotating basis. The Department seeks to clean catch basins often enough so that no more than 50% of the sump is full¹ at any time. Maintenance personnel will inspect each catch basin at least once every five (5) years.

Targeted Cleaning in Impaired Watersheds and near Construction Activity

- The Department will prioritize catch basin cleaning activity in watershed areas listed as impaired due to sedimentation/siltation, total nitrogen or total phosphorus as well as catch basins located near construction activities. If a catch basin sump is more than 50% full during two consecutive routine cleaning events, the Department will investigate sources and other factors that may contribute to excessive sediment loading, and to the extent practicable, abate contributing sources and/or factors. The results of this effort will be summarized in the next subsequent annual report.

Data Tracking and Annual Reporting

District personnel will report the following information to the internal Stormwater Committee to allow reporting in each Annual Report:

- Number of catch basins inspected
- Total number of catch basins cleaned in the urbanized area
- Total volume or mass of material removed from all catch basins

¹ A catch basin sump is more than 50% full if the contents within the sump exceed one half the distance between the bottom of the catch basin to the invert of the deepest outlet of the catch basin.



The Department will update the prioritization procedures as additional information becomes available with respect to water quality impairment data and past cleaning / inspection results.

Catch Basin Cleanings Storage and Reuse

The Department will store catch basin cleaning material in designated catch basin cleaning residual storage areas at various maintenance facilities that prevents direct discharge of materials to nearby receiving waters.

3.2 Street Sweeping

The Department is currently in the process of identifying and mapping roadway segments with curbed shoulders and/or catch basins as well as park and rides and rest areas located within the regulated urbanized area. This mapping effort is anticipated to be completed by early 2020. The Department utilizes vacuum-broom sweepers that are in District and contracts with commercial vendors to provide street sweeping services in select areas. Typically, street sweeping is targeted for major multi-lane roadways and the amount of roadway sweeping is highly dependent on equipment availability.

Routine Street Sweeping

Consistent with the 2017 MS4 Stormwater Permit, the Department will sweep streets and parking lots with curbing and/or catch basins located in the regulated urbanized area at least once per year in the spring (following winter activities such as sanding).

Higher Priority Areas for Sweeping

- Roadway areas will be swept more frequently in watersheds identified as impaired nitrogen, phosphorus, metals and total suspended solids.

Data Tracking and Annual Reporting

- District personnel will report the following information to the internal Stormwater Committee to allow reporting in each Annual Report:
 - Frequency and number of road miles cleaned
 - Total volume or mass of material removed

3.3 Trash/ Litter/ Pet Waste Control

Roadside cleanups of litter and trash are routinely performed by maintenance personnel as well as by volunteer groups as part of the Sponsor-a-Highway Program. Roadside cleanup is occasionally supplemented by crews who are involved with work release programs that are under the jurisdiction and supervised by the Department of Corrections.

In the last three years, approximately ## trash bags of roadside litter, on average, have been collected from the Department roadways. This information will be reported in the Annual Reports.

The Department currently provides pet waste bag stations at certain rest areas and service centers. Trash collection receptacles are also provided at most locations. Certain facilities such as the Salem rest area are maintained by other state agencies or 3rd party service providers and are responsible for maintenance and upkeep. By July 2020, the Department plans to assist and encourage its 3rd party lessees to provide similar postings at these rest areas and service centers. The signs postings will encourage proper disposal of pet waste using the available trash receptacles provided.

Trash is also collected at the various District Maintenance facilities and offices using commercially provided dumpsters. The trash collection and disposal are contracted out to a licensed waste disposal company.

4.0 Winter Road Maintenance

The Department is in the process of developing a statewide Salt Management Plan that will describe the various BMPs, efficiency measures and weather forecasting tools that the Department has or plans to adopt to optimize the use of deicing materials and achieve the following objectives:

- Minimize the use and optimize the application of sodium chloride and other salt² (while maintaining public safety) and consider opportunities for use of alternative materials.
- Utilize application equipment that promotes efficiency including zero velocity spreaders, anti-icing and pre-wetting techniques. Maintain records of the application of sand, anti-icing and/or de-icing chemicals to maintain reasonably safe travel conditions in the most efficient and environmentally sensitive manner.
- Prevent exposure of deicing product (salt, sand, or alternative products) storage piles to precipitation by enclosing or covering the storage piles. Implement good housekeeping, diversions, containment or other measures to minimize exposure resulting from adding to or removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.
- Provide training to Department employees on winter roadway maintenance procedures.

The Salt Management Plan is anticipated to be completed in the fall of 2019 well within the time frame specified by the MS4 Permit.

² The MS4 Permit defines salt as any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

Appendix K

Salt Management Plan



SALT MANAGEMENT PLAN



Victoria F. Sheehan
Commissioner

TABLE OF CONTENTS

1.	Commissioner’s Statement	1
2.	Introduction.....	1
3.	Purpose and Objective	2
4.	Guiding Principles of the Salt Management Plan	3
5.	Current Winter Maintenance Operations	4
5.1.	Winter Maintenance Snow Removal and Ice Control Policy	4
5.2.	Staffing and Hours of Operation.....	5
5.3.	Training.....	6
5.4.	Communication.....	7
5.5.	Maintenance Facilities	7
5.6.	Materials Used in Winter Operations.....	9
5.7.	Salt Delivery, Sampling & Testing	12
5.8.	Measurement of Salt Piles.....	12
5.9.	Application Rates.....	13
5.10.	Equipment Used For Winter Maintenance Operations	13
5.11.	Spreader Calibration	16
5.12.	Equipment Washing.....	17
6.	Winter Maintenance Operations	17
7.	Mileage of Roadway Sections Maintained	18
8.	Impaired Water Bodies	20
9.	Reduced Winter Maintenance	21
10.	Record Keeping	22
11.	Future Salt Management Plan Goals for Improving Efficiency of Salting Operations.....	23
11.1	Short Term Goals.....	23
11.2	Long Term Goals	24

12.	Salt Best Management Practices (SBMP).....	28
	SBMP – 1 Procurement, Storage and Handling of Road Salt	28
	SBMP – 2 Winter Maintenance Operations	28
	SBMP – 3 Patrol Shed Housekeeping and Snow Disposal.....	29
	SBMP – 4 Winter Operations in Salt Sensitive Areas:.....	30
	SBMP – 5 Salt Accounting.....	31
	SBMP – 6 Pre-Wetting	32
	SBMP – 7 Anti-Icing Pretreatment.....	32
	SBMP – 8 Underbelly Plows.....	33
	SBMP – 9 Ground Speed Controls	33
	SBMP – 11 Equipment Calibration	34
	SBMP – 12 Training.....	35
	SBMP – 13 Improved Storage and Handling	36
	SBMP – 14 Snow and Ice Forecasting	36
	SBMP – 15 Enhanced Plow Blade Technology	36
	SBMP – 16 Automatic Vehicle Location (AVL)	37
	SBMP – 17 Dynamic Message Signs	37
	SBMP – 18 Winter Severity	38
	SBMP – 20 Selective Tree Clearing.....	39
13.	Considerations to Implementation of the Salt Management Plan	40
14.	Monitoring & Review of Salt Management Plan.....	40
14.1	Monitoring of Plan.....	40
14.2	Revisions.....	42
15	References.....	43
16	Appendices.....	45
	Appendix A: Snow & Ice Policy	
	Appendix B: Winter Maintenance Charts (NYSDOT, 2007)	

- Appendix C: NHDOT Winter Maintenance Storm Log
- Appendix D: Salt Tonnage & Lane Mile Chart
- Appendix E: Salt Sampling Procedure
- Appendix F: Snow Disposal Guidelines
- Appendix G: Vehicle Washing and Rinsing Procedural Guideline
- Appendix H: District 2 Salt Report
- Appendix I: NHDOT Salt Storage Capacity & Locations
- Appendix J: Salt & Anti-icing Chemicals, Storage & Handling

LIST OF TABLES

Table 1: NHDOT Number of Employees by District **Error! Bookmark not defined.**5

Table 2: Application Rates for De-icing Materials..... 13

Table 3: Equipment by District 14

Table 4: Winter Maintenance Road Mileage by District and Turnpikes 19

Table 5: NHDOT Salt Sensitive Areas By District 22

LIST OF FIGURES

Figure 1: NHDOT Salt Storage Capacity and Five-Year Average Usage..... 8

Figure 2: NHDOT History of Salt Use..... 9

Figure 3: NHDOT Lane Miles and Vehicle Miles Traveled (FHWA, 2008)..... 11

Figure 4: NHDOT Statewide Winter Severity and Salt Use (2009b)..... 12

Figure 5: Effects of Pre-wetting (MI Highway Department, 1974)..... 18

Figure 6: Melting Capacity of Salt (Salt Institute, 2007) 25

1. Commissioner's Statement

As Commissioner of NHDOT, I take pride in the winter maintenance operations conducted by this Department. Ever since the early days when we started plowing our mountain passes to open up our north country roads, NH plow operators have enjoyed the reputation of providing outstanding service to residents and visitors alike. The dedication, professionalism and ingenuity of the Department's men and women snow fighters, who labor hour after hour in combating winter storms, are second to none. However, times change and so must we if we wish to preserve our fine reputation. The NHDOT will continue to accept and utilize new technologies and recognize the valid concerns regarding the adverse impacts that some of our operations have on New Hampshire's environment. All of us live in this wonderful state to enjoy all that it has to offer and would never knowingly do anything to harm it. That is why I fully endorse this effort to minimize the intrusion of chlorides into NH's environment and have committed the NHDOT to fully implement all aspects of the plan. My expectation is that NHDOT will conform to this initiative and perform our operations in an environmentally sensitive manner.

2. Introduction

The New Hampshire Department of Transportation (NHDOT) is responsible for the winter maintenance of over 8,964 lane miles (a lane mile is defined as a 12 foot wide section of road, 1 mile long) of roads. These roads are maintained by the Bureau of Highway Maintenance and the Bureau of Turnpikes. The NHDOT works vigorously to provide safe roadways for travelers by assessing weather and road conditions and conducting appropriate snow removal and ice control measures. This is an expensive and time-consuming task that is only successful due to the dedicated efforts of a trained work force consisting of approximately 650 - 700 dedicated snow fighters between the six Districts of Highway Maintenance and Turnpikes and several hundred private truck operators. Other necessary components include a well maintained fleet of modern plow trucks; an adequate supply of effective de-icing and anti-icing chemicals and the continual use of emerging technologies. Since the 1940s, sodium chloride (salt) has been the anti-icing chemical of choice for the NHDOT due to its availability, price, effectiveness and safety for those applying it. While salt is an excellent tool for highway maintenance, it can have unintended adverse effects when it enters the environment in excessive quantities; posing a risk to plant life, birds, fish, lake or stream ecosystems and ground water supplies.

Salt is highly soluble and can easily contaminate water supplies by seeping into groundwater and flowing into lakes, rivers and wetlands. Drinking water in NH is supplied by 60% groundwater and 40% surface water (New Hampshire Department of Environmental Services (NHDES), 2008a). Although recent studies have found salt levels in ground and surface water to be within safe drinking limits, salt contamination has occurred in localized areas.

Several public water supply wells have also been abandoned due to contamination by salt. A number of towns in NH have been forced to adopt aquifer protection zoning in areas where the local water supply is at risk of salt contamination. Furthermore, the number of chloride impaired water bodies has increased from 19 in 2008, to 47 in 2016 (303 (d)). NHDOT, local DPW's, parking lot owners, private road owners, some driveway and water softener owners contribute to this salt loading.

This Salt Management Plan (SMP) strives to minimize the amount of NHDOT applied salt entering the environment by establishing Best Management Practices (BMPs) in the handling, storage and dispensing of road salt. NHDOT has developed this Salt Management Plan to demonstrate compliance with EPA National Pollutant Discharge Elimination System (NPDES) permits, specifically the Small Municipal Separate Storm Sewer Systems Permit (MS4) and NHDES Alteration of Terrain (AOT) rule Env-Wq 1503.11(g).

Recommendations for continuous improvement through the establishment of short and long term goals are included in the plan as is the mandate to provide yearly reviews of how the NHDOT is progressing in obtaining compliance to the SMP. The action portion of the SMP is fiscally responsible and budgetary constrained.

The SMP is broken into two sections outlining the current and future salt management initiatives at the NHDOT. Sections 4 and 5 outline the NHDOT snow and ice practices including policies, procedures and assets currently available in combating winter storms. Current salt management measures are identified and should be used as a bench mark for future improvements. Sections 6 and 7 sets forth a work plan in the form of Best Management Practices (BMPs) and future goals. The NHDOT goals are established in order to improve efficiency in all aspects of winter salt use including product purchasing; storage of the product; and spreading of the product onto the roadway. The plan also recommends methods for monitoring progress to achieve compliance with this SMP, as well as with the MS4 Permit and AOT regulations

3. Purpose and Objective

The purpose of this SMP is to establish policy and procedures to ensure that the NHDOT works to continuously improve on the efficient and effective delivery of winter maintenance services to the highway user. The management of road salt will conform to the SMP as well as to the NHDOT Snow and Ice Policy. These documents are intended to be 'living documents' and as such are subject to periodic reviews and revisions as new technologies emerge or new concerns arise. In the quest to reduce salt use, any revisions or modifications made to the SMP should support the overall goal of providing safe roads for the traveling public.

The objective of the plan is to provide a framework that will minimize the use of chloride based materials, while still providing an acceptable level of service on the roadways. The NHDOT is committed to the storage, handling and dispensing of all winter maintenance materials in an environmentally responsible way so as to minimize the impact on the environment. All work carried out is fiscally constrained by budget appropriations allocated for the implementation of this plan.

4. Guiding Principles of the Salt Management Plan

The use of salt is a critical tool for the NHDOT in combating winter storms and it is important to have any new policy or modification of existing policy well-grounded in a few guiding principles. For this plan the following principles must be considered as a basis for developing procedures and instructions regarding salt usage in winter maintenance operations.

- A. Safety – The NHDOT considers the safety of the highway user paramount when formulating any NHDOT plan or policy and only approves actions that will do no harm to the motorist.
- B. Environmental Protection - Excessive discharge of salt(s) is known to have harmful environmental effects. The NHDOT goal is to minimize these effects while still maintaining a safe roadway for the traveling public. Salt use must be constrained to those amounts that accomplish the task and do the least harm to the environment.
- C. Financial Constraints – Certain aspects of the plan will require the purchase of new or different pieces of equipment before full implementation can occur. These expenses must be included in new budget requests and may constrain some aspects of the plan until funds are available.
- D. Staffing Constraints – Without adequate staffing, and resources, in order to meet the Department’s level of service (as written in the Department’s Winter Maintenance Snow &Ice Policy) there will be times that additional chemicals will be applied to road surfaces.
- E. Continuous Improvement – NHDOT recognizes that for this plan to be successful it needs to be phased in incrementally and ongoing over several years. The importance of having annual reviews to track progress is essential.
- F. Communications – The plan must be dispersed and discussed internally and externally with all interested parties. Meetings with groups of highway maintainers must be scheduled prior to the start of the winter season. Training sessions shall be conducted regularly so that all employees are well versed in the plan’s goals and how to obtain them.

- G. Performance Indicators – There is accurate tracking of NHDOT progress in the implementation of the plan. A senior manager is tasked with charting progress, making updates as needed and preparing an annual report.
- H. Regulatory Considerations - Some of our State maintained highways discharge to chloride impaired waterbodies. The NHDES publishes a list of these waterbodies every two years. The list, known as the 303(d) list is named after the same section of the Federal Clean Water Act (CWA). It is used to guide the development and implementation certain permits, including the MS4 permit and AOT permit. These permits require plans to be developed that include specific actions to reduce the amount of salt used within a chloride impaired watershed and/or where a Total Maximum Daily Load study Implementation Plan has been developed. A full list of the roadway sections with discharges to chloride sensitive receiving waters can be found at <https://www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm>. In accordance with the CWA, the NHDOT is dedicated in its efforts to comply with surface water quality standards in NH and is vigilant about its salting practices in close proximity to these impaired waterbodies.

5. Current Winter Maintenance Operations

5.1. Winter Maintenance Snow Removal and Ice Control Policy

The NHDOT has officially adopted a set of policies and priorities in a booklet entitled “Winter Maintenance Snow and Ice Control Policy” which governs current snow and ice operations conducted on State maintained highways. The policy defines six roadway types and establishes Level of Services (LOS) indicators for each roadway type. These two indicators are planned plowing frequency and planned allowable snow accumulation for the different roadway types. Also included in the Policy is information concerning different chemicals used in winter maintenance operations; how the chemicals are dispensed; suggested application rates and plowing operations; how to establish low salt zones and discussions on several misunderstood procedures such as pushing back and sidewalk maintenance. The current policy was adopted in 2001 and a copy of that policy may be found in the Appendix A of this report.

5.2. Staffing and Hours of Operation

There are approximately 650 - 700 authorized full time state employees who perform winter operation duties for NHDOT. The position qualifications are provided by Division of Personnel and are found in the Highway Maintainer Series. Position titles include: Highway Maintainers I, II, III, Construction Foreman (night patrol), Assistant Highway Patrol Foreman, Highway Patrol Foreman and Supervisor III (Maintenance Supervisor). Day to day patrol section work is planned and supervised by the Patrol Foreman.

In 2015, the Bureaus of Highway Maintenance & Turnpikes created a Winter Maintenance Program Specialist position to assist in performing periodic review and research of winter related items that the NHDOT is responsible for. This position has proven to be beneficial in improving our processes and continues to be an integral link to other Snow Belt states for the latest industry trends while providing a link between the Districts, Bureaus and Management within the agency.

Table 1: NHDOT Number of Authorized Winter Maintenance Employees by District/Turnpikes (2018-2019)

Title	District	1	2	3	4	5	6	TP	Total
Highway Maintainer I-II		49	49	49	36	65	38	30	316
Highway Maintainer III		29	14	22	10	29	16	28	148
Construction Foreman (night patrol)		2	3	3	2	4	2	0	16
Asst. Highway Patrol Foreman		17	14	15	14	21	13	11	104
Highway Patrol Foreman		17	14	13	16	18	12	6	96
Maintenance Supervisor		2	2	2	2	2	2	2	14
Maintenance Superintendent		0	0	0	0	0	0	1	1
Total		116	96	103	80	139	83	78	695

Employees of NHDOT Bureau of Highway Maintenance and Turnpikes are on call twenty-four hours a day, seven days a week during the winter season for snow and ice control. While no one person is assigned to be present at the patrol shed at all times, employees are expected to be available to respond should conditions warrant it. Once called in, employees remain at work until the Patrol Foreman is satisfied that the level of service has been met by the Snow & Ice Policy or the winter event clean-up is complete.

District offices commence twenty-four hour dispatch coverage near Thanksgiving and remain open until sometime in March. The Transportation Management Center (TMC), a 24 hour facility, receives timely information from police, citizens and dispatch information to maintenance crews as required. The TMC provides the year round coverage for the Turnpikes system as well. District offices also monitor weather conditions and receive weather forecasts

concerning pending storms. They are able to contact and provide support for any employees who may be working outside of normal scheduled hours.

Since 1938, the NHDOT has operated a night weather patrol during the winter months. These outside patrols are assigned to travel a portion of the roads within their district each night to check for trouble spots and to advise dispatchers of poor travel conditions or weather changes. Based upon this information, the district dispatcher will call the Patrol Foreman who is responsible for that roadway to respond to the location. The foreman may call in the entire crew or a portion of it depending on the severity of the problem as reported by night patrol. A secondary function of night patrol is to assist motorists who may have experienced a mechanical problem or some other disabling event. The night patrol is equipped to handle spot treating of problem areas to reduce the potential need for the call out of a patrol crew. They are also available to immediately investigate complaints received at the dispatch centers and to confirm the validity of these complaints.

5.3. Training

It is the NHDOT's goal to have all the field personnel that are tasked with Snow and Ice treatment to be familiar with and trained to implement current Department winter maintenance practices. Presently NHDOT Operations staff responsible for winter highway maintenance receive class room type training that covers various phases of snow and ice control procedures. Beginning in 2007, the same course that NHDOT staff use for training, has been offered to many of the private truck drivers in an attempt to get all of the plowing fleet exposed to this training. Additionally the NHDOT, as a contributing member has available an interactive computer based snow and ice training course that was developed for the American Association of State Highway and Transportation Officials (AASHTO) Snow and Ice Pooled Fund Cooperative Program (SICOP). This is an extensive course on anti-icing and road weather information systems that utilizes illustrations, video clips, tutorials, storm scenarios and chapter quizzes. The course can be done individually or as a small group and could serve as a means of providing competently trained snow plow operators.

NHDOT employees also have opportunities to attend daylong courses presented by the University of NH Technology Transfer Center. These training sessions are usually one day in length and cover a wide range of subjects. Periodic training in new equipment or materials is also offered as it is purchased or put into use. These sessions are for the most part conducted by vendors who have provided the product to NHDOT. Examples include training in brine making; use of different spreaders; how to apply new deicing chemicals and the utilization of RWIS information.

5.4. Communication

NHDOT has multiple ways of communicating internally and externally. For internal communications with field crews the NHDOT operates a two-way UHF radio system from base stations located at the District Offices, Turnpikes Headquarters, Concord Headquarters, and the Transportation Management Center. Transmission via mountain top repeaters goes out to several hundred mobile units. Each district has assigned frequencies so interference is kept to a minimum. Additional means of communication include telephones, cell phones, email, and district courier mail. In some cases CB radios are used to communicate with hired equipment operators who are plowing for the NHDOT. To communicate externally, telephones, email, US mail and publications such as the Snow and Ice Control Policy are utilized. The NHDOT 511 website provides information including camera images, Road Weather Information Systems, Doppler Radar, Winter Driving Conditions, Traffic Speeds and Dynamic Message Signs (DMS) that are used warn motorists of coming winter storm events and to update motorists of real time conditions and reduced speed limits due to winter conditions. On occasions where new projects or special operations are proposed, public forums or hearings are held to provide and receive information. The NHDOT Public Information Officer issues press releases as needed to the public and provides updates through the NHDOT Internet site and social media

5.5. Maintenance Facilities

The Bureau of Highway Maintenance, headquartered in Concord, is divided into six field districts with offices located in Lancaster, Enfield, Gilford, Swanzey, Bedford, and Durham. The six districts are further subdivided into 87 patrol sections. Each patrol section is responsible for maintaining in excess of 50 lane miles of state roadway. Staffing of personnel can vary between 5 and over 18 employees depending on the patrol section layout and topography. A variable number of state owned plow trucks and other related equipment are mobilized and privately owned plow trucks supplement state equipment in carrying out winter maintenance operations. Each patrol section has its own unique geographic conditions and traffic patterns that are best maintained by local employees familiar with these characteristics. There are 10 patrol sections in the Bureau of Highway Maintenance that are responsible for the maintenance of interstate roadways. Bureau of Turnpikes, which is headquartered in Hooksett, has 6 patrol sections responsible for the maintenance of the 651 lane miles of the Turnpike system.

At each patrol section there are buildings that house equipment and supplies. Additionally there are locations that serve solely as storage facilities for supplies of winter salt and sand. Refer to Appendix I for a list of location and approximate capacity of these storage sheds. The NHDOT traditionally used pole barn construction techniques to construct these buildings themselves, but continue to utilize outside contractors to erect larger, state of the art sheds known as high arch

gambrels as funds allow. These sheds provide excellent salt storage that is environmentally friendly. These newer sheds incorporate improved drainage systems that further support salt retention. The NHDOT intends to continue replacing or supplementing many of the older salt sheds with buildings of this design. Figure 1 summarizes the storage capacity and the five-year average for salt use for each district within the Bureau of Highway Maintenance and the Bureau of Turnpikes (TP).

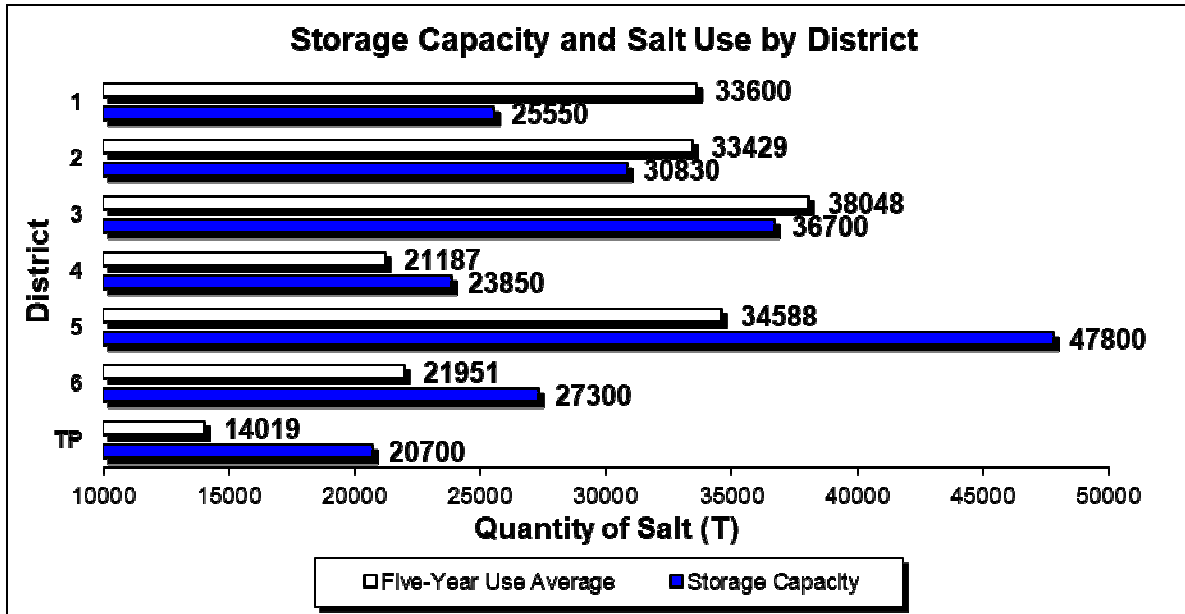


Figure 1: NHDOT Salt Storage Capacity and Five-Year Average Usage (2018)

Although it appears from Figure 1 that some districts have the ability to store an entire season of salt under cover, this is not necessarily true, as individual sheds may not have sufficient covered capacity while others in the district may have excess capacity. Cross hauling between sheds can occur when there is a shortage of salt at one shed and the suppliers are unable to deliver material to individual sheds in time for predicted storms. Cross hauling between sheds is operationally inefficient as it increases wear and tear on equipment; requires fuel for transportation; necessitates supplementary record keeping and creates more potential spillage opportunities and additional safety hazards.

5.6. Materials Used in Winter Operations

NHDOT uses a variety of materials in the process of conducting snow and ice control procedures. The primary chemical used is sodium chloride or salt as it is commonly known. Salt lowers the freezing point of water and assists in preventing snow and ice from freezing and bonding to the pavement. Figure 2 graphs the NHDOT History of Salt Use since the winter of 1998. The bulk of this tonnage is put out as straight salt applications. Salt is purchased and delivered in bulk to each patrol section with salt shed loading occurring in the fall.

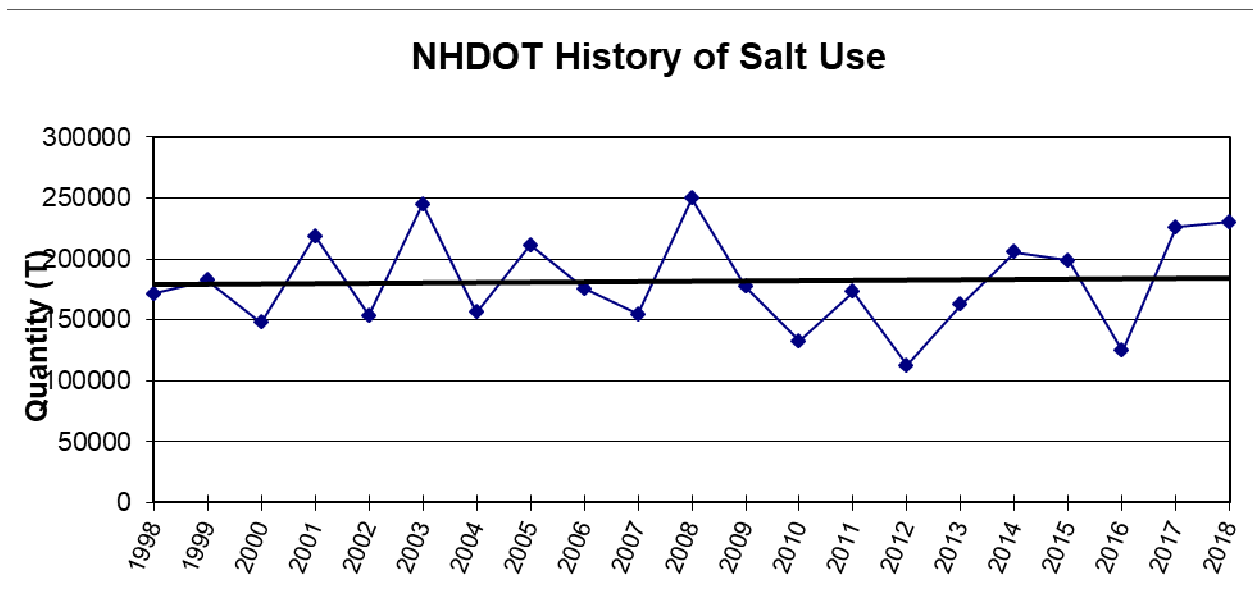


Figure 2: NHDOT History of Salt Use (2018)

NHDOT uses salt brine as a base for our salt brine-blend product. Salt brine is a liquid that is made at two NHDOT locations, Derry and Hampton using a brine maker. Salt brine is a mixture of 23.3% salt mixed with 76.7% water.

Liquid salt brine-blend, which is a salt brine mixed with liquid magnesium chloride at 80/20 blend (80% salt brine and 20% liquid magnesium chloride), is used on approximately 426 lane miles of divided highway on I-93, I-293 and Route 101 and on all Turnpike roadways. The liquid salt brine-blend is used primarily in anti-icing applications where it is applied several hours prior to a storm event when conditions warranted. Salt brine-blend is also used in the Department's saddle tanks on plow trucks and is sprayed on the salt at the spinner to prevent bounce and

scatter of the salt as it hits the road surface as well as aid in the activation of the anti-icing properties. See Figure 5 on page 18 for more details about bounce and scatter.

Straight magnesium chloride and calcium chloride is also utilized by NHDOT in the liquid form as a pre-wetting agent for salt in extreme cold weather conditions when conditions are warranted. Additionally flake calcium chloride is also used in the treatment of sand piles to prevent the sand from freezing and a limited quantity utilized for other related operations.

Sand may also be used in winter operations, primarily for immediate traction enhancement on hills or corners on lightly traveled roadways. Sand is effective for relatively low speed roadways and is effective for relatively short durations because it has no melting ability and is easily displaced by traffic. For these reasons, it is not considered useful for high speed or high volume roadways.

The NHDOT has experimented with other deicing chemicals with different additives as well as agricultural based deicer products. Salt still however remains the chemical of choice due to affordability, effectiveness, availability and safety for the applicators.

Overall salt use at the NHDOT has been slightly increasing as evidenced from Figure 2. The rise in levels of salt use can be explained by a number of different factors, the foundation of which relates to New Hampshire's growing population and economy. Growth in New Hampshire has caused an increase in traffic volumes as residents and visitors commute to work, school, sporting and cultural events as well as sightseeing attractions. There are also an increased amount of commercial vehicles that use State roads on a daily basis as commerce routes. The NHDOT is continually improving their highway systems to sustain the increasing traffic volumes and the number of lane miles on State roads has increased accordingly (refer Figure 3). In addition to this demand is the rising expectations of the driver including the perception that today's vehicles are safer in winter conditions and the notion that roads are always safe to travel on. Drivers now expect to be able to drive at all hours of the day, in all weather conditions. To combat this demand, the NHDOT has constructed new roads and added lanes to highway systems. As a result, the NHDOT has increased its salt use to maintain the growing number of State maintained roads and to provide twenty-four hour service during storms, in an endeavor to provide safer driving conditions.

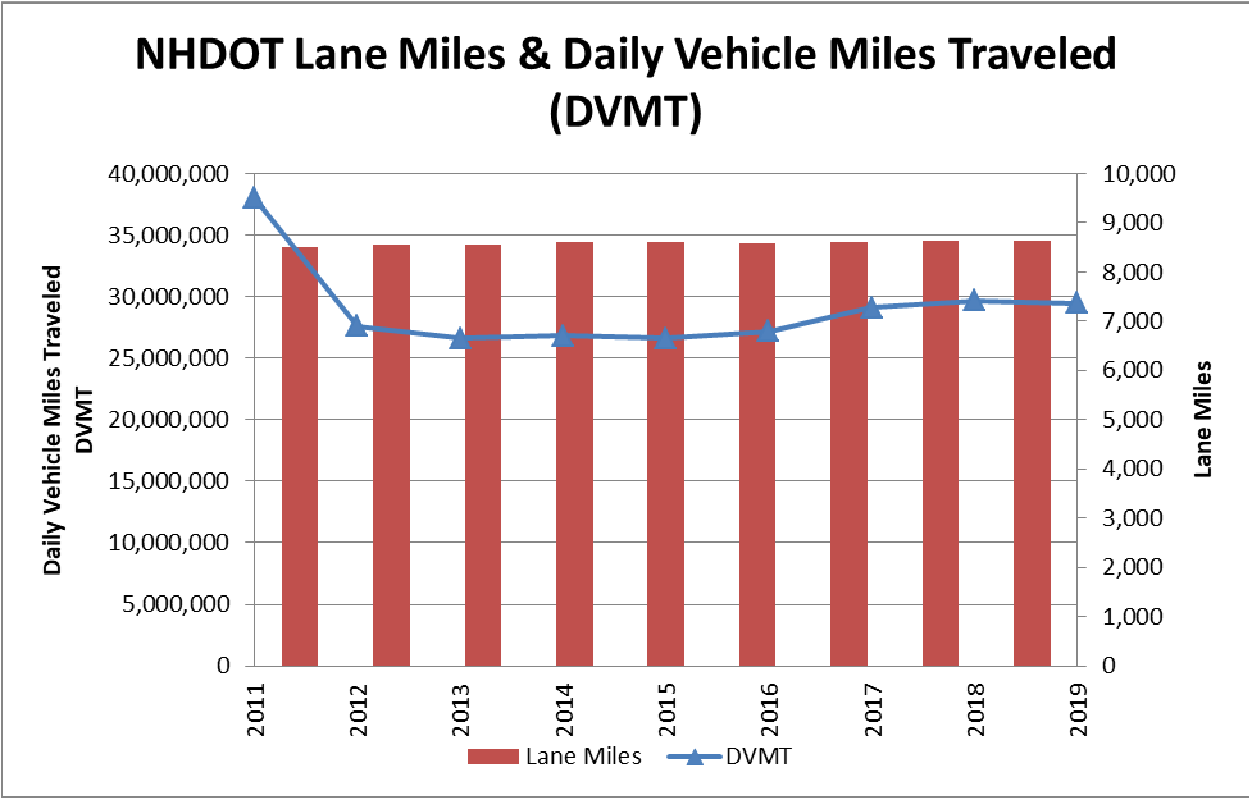


Figure 3: NHDOT Lane Miles and Vehicle Miles Traveled

Salt use is also dependent on the severity and type of storm. The Winter Severity Index (WSI) is used to specify the strength of a storm and is dependent on the quantity of precipitation and certain temperature measures. Figure 4 graphs the relationship between the calculated Winter Severity Index since 1998, and the corresponding salt used. The graph indicates that the year trends in salt use are comparable to the winter severity.

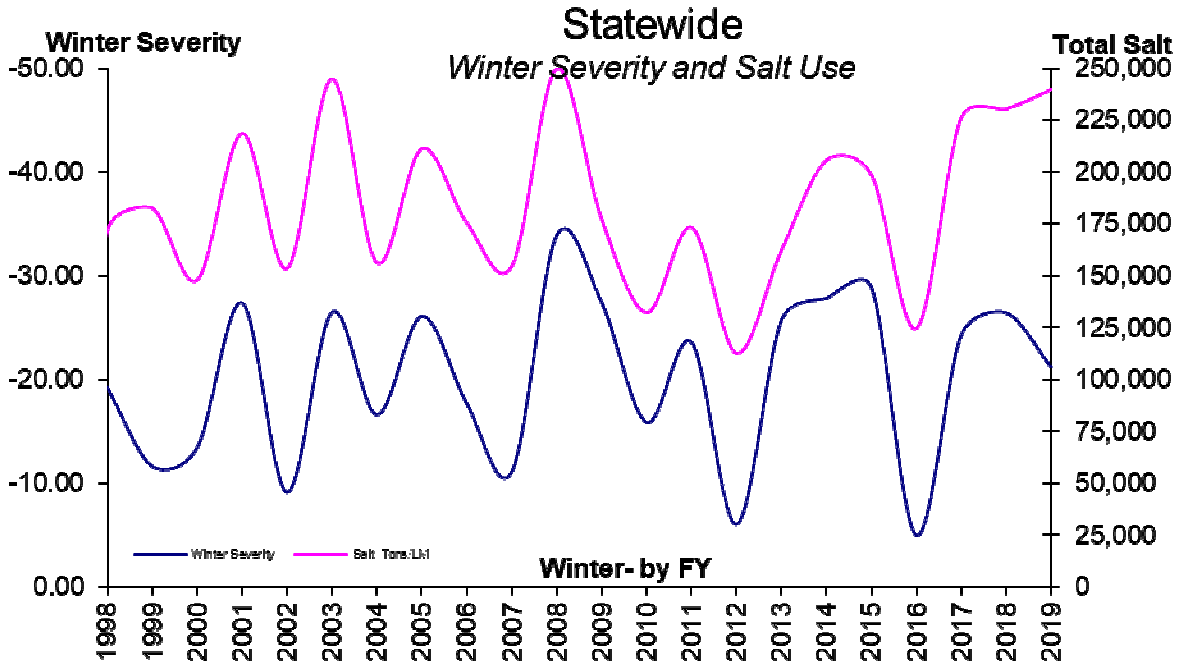


Figure 4: NHDOT Statewide Winter Severity and Salt Use (2019)

5.7. Salt Delivery, Sampling & Testing

The NHDOT requires that all deliveries be made in accordance with the specifications stipulated in the contract. The patrol foreman or his designee is at the shed for all deliveries to make a visual inspection of the product and to assist in prevention of any potential spillages or safety hazards. The salt is inspected for excessive water content, poor gradation and impurities. The patrol foreman has the right to refuse delivery of the salt if he/she deems the product to be nonconforming to the contract specifications. If an errant load happens to be dumped on site before it can be rejected, that pile is isolated and reloaded onto the vendor’s truck if possible. The Department’s Winter Maintenance Program Specialist is notified promptly to address the situation. After each day of delivery, salt piles are sampled. The NHDOT Salt Sampling Procedure can be found in Appendix E of this report. Labeled samples are immediately sent to the NHDOT Material and Research Lab in Concord for testing. All salt samples are analyzed for moisture content, gradation and select samples for purity and anti-caking. Penalties and price adjustments for nonconforming products are made in accordance with the contract terms and conditions as specified in bid documents.

5.8. Measurement of Salt Piles

District and Turnpike personnel physically measure the salt storage piles to confirm that the reported on hand inventory numbers shown on the salt report are correct. Presently each district

supervisor determines when the measurements will take place and utilizes his/her experience and judgment in viewing the salt remaining in the salt sheds. Some districts measure salt storage facilities and calculate the number of tons per foot of height for the various sheds and then paint lines on shed walls to provide quick capacity checks by the foreman. This method does provide a quick and easy estimate of the amount of material stored in the shed. Additionally, verifiable measurements are always done to assure accurate records are maintained

5.9. Application Rates

While there can be no exact application rates for deicing chemicals due to the variability of weather conditions, the application rates listed in Table 2 are guidelines which field crews may utilize as a starting point in determining an appropriate application rate. More specific application rates based on temperature and storm conditions can be found in Appendix B.

Material	Anti-Icing Material	Application	Unit
Salt	Yes	100-300	lbs/Lane Mile
Salt Brine-Blend Pre-Treat	Yes	40-60	Gal./Lane Mile
Salt Brine-Blend Pre-Wet	Yes	8-10	Gal./Ton Pre-Wet
Sand	----	500-800	lbs/Lane Mile
Liquid Calcium Chloride	Yes	8-10	Gal./Ton Pre-wet
Liquid Magnesium Chloride	Yes	8-10	Gal./Ton Pre-wet

Table 2: Application Rates for De-icing Materials

5.10. Equipment Used For Winter Maintenance Operations

Prior research in the field of snow and ice control has led to the development of new equipment being designed to make the snow fighting effort more efficient and effective. NHDOT has been purchasing this new equipment as the budget allows and will continue to do so.

Currently the work horse of the State owned plowing fleet is the 3-5 ton truck equipped with a front mounted plow, wing and stainless steel V box slide in spreader. Spreaders dispense both salt and sand with application rates controlled by ground speed controller units. Table 3 lists the

state owned and hired equipment that is used for winter maintenance by NHDOT. The State also depends heavily on hundreds of privately owned and operated trucks to supplement the state plowing fleet. There is a wide mix of truck type and size rented throughout the state. These trucks are rented on an hourly basis and perform their duties of plowing, salting or sanding under the supervision of the NHDOT patrol foreman. A rental agreement that sets an hourly rate for the basic truck as well as any specialized attachments that may be supplied is agreed upon. Presently only a portion of the private operators have invested in ground-oriented controllers for their equipment. Any effort to upgrade hired equipment capabilities will impact the dollar amount expended being under the hired equipment portion of the operating budget as well as possibly deter owners from contracting with the NHDOT due to up-front costs.

The use of state owned trucks with the most current spreading technology allows the state to effectively manage our roadways while also minimizing our impacts to the environment through implementation of appropriate salt management BMP's during winter maintenance operations.

	# State Owned Units (# Hired Units) by District							Total
	1	2	3	4	5	6	TP	
10 Wheeler Dump Truck	14 (0)	5 (11)	6 (13)	3 (16)	8 (18)	7 (16)	14 (58)	57(132)
6 Wheeler (3-5ton) Dump Truck	50(5)	35 (25)	38 (41)	28 (44)	54 (85)	28 (46)	30 (25)	263 (271)
1-Ton Dump Truck	1(1)	1 (2)	1 (1)	1 (2)	4 (7)	0 (2)	7(10)	15(25)
Winter equipped Pick-ups	22 (0)	14 (0)	14 (0)	18 (0)	19 (0)	13 (0)	9 (0)	109(0)
Brine Truck/Trailer	0 (0)	0 (0)	1 (0)	0 (0)	5(0)	0 (0)	5 (0)	11(0)
Tractor with Bucket	5 (0)	2 (0)	4 (0)	6 (0)	5(1)	3 (0)	0 (0)	25 (1)
Loader	10 (0)	5 (3)	4 (1)	4 (7)	7 (6)	6 (0)	10 (4)	46(21)
Loader-Backhoe	1(13)	0(14)	0(12)	1(6)	0 (9)	1(5)	2 (0)	5 (59)
Graders	5 (0)	3 (0)	3 (0)	2 (0)	2 (0)	2 (0)	0 (0)	17 (0)
Tow Plow	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3(0)	3(0)

Table 3: Equipment by District (2018-2019)

Stainless steel slide in spreaders use a conveyor chain and chute system to apply material at the rear of the truck. Salt can be applied with a spinner or placed directly on the centerline of the road. Slide in spreaders are also better equipped to handle pre-wetting systems, as they are less likely to deflect the corrosive liquid chemical back into the truck body.

Pre-wetting is a technique used to reduce salt application rates. Pre-wetting involves spraying salt brine-blend, liquid calcium chloride or magnesium chloride onto solid salt before it is applied to a roadway. Truck equipment needed to pre-wet salt includes truck saddle tanks; plumbing from tank to spinner; a pump and properly sized nozzles. At the patrol shed a storage tank and a transfer pump is needed to properly store the liquid materials and fill the trucks. Ground speed controllers are crucial to ensure proper application rates for the solid salt as well as the liquid used to pre-wet the solid salt.

Plows and their cutting edges have also improved in the last few years. To minimize salt use, it is critical that as much snow/ice be removed by plowing prior to an application of salt. Underbody plows have the ability to apply downward pressure and can scrape the roadways cleaner than standard front mounted plows (provided the road has a uniform cross section). Underbody plows used in conjunction with a normal front plow appear to yield the best results and the cutting edges on plows can reduce the amount of snow left on the pavement.

The NHDOT has outfitted the fleet with flexible segmented carbide blades since the winter of 2008 and has concluded that the blades last longer, run smoother, clean better and produce less noise than standard carbide blades. The flexibility of the rubber in these blades has better shock-absorbing abilities and offers more protection to the plow from severe impact. The flexibility of the rubber also allows the blades to articulate to the road surface, which helps remove snow from tire rut area. For multiple reasons, the blades have been found to have a longer wear life. A cost analysis performed found that although the flexible carbide blades have a higher initial cost, than standard carbide blades, the value gained through performance and resistance to wear, equates to a significant cost reduction. Based on these results, the NHDOT has expanded their use on all paved surfaces.

Liquid salt brine-blend is a tool that has shown to have the ability to reduce salt application. In those areas where this material is available, anti-icing runs are made several hours prior to a storm and can reduce or eliminate the compaction or adherence of the snow to the roadway. Liquid salt brine blend producing equipment is expensive and requires a municipal water supply to feed the brine maker. Trucks must also be outfitted with liquid saddle tanks to apply the salt brine blend. Presently there are 2 NHDOT owned blend makers located in Derry & Hampton that produce blend for several patrol sections in District 3, District 5, and Turnpikes.

Weather forecasting and knowledge of real time conditions is paramount in determining an effective plan for combating winter storms. Strides have been made through the use of “Road Weather Informational Systems” (RWIS) which place atmospheric and roadway sensors at selected geographical sites and provide a means of collecting and transmitting this road/weather data to the highway maintenance crews. As of now the NHDOT has 24 RWIS sites in the state with additional stations planned for construction. The effectiveness of any salt application is dependent upon the pavement temperature and RWIS is a useful source of information, providing surface and subsurface temperatures. Expansion of this network has proven to be a valuable tool for maintenance crews to assist in weather forecasting and to verify storm conditions.

Truck mounted infrared thermometers are another tool that has helped determine application rates of anti-icing chemicals by determining the surface temperature of the roadway surface. Additional installations of these devices will be sought as funds allow. These devices mount outside of a vehicle and display the pavement temperature to the truck driver. Tables that show application rates based on pavement temperature and storm conditions can assist the truck operator in determining a salt application rate when one is required. Refer to Appendix B for tables of application rates.

Generally, our fleet of plow trucks is replaced on a 12-year cycle. The NHDOT has committed to replace older spreaders with the most modern ground oriented / pre-wetting spreaders as the older ground oriented equipment is retired. In addition, the NHDOT is taking steps to expand its brine-blend program. The deployment of new equipment will be prioritized according to the current 303(d) list to ensure these BMPs are deployed in the locations where they are most needed. The list will be reviewed every two years as the final 303(d) lists are published.

5.11. Spreader Calibration:

The proper calibration of salt spreaders is crucial to the effective use of and application of salt. Calibration provides the operator with the quantity of material that will be applied at each control setting or conveyor speed. The NHDOT strives to have equipment with reliable spreader rates that are capable of applying a predetermined amount of material at a set rate. Calibration of material spreaders is done by selecting a fixed gate opening and then determining the amount of material dispensed at the different spreader conveyor speeds. A conversion factor is calculated to determine spread rates at different truck speeds.

Spreaders should be calibrated for each different type of material spread, as there is a wide variation in the unit weight of various materials. Currently the NHDOT requires owned and hired spreaders be calibrated before commencement of service and annually thereafter. Spreaders are also recalibrated when operators feel that there is a discrepancy between the set application rate and the actual output.

5.12. Equipment Washing:

Regular preventive maintenance, including cleaning and washing of equipment used in winter maintenance, is an important factor in prolonging the life and functionality of these expensive pieces of equipment. Cleaning and washing is performed at NHDOT sheds and is done in accordance with NHDOT Vehicle Washing work instruction BHM-EMS-WI-007 (refer Appendix G). Some districts also have established contracts with commercial establishments that accept equipment at their wash facilities.

6. Winter Maintenance Operations

The goal for NHDOT is to provide a bare, dry pavement as soon as practical following cessation of a winter event, depending on the road type. Most roads will receive an initial application of straight salt when an inch or so of snow has collected on the roadway. The salt is at a rate of 400-500 pounds per mile on two lane roads and dropped near the roadway's centerline or on the high side of bank curves. For interstates or other divided highways the spreaders spinner is set for a low speed and a band of salt is applied in each lane. The application rate for this procedure is 200-250 pounds per lane mile. In both cases the intent is to break and prevent any bond from occurring between the precipitation and the road surface. The exception to this early application of salt occurs when the temperature drops below 20F, when the snow is dry and traffic is blowing the snow clear of the roadway. In this case, no salt is applied as it could make the snow melt and then refreeze and complicate or worsen the situation that we are trying to avoid. The NHDOT attempts to break the bond at the pavement surface instead of melting snow from the top down, as the latter requires much more deicing chemical and results in the roadway remaining snow covered for longer periods of time.

Studies have shown that pre-wetting reduces the amount of material that is cast off the pavement during application. A study by the University of Michigan found that by keeping more of the salt on the pavement; reductions in the range of 20-30% of the initial application rates can be achieved. Results of the study showed that much more of the pre-wet salt was retained on the road when compared to a dry salt application. Figure 5 depicts the results of the study and shows the savings that may be realized through the pre-wetting of salt. Studies at the NHDOT, where salt is applied to a wet road, have found typical savings in the range of 10-15% when a pre-wetting agent has been utilized. Similar results have been reported by other organizations.

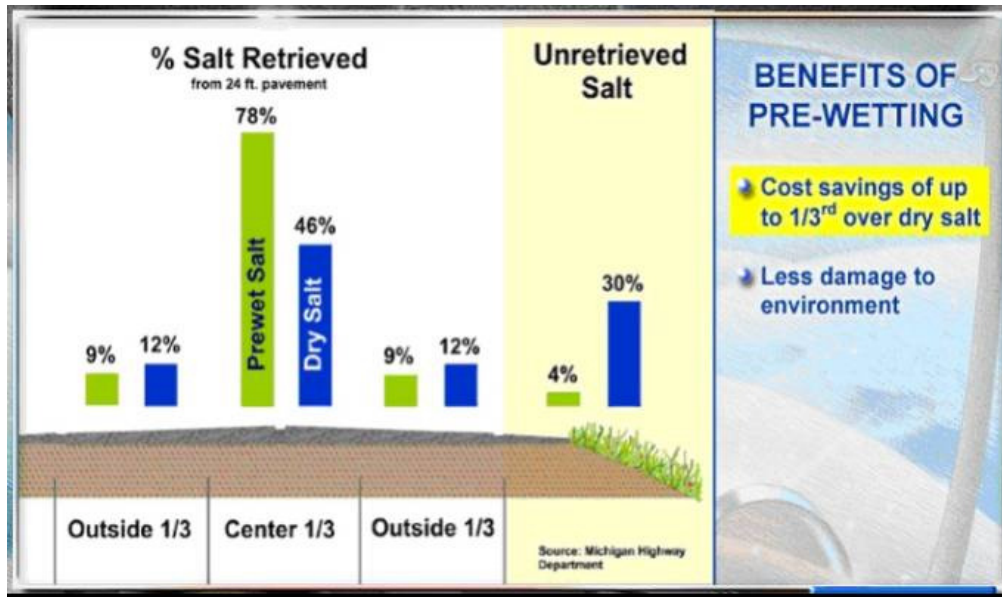


Figure 5: Effects of Pre-wetting (MI Highway Department, 1974)

Liquid calcium chloride or magnesium chloride is used to pre-wet granular sodium chloride under certain extreme road/weather conditions and where the equipment is available. Salt brine-blend is a relative overall cheaper solution compared to straight liquid calcium/magnesium chloride, however implementing pre-wet on a wider area involves high initial outlays for equipment to make and distribute the salt brine-blend. Plowing starts as soon as the salt has had a chance to do the job of forming a brine solution at the pavement surface, which prevents the formation of a bond between the precipitation and the roadway surface. Crews continue plowing and making additional salt runs as directed when observations indicate that icing or compaction of the snow is occurring. Plows are run at a prescribed angle so that the cutting edge can effectively scrape as much material as possible. Plow shoes are elevated and only touch the ground when there are distortions in the roadway or any uneven surface is encountered such as a railroad crossing. At the cessation of the storm, a final plow run is made where a light application of salt is applied where needed, intended to remove any remaining thin residue of ice or snow that the plows were unable to remove in prior runs. Widening or “pushing back” of the snow banks to provide room for additional snow or to improve sight distance is performed following the storm and in the daytime for worker visibility whenever possible.

7. Mileage of Roadway Sections Maintained

The NHDOT maintains over 8,964 lane miles of roadways each winter. The road types range from modern Turnpike and Interstates that are up to 5 lanes in each direction to aging, rural, and narrow secondary roads. Each road has unique characteristics that challenge plow operators in carrying out their winter duties. Traffic volume, weather trends, time of day, weekday, tree canopy, road design, surface condition, drainage, rutting and how roadways intersect with private

aprons and town/city drives vary greatly and can influence the amount of salt required to achieve the desired result. Table 4 lists the winter maintained mileage of each District within the Bureau of Highway Maintenance and Bureau of Turnpikes by highway classification. These classifications are defined in the Snow and Ice Policy (refer Appendix A) and are based primarily on traffic volume but can take into account the posted speed limit, highway grade, major industrial complexes and major traffic generators. The various highway types are for defining snow and ice control operations such as level of service, frequency of plowing and anticipated end of storm conditions. The **TIER** classification used for winter maintenance purposes should not be confused with the **CLASSIFICATION** of the highway as defined by RSA 229.5.

District	Mileage shown are lane miles							Total
	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	
1	0.67	136.99	655.16	356.97	176.89	0.00	3.19	1329.87
2	1.87	133.17	461.93	498.03	238.12	0.00	3.74	1336.87
3	4.00	199.27	514.72	561.06	315.76	0.00	3.20	1598.00
4	0.00	0.00	427.18	596.04	145.79	0.00	1.87	1170.88
5	19.78	560.43	560.95	418.75	134.52	0.00	10.57	1705.00
6	0.00	91.30	400.47	558.22	121.07	0.00	0.94	1172.00
TP	2.93	590.78	40.69	2.54	1.82	0.78	11.46	651.00
Total	29.24	1711.94	3061.09	2991.61	1133.98	0.78	34.97	8963.62

Table 4: Winter Maintenance Road Mileage by District and Turnpikes (2019)

Tier 1 roads that are maintained by Highway Maintenance are the following:

- Interstate 89 (I-89) from Bow, NH to the Connecticut River, Lebanon, NH.
- Interstate 93 (I-93) stretching from the Massachusetts border to the Connecticut River in Littleton, NH. (excluding sections between I-293 northerly interchange to exit 14 in Concord, which is Turnpikes owned)
- Interstate 293 (I-293) runs concurrently with U.S. Route 101, starting at I-93 in Manchester and continuing in a westerly direction, ending at the Everett Turnpike junction.
- Interstate 393 (I-393) runs concurrently with a section of U.S. Route 4 and U.S. Route 202 beginning at the I-93 interchange and continuing miles to Pembroke, NH
- Route 101 runs from 1A in Hampton to I-93 in Manchester.

The Turnpikes system is comprised of the following limited access toll roads, which are also classified as Tier 1 highways:

- The Central NH Turnpike, commonly known as the F.E. Everett Turnpike, extends from the Massachusetts state line in Nashua to Exit 14 in Concord.
- The Spaulding Turnpike (Route 16) from Portsmouth Traffic Circle to exit 18 in Milton.
- The Blue Star Turnpike runs from the Massachusetts border to Portsmouth and consists of the entire section of I-95 in NH.

8. Impaired Water Bodies

Many of our State maintained highways abut or are in close proximity to chloride impaired water bodies. The New Hampshire Department of Environmental Services publishes a list of these water bodies every two years.

There are currently 203.5 lane miles of State maintained highways that drain to chloride impaired water bodies. A full list of the 303(d) list and a map of locations can be found at <https://www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm>.

In accordance with the CWA, the NHDOT is dedicated in its efforts to regulate surface water quality in NH and is vigilant about its salting practices in close proximity to these impaired water bodies.

The CWA requires that no activity that would further impair the listed water bodies be permitted. The CWA also requires that all impaired water bodies be studied to determine if pollutant loads can be reduced. Total Maximum Daily Load (TMDL) studies have been completed on a number of chloride impaired watersheds and it has been determined that in addition to NHDOT there are others who contribute significant quantities of sodium chloride to the impacted areas. Among these groups are local town highway crews and private contractors who maintain parking lots at shopping centers or local businesses. A NHDOT study of the two largest water sheds areas along I-93 found that nearly 50% of the total salt loading was attributed to salt used to maintain private parking lots while roughly 30% came from municipal roads and the remainder from NHDOT's usage (2009d).

In response to the TDML studies it is evident that any substantial reduction in chloride loading must include all contributors, not just NHDOT. To minimize chloride loading NHDOT has identified that substantial reductions in the amount of salt applied to area roads and parking lots is required. In response to the TMDL required load reductions, the NHDOT has investigated a number of Best Management Practices (BMPs) to improve water quality. The NHDOT has identified the use of ground oriented salt spreaders, onboard pre-wetting equipment and pre-storm brine applications as the most effective practices to reduce the amount of salt released to

the environment and still maintain adequate levels of service on the State highway system. As required by the CWA, the NHDOT has begun to deploy these BMPs in the watershed where TMDL studies have been completed and will continue to monitor their effectiveness.

The NHDOT is also interested in improving water quality in chloride-impaired watersheds. Although the CWA only requires the NHDOT to maintain chloride (salt) levels in these impaired watersheds, the NHDOT has plans to reduce chloride loads to these impaired water bodies when possible in the interest of reducing contaminations. To that end, the NHDOT has placed a priority on instituting the above-mentioned BMPs in chloride-impaired watersheds.

NH is fortunate to have the active participation of many citizens in the “Volunteer Lake Association Program” which is sponsored by the NHDES. Under this program the volunteers are trained in taking water samples from water bodies throughout NH. These samples are analyzed at the NHDES lab and the results reported. NHDOT will work with these interested groups to implement procedures that attempt to minimize the intrusion of chlorides into these sensitive areas. BMPs for use in these locations are discussed in Section 6 of this report.

9. Reduced Winter Maintenance

Type 4 and 5 road classifications are designated sections of low volume roads that receive low or no salt applications. This designation results from requests from local governing bodies and involves a review of nearby environmental, traffic and geographic conditions. Appropriate signs notify the residents and motorists of the reduced salt usage. A description of these areas and the reason for establishing the low salt zone is found in Table 5. Further information on reduced winter maintenance and the procedure to establish low salt zones can be found in the NHDOT Snow and Ice Policy in Appendix A.

District	Water Body	Town	Description	Action	Shed	Lane Miles
2	Kolelemook Lake	Springfield	4 Corners Rd: between NH 114 and Bowman Rd	Salt Reduced	214	1.5
2	Kolelemook Lake	Springfield	NH 114: Between Bowman Rd and 4 Corners Rd	Salt Reduced	214	2.4
2	Little Lake Sunapee	New London	NH 114: Between Old County Rd N. and Little Sunapee Rd	Salt Reduced	214	3.5
2	Little Lake Sunapee	New London	Little Lake Sunapee Rd: Between NH 114 Otterville Rd	No Salt	214	2.7
2	Herrick Cove	New London	NH 103A: Between NH 11 and Columbus Ave	Salt Reduced	216	1.9
4	Municipal Water Supply	Wilton	NH 31: Half a mile south of NH 101 & cont. south for 0.75 miles	Salt Reduced	415	1.5
5	Local Ground Water Concern	New Boston	Chestnut Hill Rd	Salt Reduced	511	0.4
5	Cobbetts Pond	Windham	Cobbetts Pond Rd	Salt Reduced	514	3

Table 5: NHDOT Salt Sensitive Areas (2019)

10. Record Keeping

The purchase, delivery, storage and usage of salt is very important to NHDOT. Extensive records are kept for each of the 93 patrol sections (Highway Maintenance and Turnpikes) that include accurate salt inventory records. Every week the patrol sections enter weekly salt usage; accumulated usage for the season; tons of salt received and tons of salt remaining into the Department's Maintenance Activity Tracking System (MATS) . Usage is reported in tons as well as calculated into tons per lane mile. Also recorded is the amount of sand and calcium chloride used per week and for the season. The figures from each patrol section are compiled and sent as an accumulative report to their respective Bureau (refer Appendix H for a District Salt Report example). Information is assembled by using all of the records and produces a statewide report showing salt figures according to each district. Other record keeping activities include:

- Dispatch logs kept by each district/Turnpike office as is the weather forecast and weather road condition reports made by field crews.
- The NHDOT's Human Resource Bureau maintains all Department training records.
- Patrol foreman keep a personnel diary where they record important operational data.

- Use of NHDOT’s Maintenance Activity Tracking System (MATS) a computer-based program used to record employee time, material and equipment usage. Equipment usage hours and/or miles driven are also recorded by the system. Current plans include continuing to utilize MATS as the single salt reporting mechanism.

11. Future Salt Management Plan Goals for Improving Efficiency of Salting Operations

The goals for this SMP are divided into two sections: short term and long term. The underlying difference is one of economics; short term work items are low cost initiatives that can be implemented upon acceptance and concurrence of senior management while the long term work has funding needs that are not currently programmed within the NHDOT’s budget.

11.1 Short Term Goals:

- A. **Benchmarking of Roads for Salt Usage:** Each Patrol Foreman will be trained to determine the amount of salt necessary for each truck to treat their section of roadway based on application rate. The Salt Tonnage and Lane Mile Chart in Appendix D can be used to determine the required tonnage given the number of lane miles. This will give each driver a benchmark quantity by which they may determine if they are applying too much or too little salt on their route.
- B. **Storm Log:** The NHDOT utilizes a standardized Winter Maintenance Storm Log, such as the one shown in Appendix C that will be filled out by each operator at the conclusion of a winter storm event. In addition to providing information on the quantity of materials used, this document assists in the defense of tort claims or other more serious allegations that may be resolved through the court system.
- C. **Salt Reconciliation:** Each salt storage facility is inventoried monthly, from November to March, to reconcile the amount of salt actually used and on hand.
- D. **Review Level of Service:** The Snow and Ice Policy level of service section shall be reviewed to confirm that all roads are designated properly by taking into account customer and environmental expectations. Prepare patrol section maps that display the level of service for each roadway maintained.
- E. **Establish a Public Outreach Campaign:** NHDOT’s Public Information Office will establish an ongoing public awareness program designed to present the environmental concerns surrounding winter maintenance and to alert the driving public about the hazards of winter weather. Promotional information such as the “DON’T CROWD

the PLOW” and Frequently Asked Winter Maintenance Questions are distributed at various meetings and information centers to raise awareness as to what duties the NHDOT performs and any policies related to these operations. NHDOT will also post winter weather messages on our message boards to provide the public information pertaining to incoming winter weather.

- F. The NHDOT has outfitted trucks with a flexible segmented rubber cutting edge for the plows. These blades scrape cleaner, wear longer and are quieter than the existing carbide blades. All new plows should have these blades and efforts should be made to upgrade the existing equipment.

11.2 Long Term Goals:

A. Equipment Up-Grades to the Plow Fleet:

- 1) Since hired trucks compose over 55% of the plow fleet any reductions in salt usage must involve that equipment. The inventory of hired equipment indicates only a small number of the hired trucks are equipped with ground speed oriented spreader controls. As these controls are probably the largest single saver of salt available it is imperative that the NHDOT create an incentive to equip private trucks with ground speed controls. It is critical that trucks operating in environmentally sensitive areas be equipped as soon as possible.
- 2) Pre-wetting equipment needs to be provided on hired and State owned trucks. Implementation should be prioritized and should start in the impacted water and environmentally sensitive areas.
- 3) The effectiveness of salt is very temperature dependent. Figure 6 graphs the relationship between temperature and the quantity of ice that 1 pound of salt can melt. Large quantities of salt may be unnecessarily used if a higher application rate is applied for a low temperature when the pavement is actually warmer. Truck operators must adjust their application rates based upon pavement temperatures to ensure that the minimal amount of salt is used. Plow units should be equipped with infrared thermometers which determine and display the pavement temperature continuously in the truck cab. Charts are available to suggest appropriate application rates based upon the pavement temperature and the type of weather being experienced (refer Appendix B).

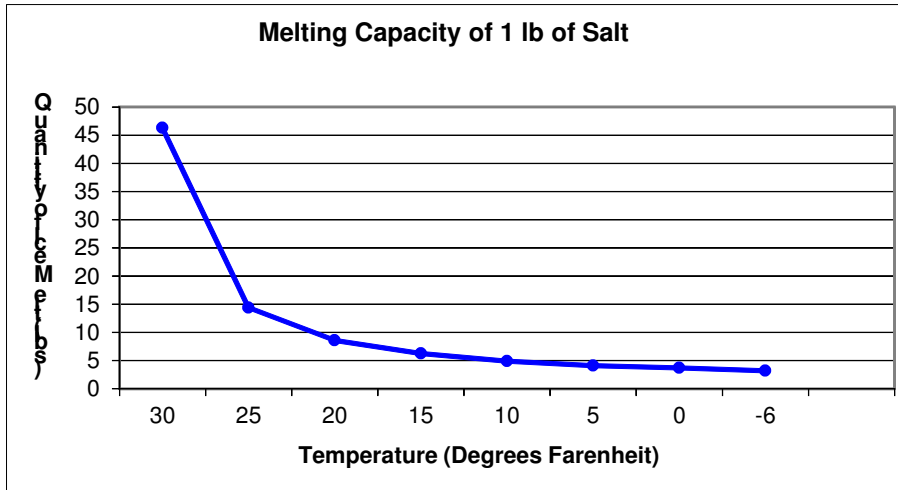


Figure 6: Melting Capacity of Salt (Salt Institute, 2007)

- 4) NH plow trucks have traditionally used a front plow and a wing for removing snow from roadways. With this equipment a residue always remains and is removed by a final application of salt. Under body plows remove more of this residue and thereby reduce the amount of salt needed to bare the roads following cessation of a storm, but cannot be used on non-Interstate roadways.
 - 5) Newer technology in spreader controls allows information regarding the material application rate, time of application and the geographical location where the material was spread to be sent to AVL's to be reviewed by supervisory staff. This information will be valuable in determining how effective the application of deicing chemical is and to confirm usage reports.
 - 6) Spreader manufacturers produce equipment that can dispense both liquids and solid deicers with ground speed controllers for both materials. As the NHDOT utilizes more liquid treatments these spreaders will be essential in making an efficient operation.
- B. Expand the NHDOT Salt Brine – Blend Program:** Presently the NHDOT has two brine – blend making facilities, one located in Derry and the other in Hampton. As pre-treating roads and pre-wetting salt helps reduce our chloride usage, consideration of purchasing another brine maker centrally located in the state should be considered. As a municipal water source is required, the numbers of candidate sheds are few; however there are many type 1 roads that would be excellent candidates to receive the

anti-icing brine - blend treatments. Another advantage would be that the brine could take the place of the more expensive liquid calcium/magnesium chloride that is used to pre-wet the granular salt in areas where typical temperatures allow. Other surrounding patrol sheds could purchase plastic tanks to store the salt brine for use in pre-wetting operations. Refilling of these remote tanks would take place during non-storm days.

- C. **Continue Construction of High Arch Gambrel Salt Sheds:** The construction of new salt sheds should continue with the goal of having each patrol section having the capability of storing the anticipated total season amount of salt in their shed. It is in the NHDOT's best interest not to have to contend with the scheduling problems associated with accepting winter time deliveries such as wet loads, limited product availability, trucking during inclement weather and spillage problems. In addition to expanding the undercover capacity of the individual patrol sections, it would be beneficial if each district could have one large auxiliary shed located in the central part of each district where emergency reserves could be stockpiled for those times when salt is in short supply and regional demand outstrips the production capabilities of the salt suppliers.
- D. **Expand the RWIS Program:** There are currently 24 Road Weather Information Systems (RWIS) located in NH with additional stations currently under construction. These stations provide real time meteorological and pavement information through the use of many instruments. A tailored weather forecast can be produced based in part on this data and is a valuable planning tool for maintenance crews. I-93 has a reasonable amount of coverage however I-89 and many other areas have little or no available information. Expansion of the system would be beneficial to maintenance and turnpike crews. This information, particularly the grip factor, chemical content currently on the roadway and freeze point of the road are particularly important in determining if or when additional salt runs are required.
- E. **Improve Salt Loading Facilities:** Construct adequately sized and safe loading ramps that allow machinery to approach trucks on a level platform. Many existing ramps are undersized and make it difficult to load larger trucks often resulting in spillage of material. Loading areas should be paved to facilitate clean-up of any spilled materials.
- F. **Salt Report Per Truck:** The NHDOT currently has a comprehensive salt tracking procedure at the individual patrol section and district level. The accuracy of the tracking procedure could be refined by instituting a reporting procedure at the truck level as opposed to the patrol shed level. When resources, equipment, and staff become available with asset management responsibilities. A reporting form could be

developed that would track material usage by each truck on each patrol route for each winter event. The asset manager, in collaboration with the winter maintenance specialist, could then make comparisons between the calculated amount of salt needed in pounds per lane mile and the actual amount used in each storm for each truck.

G. **Quality Control Audits:** Select persons (yet to be defined by NHDOT leadership) will conduct random audits of NHDOT processes, equipment, material and personnel to ensure the reliability and validity of the SMP as resources allow. Audits shall include inspection and evaluation of the following items:

- Documentation and record keeping (storm log, truck report, salt report)
- Equipment (condition, calibration)
- Personnel (competence of operators, qualifications, training, work motivation etc)
- Hired equipment/personnel (conditions and qualifications etc)
- Patrol shed performance (good housekeeping, accident count, safety measures, vehicle washing, snow dumping etc)
- Purchasing and material (quantity and quality)

H. **Reporting:** All monitoring and quality control audits shall be detailed in a SMP Annual Report to be forwarded to the Director of Operations for his/her review; distribution to others; and corrective action, should any be required as resources allow.

I. **Statewide Winter Severity Index:** Track and log weather data by using a location from the National Weather System station located in each District and enters that data into a Weather Severity Index (WSI) program that calculates a monthly and seasonal WSI number.

12. Salt Best Management Practices (SBMP)

SBMP – 1 Procurement, Storage and Handling of Road Salt

STATEMENT OF PRACTICE:

The purpose of this practice is to prevent the intrusion of salt into the environment as a result of the leaching, runoff or erosion of NHDOT owned stockpiles of winter road salt. (BHM-EMS-WI-006, EMS001)

SBMP – 2 Winter Maintenance Operations

STATEMENT OF PRACTICE:

The goal of NHDOT's snow and ice control operations is to provide a specified level of service during winter storm events and restore bare pavement as soon as practical following a winter storm event, depending on the class of roadway. Operations should achieve these goals while attempting to use a minimum amount of deicing chemicals. There are many techniques that can be used to minimize salt use however the responsibility of determining the specific methods of fighting winter storms rests with the patrol foreman. It is his/her judgment, knowledge and experience of the local road system that will provide the best results. Training in various salt saving techniques is critical for success but, it is impossible to dictate any hard and fast rules as each storm presents its own unique circumstances.

RECOMMENDED PROCEDURES:

1. Crews should adhere to the principle of anti-icing when conditions permit. This technique shall involve the early light application of a chemical to prevent a bond from occurring between the precipitation and the road way surface as it takes one-third the chemical to prevent this bond than it does to fight the compaction from the top down.
2. Mechanically remove as much snow as possible, as it is less costly and introduces less salt into the environment. The use of underbody plows, where the road shape permits, is one means of scraping the road cleaner. Plows should be configured to contact the road's surface at an optimal angle to achieve the best results. Flexible plow blades are also an effective means of removing most snow via mechanical means.
3. Use of ground oriented spreaders is highly recommended.
4. Do not exceed the capacity of the spreaders with salt. Generally speaking, keep the maximum height of loaded material level with the spreader's tailboard.

5. When reapplying salt, plow prior to the application to reduce the potential dilution of the salt being dispensed. Co-ordinate plowing so that any salt applied has a chance to work and it is not plowed to the side of the road.
6. Keep the truck's speed at desired levels when applying chemicals to prevent bounce and scatter of material. When conditions are appropriate and the truck is properly equipped, pre-wet the dry salt at the spinner with 8-10 gallons of salt brine or liquid calcium chloride.
7. Apply salt in a windrow off a chute near the centerline of two-way roads and across the entire lane on divided highways as needed.
8. Alter application rates depending upon the pavement temperature, forecast trends and road conditions. Refer to Appendix B for recommended application rates according to temperature and type of storm.
9. Calibrate all spreading equipment and keep a chart of application rates in the vehicle (refer Appendix D). Know the length of the roadway section you are maintaining. Keep accurate records of the amount of material applied for each truck and each storm event.
10. Conduct post storm reviews to discuss how effective applications were and what might be done differently in similar events (refer Appendix C).
11. Consult RWIS data for the chemical content of the specified road and reapply chemical only when conditions warrant it. For roadways not covered by RWIS data make intermediate salt runs only when compaction is occurring or as instructed by a supervisor.

SBMP – 3 Patrol Shed Housekeeping and Snow Disposal

STATEMENT OF PRACTICE:

At state owned patrol facilities, materials used in winter operations should not be allowed to remain on the ground, pavement or equipment where it might enter the adjacent environment (BHM-EMS-WI-006, EMS001). Equipment should be cleaned in accordance to the NHDOT Vehicle Washing work instruction (BHM-EMS-WI-007, TURN-EMS-WI-004), a copy of which can be found in Appendix G. All work carried out shall conform to the NHDES Snow Disposal Guideline included in Appendix F.

SBMP – 4 Winter Operations in Salt Sensitive Areas:

STATEMENT OF PRACTICE:

Crews performing winter maintenance operations in identified salt sensitive areas need to be especially vigilant in the application of salt and need to evaluate the use of alternative treatments and procedures.

RECOMMENDED PROCEDURES:

1. Whenever possible snow banks should not be plowed directly into standing or running water. Operators shall reduce their speed to prevent the throwing of snow great distances from the roadway surface, thereby minimizing the amount of snow deposited directly into any water body. It will be necessary to push the snow core back to make room for additional snow and to prevent snowmelt from running onto the roadway surface, but pushed not so far as to land in streams or lakes.
2. Evaluate the entire road surface whenever repeat salt runs are made and if conditions permit, perform spot salting instead of applying salt on the entire roadway section.
3. Remove as much snow as possible by mechanical means (plowing) before applying salt. Use graders or trucks with underbody plows to scrape the road clean so that lighter applications of salt can be used to bare the roadway surface.
4. Mark the sides of the roadway where streams, rivers or other water bodies are crossed to instruct the truck operator to modify the plow angle if possible when approaching these areas to carry as much of the snow core as possible beyond the crossing before discharging it to the side of the road. The intent is to keep the direct discharge of salt laden snow from draining directly into watercourses.
5. During the construction (non-winter maintenance) season evaluate the feasibility of constructing grass lined ditches, settling basins or the redirection of surface water runoff away from live streams or water bodies.
6. Consider other design or roadway improvements that would reduce the need for salt applications. Removal of trees (especially conifers) that shade the roadway can often times allow the sun to bare the road or at least raise the roadway surface temperature thereby permitting reduced salt application rates to be used. Tree removal on a north-south road shall be concentration on the east side to permit maximum sun exposure during the morning. An east-west directing road shall have trees removed on the south side to improve northern exposure. Another roadway improvement is the use of a snow fence to reduce drifting or the accumulation of blown snow on the road. Roadways

should be improved during non-winter maintenance seasons to provide smoother road surfaces. Roads that are smoother require less salt, as plows are able to remove more of the surface snow. Paving, drainage improvements and base reconstruction are all items that create smoother roads and lessen the expense of winter maintenance and ultimately the quantity of salt used.

7. In chloride impacted areas non-chloride based deicers such as potassium acetate or calcium magnesium acetate can be considered as alternatives to salt treatments.

SBMP – 5 Salt Accounting

STATEMENT OF PRACTICE:

This practice is to ensure that NHDOT salt use is accounted for in the at each storage locations. Salt quantities at storage locations are recorded on a regular basis and compared to salt usage reports and deliver amounts. The purchase, delivery, storage and usage of salt is very important to NHDOT

RECOMMENDED PROCEDURES:

1. Keep records for each of the 93 patrol sections (Highway Maintenance and Turnpikes)
2. Inventory records shall include how much salt was delivered; how much salt was used each week and what is remaining in storage.
3. Every week the patrol sections report to their district/bureau on their salt usage.
4. The reports show weekly usage; accumulated usage for the season; tons of salt received and tons of salt remaining.
5. Usage is reported in tons as well as calculated in tons per lane mile.
6. Reports shall also include the recorded amount of sand, calcium chloride and magnesium chloride used per week and for the season.
7. The Districts and Turnpikes compile the figures from each section and enters them into the Departments Maintenance Activity Tracking System (MATS). An accumulative report then can be generated that shows all of the details of materials usage and remaining on hand quantity. (refer Appendix H for a District Salt Report example). Highway Maintenance assembles all the records and produces a statewide report showing salt figures according to each district/bureau.

8. Dispatch logs are kept by each District/Turnpike office as is the weather forecast and weather road condition reports made by field crews.
9. The NHDOT's Human Resource Bureau maintains pertinent training records.
10. Patrol foreman are encouraged to keep a personnel diary where they should record what they deem to be important.
11. The NHDOT's Maintenance Activity Tracking System (MATS) is a computer-based program used to record employee time, material and equipment usage. Truck time or miles driven are also reported by the system..

SBMP – 6 Pre-Wetting

STATEMENT OF PRACTICE:

As part of various DES Implementation Plans the Department has been working towards increasing the number of plow trucks which have the capability to apply salt to also have the capability to pre-wet that material at the spinner with a salt brine/MgCL liquid(blend). Any approach to full compliance will take a number of years due to limited state funding and the hired equipment owners being reluctant to invest in the needed equipment, even with an increased operating rate.

RECOMMENDED PROCEDURES:

1. Department has worked with the Legislature to purchase the needed additional state trucks and increase the workforce to operate those trucks to a level such that virtually all spreading on I-93 from Salem to Manchester is now done with state trucks equipped with a pre-wet system on the truck. New state trucks being placed into the fleet are all now equipped with a liquid pre-wet system..
2. There are still impaired watersheds that are treated with hired trucks and non-pre-wet state trucks, due to the operational need.
3. The Department has made the brine blend available to some local municipalities that also maintain roadways within chloride impaired watersheds.

SBMP – 7 Anti-Icing Pretreatment

STATEMENT OF PRACTICE:

The Department performs anti-icing in the form of pre-treating the roadways in the I-93 corridor, all Turnpikes roads, and various locations throughout the state with a salt brine/MgCl application in advance of a storm, if conditions are conducive to this treatment.

RECOMMENDED PROCEDURES:

1. The application of anti-icing chemicals onto the roadway prior to the start of a storm prevents snow from bonding to the pavement during the start of a snow storm.

SBMP – 8 Underbelly Plows

STATEMENT OF PRACTICE:

The Department uses underbody plows mounted on trucks where it is beneficial. These units are especially beneficial for periods of ice buildup on the roadway where these units can better scrape the roadway and remove the ice accumulation rather than removing it primarily with the application of chlorides.

RECOMMENDED PROCEDURES:

1. These units are only suited for the Interstate- type application due to the extreme down pressure generated and the harm that this would inflict on manholes and water shutoffs found along much of the secondary system in this corridor.

SBMP – 9 Ground Speed Controls

STATEMENT OF PRACTICE:

The purpose of this technology is to assure that a uniform quantity of material is spread on the roadway regardless of the truck's operating speed.

RECOMMENDED PROCEDURES:

1. All state trucks are outfitted with a ground speed orientated controller with variable settings to allow the operator to adjust to the proper application rate depending on temperature and weather conditions.

SBMP – 10 Pavement Temperature Sensors

STATEMENT OF PRACTICE:

The purpose of this practice is to allow the foreman to determine the proper application rate for salt depending on the pavement temperature to assure that neither over nor under application is utilized.

RECOMMENDED PROCEDURES:

1. Currently only the patrol foreman's and maintenance supervisor's pickups have mobile pavement temperature sensors installed.
2. In addition to the foreman's and maintenance supervisor's pickups being equipped, each of the Road Weather Information Systems (RWIS) provides this data to the patrol sections.

SBMP – 11 Equipment Calibration

STATEMENT OF PRACTICE:

The purpose of this practice is to prevent inadvertent over application of anti-icing materials. The proper calibration of salt spreaders is crucial to the effective use of and application of salt. Calibration provides the operator with the quantity of material that will be applied at each control setting or belt speed. The NHDOT fleet consists of equipment with reliable spreader rates that are capable of applying a predetermined amount of material at a set rate.

RECOMMENDED PROCEDURES:

1. Calibration of mechanical spreaders, which only exist on some hired trucks, is done by selecting a gate opening and then determining the amount of material dispensed at the different spreader belt speeds.
2. A simple conversion factor is used to calculate spread rates at different truck speeds.
3. Hydraulic spreaders with electronic ground speed controllers are slightly more difficult to calibrate and require the assistance of Mechanical Services or vendors who supply the spreaders. In either case, operators must know how much material is being spread and have confidence that it is relatively accurate.
4. Spreaders should be calibrated for each type of material spread, as there is a wide variation in the unit weight of differing materials. Current practice requires that State owned and hired spreaders be calibrated before commencement of service. Spreaders are recalibrated when operators feel that there is a discrepancy between the set application rate and the actual output.

5. All of the trucks in the NHDOT fleet that apply chlorides have been calibrated and are re-calibrated if either there is a change in the system (new spreader/change in controller/mechanical issues) or if there are any issues noted in the operation of the spreading system during operation (i.e. use of more or less material than anticipated during operations).

SBMP – 12 Training

STATEMENT OF PRACTICE:

NHDOT employees and contractors are thoroughly trained on a 3 year cycle, and all new employees prior to the start of the winter season, in winter maintenance operations including information presented in this plan. Presently all employees receive an eight hour class room type training that covers most phases of snow and ice control procedures. The purpose of this training is to ensure that the winter maintainers throughout the state are aware of the BMP's that are available to them to help protect the environment.

RECOMMENDED PROCEDURES:

1. All NHDOT maintenance employees and many hired equipment operators are trained with any new employees trained prior to the winter season. Training consists of the basics of plow operation as well as the various equipment that is used, techniques used during operation, practices for varying weather conditions and general adherence to the Department Snow and Ice Policy as well as any specific environmental agreements that may be in place along the corridor.
2. NHDOT has purchased an interactive computer based training course that was developed for the American Association of State Highway and Transportation Officials (AASHTO). This is an extensive course on anti-icing and road weather information systems that utilizes illustrations, video clips, tutorials, storm scenarios and chapter quizzes. The course can be done individually or as a small group and could serve as a means of certifying snow plow operators.
3. Employees also have opportunities to attend daylong courses presented by the University of NH Technology Transfer Center. These training sessions are usually one day in length and cover a wide range of subjects. While there is a registration fee to attend, many employees have been approved to attend courses with the NHDOT paying the fees.

Periodic training in new equipment or materials is offered as it is purchased or put into use. These sessions are for the most part conducted by vendors who have provided the product to NHDOT.

SBMP – 13 Improved Storage and Handling

STATEMENT OF PRACTICE:

The purpose of this practice is to prevent the intrusion of salt into the environment as a result of the leaching, runoff or erosion of NHDOT owned stockpiles of winter road salt. (BHM-EMS-WI-006, EMS001)

SBMP – 14 Snow and Ice Forecasting

STATEMENT OF PRACTICE:

The purpose of Snow and Ice forecasting is to enable the winter operations maintainers the ability to try and predict the weather conditions and then adequately plan for storms whereby allowing them to choose the appropriate BMP's that in turn will allow them to minimize effects to the environment when deciding if, when, and how much salt or brine they should be applying.

RECOMMENDED PROCEDURES:

1. NHDOT contracts with a private weather service which uses the information from the network of RWIS stations in NH and throughout the region as well as other data sources such as the National Weather System stations. This service is called the Transportation Weather Support Service (TWSS).
2. Patrol sections make use of the commercially available forecast services such as Weather Channel, Accuweather, Weather Underground, etc to provide a full picture of the current and forecasted weather in their specific patrol area.

SBMP – 15 Enhanced Plow Blade Technology

STATEMENT OF PRACTICE:

The Department has adopted the use of the flexible plow blade systems for improved performance and efficiency of snow removal. This technology allows the carbide blade to be constructed in multiple segments and each segment capable of flexing depending on the cross sectional surface of the roadway. This ability to conform more to the actual surface of the road versus plowing on a linear basis allows the plows to mechanically remove more of the snow and ice on the roadway and therefore reduce the use of chlorides to remove what the plows could not before this new blade flexibility.

RECOMMENDED PROCEDURES:

1. Use of chlorides along with the enhanced plow blade technology is still necessary to proactively prevent the adherence of snow and ice to the pavement surface, it is needed far less at the culmination of a storm to regain bare pavement.
2. Some plow routes may not be ideal for these units for a variety of reasons although these blades are used almost entirely on all trucks operating on the Interstate roadway and a vast majority of the secondary sections.

SBMP – 16 Automatic Vehicle Location (AVL)

STATEMENT OF PRACTICE:

Automatic Vehicle Location is a means for determining the geographic location of a vehicle and other information such as spreader operation, plow up/down and vehicle speed. This information is then transmitted to a location where that data can be stored and reviewed. Automatic vehicle location is a powerful tool for managing fleets of vehicles. NHDOT is using this technology to enhance our winter maintenance capabilities and better manage our application of salt on the state's roadways in an effort to minimize impacts to the environment.

RECOMMENDED PROCEDURES:

1. All state owned plow trucks that operate within the Interstate corridors should be outfitted with AVL units.
2. Geo-fences are to be created around chloride impaired areas, which allow NHDOT the ability to monitor the chloride output of AVL equipped plow trucks.

SBMP – 17 Dynamic Message Signs

STATEMENT OF PRACTICE:

Dynamic Message Signs (DMS) are used to inform the public about storm related issues as well as provide a reduced speed advisory during storm events. This allows the NHDOT to adhere to the Snow and Ice Policy, which does not mandate a bare roads condition, with less concern that the travelling public will be operating at speeds that are not recommended based on the roadway conditions at the time.

RECOMMENDED PROCEDURES:

1. NHDOT will determine when and where to deploy DMS in advance of the winter season.

2. NHDOT will determine when to update Permanent Dynamic Message Signs with winter messages from updates from the Winter Maintenance Program Specialist and Maintenance Supervisors.

SBMP – 18 Winter Severity

STATEMENT OF PRACTICE:

The purpose of tracking and reporting winter severity is to allow the NHDOT to more accurately review past winter activities to assure that proper salt management decisions were made and to gauge the success of BMP implementations..

RECOMMENDED PROCEDURES:

1. The Department tracks and logs weather data from the Concord NH National Weather System station located at the Concord Airport and enters that data into a Weather Severity Index (WSI) program that calculates a monthly and seasonal WSI number.
2. This calculated number utilizes the daily high/low temperatures and snowfall and can then be used to compare chloride usage to the WSI. This is critical since every winter season can vary from that previously but this formula can normalize the variations by numerically depicting how more or less a winter has been as compared to other winter seasons.

SBMP – 19 Reduced Winter Maintenance

STATEMENT OF PRACTICE:

Type 4 and 5 road classifications are designated sections of low volume roads that receive low or no salt applications. This designation results from requests from local governing bodies and involves a review of nearby environmental, traffic and geographic conditions.

RECOMMENDED PROCEDURES:

1. Appropriate signs notify the residents and motorists of the reduced salt usage.
2. Further information on reduced winter maintenance and the procedure to establish low salt zones can be found in the NHDOT Snow and Ice Policy.

SBMP – 20 Selective Tree Clearing

STATEMENT OF PRACTICE:

Removal of trees (especially conifers) that shade the roadway can often allow the sun to bare the road or at least raise the roadway surface temperature thereby permitting reduced salt application rates to be used.

RECOMMENDED PROCEDURES:

1. Tree removal on a north-south road shall be concentration on the east side to permit maximum sun exposure during the morning.
2. An east-west road shall have trees removed on the south side to improve sun exposure.

SBMP – 21 Snow Fence

STATEMENT OF PRACTICE:

Use of snow fences in areas in which snow drifting occurs.

RECOMMENDED PROCEDURES:

1. Snow fences will be placed in areas where snow tends to drift across the roadway on a regular basis. These fences prevent snow from collecting on the road surfaces in these areas during non-storm periods thus requiring the NHDOT to use less salt in these locations.

13. Considerations to Implementation of the Salt Management Plan

Implementation of this salt management plan on roadways is determined by the information below:

- A. Safety of the travelling public
- B. The tier of the roadway.
- C. Environmental impact.
- D. Number of miles needed to be effected.

Limitations to implementation of this plan are caused by the following:

- A. NHDOT winter maintenance staffing.
- B. NHDOT winter maintenance fleet.
- C. Required number of hired equipment rentals.
- D. Lack of hired equipment not having proper ground speed controllers or pre-wet systems
- E. Funding.

14. Monitoring & Review of Salt Management Plan

The SMP will be monitored and reviewed to ensure that the NHDOT is meeting the objectives and goals stated in the plan. The Winter Maintenance Program Specialist will conduct an annual review of the SMP including the monitoring of processes and audits of quality control measures to ensure that NHDOT is meeting the goals specified in the SMP.

14.1 Monitoring of Plan

A designated person will monitor processes in the plan to ensure that the NHDOT is in compliance with the SMP and working towards the objectives and goals stipulated in the plan. The following items need to be updated as required:

- NHDES Chloride Impaired Water Bodies
- NHDOT Reduced Winter Maintenance
- NHDOT State Owned and Hired Equipment List
- NHDOT Employee List

Other items that need to be monitored include salt use and winter severity, environmental effects, level of service maps, winter accident rates and customer feedback.

Salt Use:	An analysis of the total tons of salt used will be performed.
Winter Severity:	Winter severity index will be calculated to normalize varying winter seasons to ensure that applied salt quantities are comparable.
Environmental Effects:	NHDOT should work with NHDES to monitor the environmental effects of continued salt use on vegetation, wildlife and aquatic resources. Benchmarks for these affected items need to be developed to enable comparisons to be made from year to year.
Level of Service Maps:	NHDOT can work in conjunction with the Bureau of Planning to regularly revise level of service maps. These changes will be made only after concurrence with the Commissioner's Office.
Accidents:	NHDOT should attempt to monitor accident rates during winter and make comparisons with previous years to closely watch for any changes that may result due to implementation of the SMP. Better accident reporting systems should be considered if the required information is incomplete or not available to NHDOT.
Customer Feedback:	NHDOT should seek information regarding customer satisfaction to assess if any changes made have decreased/increased the number of service complaints. Any inadequacies identified with the SMP shall be corrected and once approved, revised to indicate the change.

14.2 Revisions

Based on the monitoring and auditing conducted, the SMP shall be revised to ensure that the plan is accurate according to the NHDOT's current practices, objectives and goals. Information in the SMP including equipment, personnel, salt usage, winter severity and related documentation must remain up to date. The reason(s) for the revision should be stated, signed and dated with approval. The updated SMP shall be redistributed to all parties and if necessary training given to field crews on any applicable changes.

Documents contained in the appendices and referenced in the SMP must also be reviewed and updated accordingly. These include:

Document	Department/Division	Revision Date
Snow and Ice Policy	Division of Operations	10-15-2001
Salt Sampling Procedure	Division of Operations	10-09-2017
Vehicle Washing Work Instruction (BHM-EMS-WI-007, TURN-EMS-WI-004)	Division of Operations	11-16-2012 / 12-12-2014
Snow Disposal Guidelines	Department of Environmental Services	2007
Salt & Anti-icing Chemicals, Storage & Handling (BHM-EMS-WI-006, EMS001)	Division of Operations	03-05-2012 / 04-28-2011
Reduced Winter Maintenance Areas	Division of Operations	2019

15 References

American Association of State Highway and Transportation Officials (AASHTO), 2004. *Environmental Stewardship Practices, Procedures and Policies for Highway Construction and Maintenance*

Federal Highway Administration (FHWA), 2008, Highway Statistics - *Table (HM-81): State Highway Agency Owned Public Roads Rural and Urban Miles*, U.S. Department of Transportation.

Federal Highway Administration (FHWA), 2002, *Main Routes of the Dwight D. Eisenhower National System of Interstate and Defense Highways*, U.S. Department of Transportation. Available at: <http://www.fhwa.dot.gov/reports/routefinder/table1.htm> [Accessed 17 February 2010]

Federal Highway Administration (FHWA), 2009 *Lane-Miles by Functional System*, U.S. Department of Transportation. Available at <http://www.fhwa.dot.gov/policyinformation/statistics/hm60.cfm> [Accessed 23 February 2010]

New Hampshire Department of Environmental Services (NHDES), 2008a. *New Hampshire Water Resource Primer*. Available at http://des.nh.gov/organization/divisions/water/dwgb/wrpp/documents/water_resources_primer.pdf

New Hampshire Department of Environmental Services (NHDES), 2008b, *NHDES guide to Groundwater Protection*. Available at <http://des.nh.gov/organization/commissioner/pip/publications/wd/ documents /wd-07-29.pdf>

New Hampshire Department of Transportation (NHDOT), 2008, *2008 NHDOT 303(d) List*, Department of Environmental Services, Concord, NH.

New Hampshire Department of Transportation (NHDOT), 2009a, *Implementation Plan to Increase the Efficiency and Effectiveness of Road Salt Use to Meet Total Maximum Daily Load for Chloride*, Concord, NH.

New Hampshire Department of Transportation (NHDOT), 2009b, *Winter Severity Index Tables 1993 into Future- Statewide (spreadsheet)*, Concord, NH.

New Hampshire Department of Transportation (NHDOT), 2009c, *Statewide Salt Report FY 2010 Salt & Sand (Nov. 2009- April 2010)*, Concord, NH.

New Hampshire Department of Transportation (NHDOT), 2009d, *Implementation Plan to Increase the Efficiency and Effectiveness of Road Salt Use to Meet Total Maximum Daily Load for Chloride*, Concord, NH.

New Hampshire Office of Energy and Planning (NHOEP), 2008, *2008 Population Estimates* [online]. Available at:

<http://www.nh.gov/oep/programs/DataCenter/Population/PopulationEstimates.htm>

[Accessed 17 February 2009)

New Hampshire Historical Society (NHHS), *New Hampshire Population, 1767-2002*, Concord, NH. Available at: <http://www.nhhistory.org/edu/support/nhlearnmoreindex.htm>

[Accessed 17 February 2010].

New York State Department of Transportation (NYSDOT), 2006, *Highway Maintenance Guidelines – Snow and Ice Control*, Office of Operations Management.

New York State Department of Transportation (NYSDOT), 2007, *Equipment Operator Snow & Ice Manual*, Highway Maintenance Division.

The Salt Institute, 2007, *The Snowfighter's Handbook – A Practical Guide for Snow and Ice Control*, Alexandria, Virginia. Available at <http://www.saltinstitute.org/Education-Center/Snowfighters-training/Snowfighting-training>

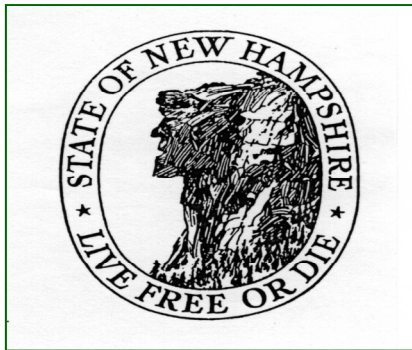
US Environmental Protection Agency (US EPA), 2002, *The Clean Water Act (CWA)*, US Federal Government. Available at: <http://www.epa.gov/lawsregs/laws/cwa.html>

16 Appendices

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION



Winter Maintenance Snow Removal And Ice Control Policy.



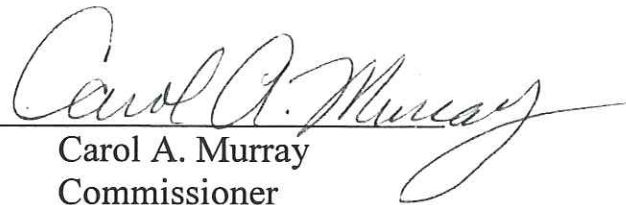
Carol A. Murray
Commissioner

October 15, 2001
Revised, adopted (date)

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE COMMISSIONER

I, Carol A. Murray, Commissioner of the New Hampshire Department of Transportation adopt this document entitled "Winter Maintenance Snow Removal and Ice Control Policy" as the policy and priorities of the Department in the Winter Maintenance of the State's Highways.

DATED: October 16, 2001


Carol A. Murray
Commissioner

State of New Hampshire Department of Transportation

SNOW REMOVAL & ICE CONTROL POLICY

GENERAL POLICY:

Winter weather in northern New England is difficult to predict. There are many variables affecting winter maintenance operations such as type of precipitation, air and pavement temperature, traffic, wind, time of day and day of week. Winter maintenance is considered an art, not a science.

The New Hampshire Department of Transportation's (NHDOT) snow removal and ice control policy has been based for many years on the goal of obtaining bare and dry pavements at the earliest practical time following cessation of a storm. It is virtually impossible to provide bare pavement during a winter storm and the NHDOT does not attempt to do so. Judgment based on experience is essential in conducting and timing remedial work to overcome ice and snow hazards. As each storm situation varies, it is important to emphasize that this policy be used as a guideline to assist foremen in making well informed, judgment decisions in the exercise of their snow removal and ice control responsibilities. The Commissioner recognizes that a rigid application of this policy is impossible given the varying conditions that exist in each storm across the 4,000+ miles of State highways. No policy could be prepared that could dictate set procedures under all the variants. Any attempt to dictate the timing of various winter maintenance operations from other than the specific location could create disastrous results. At many locations in the state the same problem does not exist within a single patrol section let alone an entire district or state.

Traffic volume and posted speed are the primary factors in determining the level of winter maintenance service with the highway grade also being an important factor. The Interstate System, Turnpike System and other heavily traveled highways are maintained in such a manner that bare pavement is produced as soon as practical after termination of a storm. On State highways with low traffic volumes, the NHDOT attempts to provide some bare pavement, but not necessarily from shoulder to shoulder, within a day or two after a storm ends.

It is impractical to develop specific rules on winter maintenance operations due to the numerous variables involved in winter storms. The judgment of the local highway patrol foreman governs the type, quantities and application schedule of materials used to control snow and ice. It is the intent of the NHDOT to use the minimum deicing or anti-icing material needed to restore safe travel conditions as soon as practical following termination of winter storms. Salting and sanding units are usually equipped with calibrated mechanical spreaders that accurately control the application rates of materials. Employees are instructed in the proper dispensing of the necessary quantity at the appropriate time.

The winter maintained State highway system is comprised of four roadway types defined as follows and as shown on the attached map:

Type 1 A - Highways on the Interstate and Turnpike Systems and those highways carrying 15,000 vehicles or more daily (green) should have full width bare pavement as soon as practical after a winter storm terminates.

Type 1 B - Highways on the State system and carrying 5,000 to 15,000 vehicles daily (blue) should have full width bare pavement as soon as practical after a winter storm terminates.

Type 2 - Highways on the State system carrying 1,000 to 5,000 vehicles daily (orange) should have some bare pavement as soon as practical after a winter storm terminates.

Type 3 - Highways on the State highway system carrying less than 1,000 vehicles daily (red) should have bare pavement in left wheel tracks near the center of the highway as soon as practical after the winter storm. Included in this classification are highways carrying less than 500 vehicles daily for which snow-covered pavement is deemed acceptable.

These designations have been determined by traffic volume primarily but have been modified to include consideration of posted speed, highway grade, truck volume, accessibility to hospitals and emergency services, special events, second and/or third shifts at major industrial complexes and major commercial traffic generators as well as to establish continuity between highway districts.

OPERATIONS:

Snow removal and ice control usually requires the timely application of either chemicals, abrasives or a chemical-abrasive mixture to roadway surfaces in combination with aggressive snow plowing operations. Choice of material is dependent upon the weather and road conditions. Occasionally conditions such as low temperatures do not require material application. Materials available include the following:

Sodium Chloride – The use of sodium chloride (common salt) combined with snow plowing is the most effective, most economical and safest snow and ice control method currently available. Salt is most effective for melting purposes at temperatures above 20 degrees F., with reduced melting ability as the temperature drops. In general, the purpose of salt is to (1) reduce adherence of snow to the pavement, (2) keep the snow in a “mealy” condition and thereby permit nearly full removal by plowing, and (3) prevent the formation of ice or snow ice (hard pack). Salt is not intended to take the place of snowplows. It is economically and environmentally unacceptable to attempt to melt snow accumulations that are plowable. Salt is also to be added to sand stockpiles to prevent freeze up of the abrasives.

Calcium Chloride. Calcium chloride is a chemical which melts ice at lower temperatures than sodium chloride. Flake calcium chloride is used as an additive to abrasives (sands) to prevent freezing in stockpiles, to thaw culverts and catch basins, to help hold the abrasive in place on the pavement and on rare occasions to trigger sodium chloride action. Liquid calcium chloride at 32% strength can be used to pre-wet solid sodium chloride to trigger the chemical reaction at low temperatures. The addition of liquid calcium chloride also is beneficial in retaining de-icing material on the roadway by increasing the adhesion of the material to the roadway.

Abrasives. Abrasives (sand and fine mineral aggregates) are used primarily for immediate traction on hills, curves, intersections, railroad crossings and other areas to increase traction and minimize the use of salt. Sodium chloride, calcium chloride or an appropriate mixture of the two are usually added to abrasives in amounts dependent upon existing weather conditions. Stockpiles of abrasives are usually treated with chloride at the start of the season to prevent subsequent freezing.

Alternative De-Icers

There is considerable research being done on new deicing chemicals. Non-corrosive and environmentally friendly chemicals, in solid or liquid form, are now available but widespread use is currently limited due to the high costs and the need for specialized equipment to store & dispense them. NHDOT has and will continue to experiment with new products as they come on the market in an effort to provide an affordable and acceptable level of service while being environmentally responsible. There is considerable research throughout the world going on in this area and NHDOT is an active participant.

Application of De-Icing Materials

The use of chemicals, abrasives or chemical-abrasive mixtures is dependent not only on present roadway and weather conditions, but also on anticipated changes in these conditions and fiscal or logistical constraints experienced by the NHDOT. The effects of peak traffic periods, approaching nightfall or daybreak, precipitation type, and predicted end of storm, are considered and evaluated prior to selecting the proper materials and rate of application.

Adverse roadway conditions existing during periods of low temperatures, which are predicted to rise would generally be treated in accordance with the recommendations for the higher temperature. If the time of day, trend and weather forecast is such that a drop in temperature may reasonably be expected, treatment would generally be in accordance with the recommendation for the lower temperature. Chemicals or abrasives should not be used at low temperatures if the pavement is dry and snow is blowing off the pavement as such use would be wasteful and may be counterproductive.

Rates of Application

Generally straight sodium chloride is the chemical of choice for most storm situations. Sodium chloride is used to prevent snow pack and ice build-up on the pavement and to aid removal of any build-up that occurs. The following instructional guidelines are recommended to adequately maintain highways under most conditions:

RECOMMENDED SNOW AND ICE TREATMENTS PER LANE MILE			
CONDITIONS	TEMPERATURE	TYPE 1A & 1B	TYPE 2 & 3
Sleet & Freezing Rain	Variable	Salt 300 lbs. per lane mile and/or abrasive as needed.	Salt 300 lbs. per lane mile and/or abrasive as needed. (2)
Snow	20° and up	Salt 250 lbs. per lane mile. (1)	Salt 250 lbs. per lane mile. (2)
Snow	Below 20°	Salt 250 lbs. per lane mile. (2&3)	Abrasive-Chemical Mix

- (1) For exceptionally high volume roads where traffic will enhance the action of the salt, this rate may be decreased to 200 lbs. per lane mile.
- (2) Abrasive – chemical mix may be needed at extremely low temperatures or on very lightly traveled highways.
- (3) An alternative low temperature treatment is to use a chemical mix of 2 parts salt to 1 part calcium chloride at 200 lbs. per lane mile.

Chemicals or mixes are normally applied to the middle 1/3 of pavement width and on the high side of banked curves. Spread width may be increased or decreased depending on the action of traffic. Materials are applied early in the storm so that a brine develops on the pavement and prevents build-up of packed snow. It takes much less deicing chemical to remove compacted snow when the treatment is placed between the pavement/snow layer than if it is placed on top of the snow. If snow continues and accumulates on the pavement, plowing should continue and additional chemical or mix treatments should be made if compaction develops.

There are many additional circumstances which will necessitate modification to these treatments. Some of these circumstances are:

1. Rising or falling temperatures.
2. When pavement is cold and dry and snow is falling, chemicals are not applied. Plowing and treatment of icy spots, if they develop, is recommended.
3. As stated in footnote (2) an abrasive-chemical mix may be needed at extremely low temperatures or on very lightly traveled highways. Under these conditions the effectiveness of salt is reduced and abrasives may be needed for traction.

Spreading Practices

Each spreading unit is calibrated to insure that selected rates of application are attained. Timing of the initial application during each storm is very critical. It should be delayed until there is sufficient accumulation on the pavement to hold and contain the material spread. However, the pavement may become glazed prior to this time and may require an earlier treatment.

Portions of each patrol section are unique due to various physical conditions and will require a greater application rate or an additional application during some storms. However, these areas should be judged and treated separately and not used as a barometer to evaluate and subsequently direct complete applications over the entire section. In order to conduct an efficient operation, periodic observation of the pavement surface conditions must be performed.

Width of material spread (throw plus roll) should be restricted. Reduction of the spread width by windrowing chlorides will increase the concentration of the chemical where it is needed and therefore increase the effectiveness of the application. Spreading operations should generally be conducted at speeds less than 25 mph on two lane roads. Air turbulence created at speeds greater than 25 mph makes it difficult to retain all the material discharged within the desired width. Spinner and belt speeds and spread pattern must be adjusted to obtain the correct spread rate and to retain the material within the lane (s) where the additional material is required.

On a four lane undivided roadway the passing lane in either direction may be spread simultaneously from the adjacent travel lane. Belt speed, spinner speed and vehicle position need not be changed since the normal spread pattern on this type roadway is achieved by spreading simultaneously upon the two lanes during the singular directional pass of the spreading unit.

Special Attention For Bridges

Bridge decks normally freeze or glaze sooner than adjacent pavement sections, especially in the late fall and early winter. Special care and good judgment is required in the use of de-icing chemicals on all bridge decks.

Accumulations of snow along gutter lines and sidewalk or catwalk areas of all bridges should be removed when accumulation of snow and/or ice affects highway safety. Removal operations should commence on the high side of bridges on banked curves to minimize snowmelt and re-freezing or glazing of the travel lanes.

Plowing Operations

Plowing operations are generally initiated after one to two inches of snow have fallen and continue until the storm has ended. Widening and intersection view clearing is performed following cessation of the storm as necessary, and generally during daylight hours when best visibility prevails.

For snow storms with a predicted accumulation in excess of two inches, plowing usually begins after the initial salt application has formed a brine and after one to two inches of snow has fallen (dependent on intensity of snowfall) and continues for the duration of the storm. After a storm terminates, a final cleanup plow run is made and a light salt application is laid down as necessary to remove any remaining residue.

For light accumulation snowfalls, snow squalls, and so-called “Alberta Clippers” of short duration, plowing may begin immediately and may include simultaneous salting and/or sanding to provide the desired results quickly and efficiently.

Truck-mounted snowplows and wing plows are utilized to clear pavements and shoulders of frozen precipitation. Storm intensity (generally measured in inches per hour) varies considerably in New Hampshire but average major snow storms are approximately one inch per hour. This one-inch per hour intensity rate and the allowable snow accumulation is used in planning the availability of equipment necessary for snow removal operations.

SNOW AND ICE MANAGEMENT PLANNING CRITERIA			
HIGHWAY TYPE	PLANNED PLOWING FREQUENCY	PLANNED ALLOWABLE SNOW ACCUMULATION	AVE. MAX. ALLOWABLE ACCUMULATION
TYPE 1A	1½ hours	1½"	3"
TYPE 1B	2 hours	2"	4"
TYPE 2, 4	2½ hours	2½"	5"
TYPE 3, 5	3½ hours	3½"	6"

The preceding table is based on an average accumulation of one inch per hour under optimum conditions (i.e., no traffic tie-ups or accidents, and no equipment breakdowns) and excludes initial response time. The average maximum depth of snow or other accumulation a motorist may encounter on highway pavements, except during blizzard conditions and/or heavy wind and drifting conditions, is shown in the right-hand column of the table.

Frozen precipitation including sleet and the build-up of ice caused by freezing rain are special situations, and not subject to procedures indicated above. When a changeover from snow or sleet to freezing rain is predicted or anticipated, snow and/or sleet is left on the pavement to capture the freezing rain thereby preventing a glare ice situation, which without question is the most treacherous condition that occurs on highways. Treatment includes application of salt at a rate of 300 pounds per lane mile as needed throughout the storm. Heavy rain tends to wash off applied salt or sand, making it difficult to keep the pavement ice-free.

It is the policy of NHDOT to perform snow removal and ice control operations in a consistent and impartial manner throughout the state. There are a few plowing procedures that are frequently misunderstood. In an attempt to clarify our actions the following policies and procedures are explained.

Mailboxes And Other Structures Within The Highway Right-Of-Way

Occasionally mailboxes or other devices are damaged by snow plowing operations due to poor visibility, the mailbox being buried in a snow bank or the weight/volume of the snow being plowed. This damage is not deliberate and in most cases is unavoidable. NHDOT is not responsible for damage and does not repair, replace or re-erect boxes that are located within the highway right-of-way. These devices are located within the highway limits and are the responsibility of the property owner. NHDOT will work with the box owners to locate the box in the safest possible location and offer advice on its design to minimize potential damage.

Widening Or Pushing Back Snow Banks

Following storms with heavy snowfall or when several storms result in substantial snow bankings, NHDOT will undertake a roadway widening procedure, which will push back the snow banks. This is a necessary operation because it accomplishes the following:

- (A) Provides room for future snow storage.
- (B) Reduces or prevents melted snow from running out onto the roadway pavement and creating icing conditions.
- (C) Increases safe sight distance at intersections and driveways.
- (D) Maintains a uniform line by eliminating protrusions at driveways and intersections.

Unfortunately there is no way to prevent depositing snow in previously cleaned driveways or walkways except to leave a hazardous projecting mound of snow. With thousands of driveways of all sizes and descriptions along our highway system it is impossible to clear these individual drives as the cost would be prohibitive and would probably result in complaints of highway funds expended for the benefit of certain individuals.

Signalized Intersections

At those locations where there is steep highway grades law enforcement officials or authorized NHDOT employees may put traffic signals on flash for the duration of the storm.

Sidewalks

NHDOT in conjunction with construction projects occasionally reconstructs or constructs new sidewalks adjacent to highways. However, the maintenance of the sidewalks, including snow removal, is the responsibility of the local community. This policy is firm and longstanding statewide. In addition, in those communities where on-street parking is permitted, snow removal from the parking areas, including plowing and or hauling away, is a local responsibility. The local NHDOT crew will adjust its plow pattern when possible to assist the community if at all possible, which could include pushing back snow banks during No Parking hours, or leaving a windrow as close to the traveled way as possible. Usually these arrangements are made locally between the municipality and the NHDOT Patrol Foreman.

Reduced Winter Maintenance

The NHDOT will evaluate the feasibility of establishing low or no salt sections on selected low volume roadways following a written request from the local governing body. To facilitate this program two additional highway types are specified as follows:

Type 4—Highways on the State highway system carrying less than 2,500 vehicles daily for which all municipal officials, including all selectmen, the police chief, the fire chief, the chief of ambulance service, and the superintendent of schools or the school board, have signed and submitted a written request to establish low (minimum) salt sections on existing Type 2 highways (orange routes) shown on the winter maintenance system map.

Type 5—Highways on the State highway system carrying less than 1,000 vehicles daily for which all municipal officials, including all selectmen, the police chief, the fire chief, the chief of ambulance service, and the superintendent of schools or the school board, have signed and submitted a written request to establish no salt sections on existing Type 3 highways (red routes) on the winter maintenance system map.

RECOMMENDED SNOW & ICE TREATMENTS PER LANE MILE FOR REDUCED WINTER MAINTENANCE AREAS			
CONDITIONS	TEMPERATURE	TYPE 4	TYPE 5
Sleet & Freezing Rain	Variable	Salt 250 lbs. per lane mile and/or abrasives as needed	Abrasives only
Snow	20 degrees Fahrenheit	Salt 250 lbs. per lane at beginning and/or end of storm only	Abrasives only
Snow	Below 20 degrees Fahrenheit	Abrasives only except salt 250 lbs. per lane mile at end of storm	Abrasives only

The process to establish reduced winter maintenance areas commences when NHDOT receives a written inquiry from a municipality's authorized officials. The NHDOT will field review the section(s) requested to see if the section's geographic, traffic and environmental conditions would permit consideration of reduced winter maintenance. If NHDOT determines it is feasible to reduce the level of service, the municipality must submit signed approvals from governing town officials, police chief, fire chief, chief of ambulance service and the school board/superintendent of schools. A public meeting will be convened to accept comments from the public. The level of service anticipated will be discussed and will include items such as the amount of bare pavement that would be expected, the surface condition, and the time of treatment. If the conditions are acceptable the location will be approved and public notices made. Additionally, roadway signs will be erected delineating the area as a reduced winter maintenance zone. NHDOT officials reserve the right to change the designation if safety concerns arise and the designation is found to be inappropriate. Reclassification of the roadway to a Class V (town maintained highway) will also be discussed with the municipality's officials.

Appendix B: Winter Maintenance Charts (NYSDOT, 2007)

- B-1 FACTORS THAT EFFECT AN APPLICATION RATE DETERMINATION**
- B-2 ANTI-ICING WITH STRAIGHT LIQUID CHEMICALS**
- B-3 BLACK ICE MAINTENANCE**
- B-4 FREEZING RAIN MAINTENANCE**
- B-5 SLEET MAINTENANCE**
- B-6 LIGHT SNOW MAINTENANCE**
- B-7 MODERATE TO HEAVY SNOW MAINTENANCE**
- B-8 GLOSSARY OF TERMS**

APPENDIX B-1

FACTORS THAT EFFECT AN APPLICATION RATE DETERMINATION TRAFFIC:

AADT –The higher the volumes the more mixing action you get along with heat from friction. Higher volumes are also an indication of your more important roads.

Rush Hour – This effect's your timing and your maneuverability as you try and get treatment down ahead of the rush. In extreme cases you may actually need to avoid a road because your trucks will be trapped and non-productive. Rush hours can also create a directional situation where you get a good mixing action in one direction and almost none in the other.

Day of the Week –Different days, especially the weekend create different traffic patterns and volumes and the application may need to be changed to adjust for this.

Corridors –This is an evolving issue from Transformation, but has always influenced level of response. Certain roads are key to the function of the system and if they are not open the rest of the system fails regardless of the conditions on the feeder roads.

ROAD CONDITIONS:

Geometrics –Steep grades, sharp curves, bridge decks, etc. all influence our application rates. Some of these situations determine the application rate for a whole beat, and others require the driver to make adjustments during his run.

Cold Spots –areas at higher elevations or shaded most of the day create cold spots which normally require more material than adjacent sections of the beat.

Length of Beat –This effects cycle time. The longer the time between plowings the more material is needed to prevent bonding. On long cycle times adding too much material will lead to a build up of slush which is more dangerous than packed snow that has not bonded to the pavement.

Plow Speed –While ideal plow speed is around 30 mph, it does vary considerably due to traffic adjacent buildings, pedestrians, high speed roadways, etc. This can create different cycle times between beats of the same length, or even the same beat at different times of the day.

Multiple Lanes –While in some cases a beat consists of a uniform number of lanes so that the assigned trucks can plow in echelon in one pass. However in most cases the number of lanes varies and trucks have to double back or trucks from other beats have to be assigned to help. This results in increased cycle time.

Pavement Surface –Some pavement treatments like Nova Chip and some Super pave mixes have an open graded surface which draws the brine away from the surface and you need more chemicals to prevent bonding.

WEATHER:

Time of Season –More chemicals are required in January than March because of colder temperatures and continued cold weather is likely.

Sunlight –The amount of sunlight influences the melting action and reduces the need for chemicals. Besides more sunlight in the beginning and end of the season the sun is at a higher angle.

Type of snow or ice –The wetter the precipitation the more dilution occurs which requires more chemicals to keep the freezing point reduced.

Intensity of the precipitation –The harder the snowfall the more material will be needed to prevent bonding before the next plowing

Pavement Temperature –While changes in air temperature are useful to watch, the pavement temperature is what really matters because this is where the bonding happens. When deciding application rates the expected trend in the temperature is important to be taken into account.

Note: The tables for application rates attempt to take into account the last three items.

APPENDIX B-2: ANTI-ICING WITH STRAIGHT LIQUID CHEMICALS

The strategy of anti-icing is to be proactive in the application of chemicals to prevent the formation or development of bonded snow and ice to the pavement surface. This tactic is used to “buy time” prior to the onset of a snow and ice event or anticipated black ice conditions. When the event actually begins, conventional reactive strategies are then used. This strategy can be particularly useful on A1 type highways where conventional methods may be slowed due to high traffic volumes. These methods are also useful for unique trouble areas such as bridge decks, high elevations, and shaded areas that freeze quicker than adjoining segments.

Anti-icing can be done by applying conventional solid and pre-wetted solids. This tactic is prone to wasting material, particularly if the pavement surface is dry. High volumes and speeds will scatter most of the material off of the travel lanes. The preferred material for anti-icing is the use of salt brine or liquid chemicals such as magnesium chloride sprayed directly on the pavement surface using a tank and spray bar system. Various slide in tank and spray bar systems are now available.

Liquid Chemicals:

Liquid ice control chemicals are made up of solid ice control chemicals in a water solution. After application, the water evaporates and a residual dry chemical is left on the pavement surface. This material is not prone to scattering or dispersal from traffic conditions. Salt brine is most effective at a 23% solution. It can be produced in house by agitating solid NaCl in water. It is also a byproduct of the oil and gas industry and can be acquired in certain geographic areas at little or no cost.

Liquid Magnesium Chloride, Liquid Calcium Chloride, Potassium Acetate, Calcium Magnesium Acetate, and a variety of proprietary formulas that contain anti-corrosion inhibitors and agricultural byproducts are also available. Although generally higher in cost than salt brine, they can be more effective at lower temperatures.

Application Criteria:

Straight liquid chemical applications can be made up to 3 days prior to the onset of a winter weather event if the chemical is allowed to dry on the pavement surface. Rain events and particularly high traffic volumes will lesson the anti-icing effects. Table A gives a general range of application rates.

The rates to achieve effective results can vary significantly with the type of liquid chemical used and pavement temperatures. Too little material will not produce desired results. Too much material can result in hazardous slippery conditions before the material has fully dried. It is recommended that new users start at the lower end of the range and gradually increase application rates until desired results are achieved. It is also very critical that liquid spray units are calibrated at the beginning of each snow and ice season. This can be accomplished by collecting liquid at the spray bar over a pre-measured distance. Because results are very sensitive to application rates, calibration is critical.

Liquid chemicals should only be applied as an anti-icing strategy when the pavement temperatures are 20°F or higher. Application of salt brine at lower temperatures would require excessive application rates and may be prone to rapid refreeze. Liquid chemicals such as magnesium chloride and other proprietary products may be used at lower temperatures, but again, application rates may negate any cost benefit. Conversely, liquid applications should not be made if pavement temperatures are much above freezing. Above 38°F and at high humidity, liquid chemicals will not properly dry on the surface and can result in hazardous slippery conditions.

De-icing:

Straight liquid chemicals may be applied as a de-icing strategy during low moisture, light snowfall at pavement temperatures above 20°F. Cycle times should be minimized as dilution of straight liquids occurs much quicker than solid chemical applications. At temperatures near freezing, it can be very effective at melting thin ice in the absence of precipitation.

Liquid chemicals are more sensitive to temperature and dilution than solid abrasives. If used as a de-icing strategy, more caution is required to avoid refreeze without the friction enhancement characteristics of a solid material.

SUGGESTED APPLICATION RATES FOR STRAIGHT LIQUID ANTI-ICING			
Temperature (°F)	* Application Rate Gals. / Lane Mile		
	23% Salt Brine	27% Magnesium Chloride	32% Calcium Chloride
32°F	30	28	33
20°F	40	30	36

* Application rates as high as 60 gal/lm have been successfully used in salt brine straight liquid applications. It is strongly recommended however, to start with the application rates as illustrated by this table to avoid the potential for hazardous conditions as a result of friction loss from the chemical application itself. If desired results cannot be achieved at these rates, incremental adjustments can be made upward until results are achieved.

APPENDIX B-3: Snow And Ice Maintenance: BLACK ICE

Surface		Initial Maintenance Action			Follow Up Maintenance Action			Comments
Temp (°F)	Condition	Action	Rock Salt (lbs/LM)		Action	Rock Salt (lbs/LM)		
			Dry.	Pre-Wet		Dry	Pre-Wet	
Above 32	Dry or Damp	Apply pre-wetted rock salt or direct liquids to prevent formation.		115	None, See comments.			Monitor pavement temperature closely; begin treatment if pavement temperature starts to fall toward 32 and it is at or below the dew point.
23 to 32	Frost or Black Ice	Apply pre-wetted rock salt or direct liquid; use dry salt if pre-wetted not available.	275	225	Re-apply pre-wetted rock salt as needed.	115	90	1) Monitor pavement temperatures closely; if pavement becomes wet or if thin ice forms reapply chemicals. 2) Do not apply direct liquids on ice so thick that the pavement cannot be seen. 3) Heavier follow up application(s) may be necessary.
15 to 23	Frost or Black Ice	Apply pre-wetted rock salt; use dry rock salt if pre-wetted not available.	360	275	Re-apply pre-wetted or dry rock salt as needed	115	90	1) Monitor pavement temperature closely; if pavement becomes wet or if thin ice forms reapply chemicals. 2) Do not apply direct liquids on ice so thick that the pavement can not be seen. 3) Heavier follow up applications(s) maybe necessary.
Below 15	Frost or Black Ice	Apply abrasives			Apply abrasives			1) Refer to Snow and Ice Guidelines Section 5.4406, paragraph B. for abrasive application rates.

Notes: 1) Black ice or frost is normally a spot condition –these application rates would be applied to areas susceptible to the formation of black ice or areas where black ice has developed. Watch for freezing surface temperatures below dew point with sources of vapor, clear night skies and light winds.

2) Refer to direct liquid chemical application guide lines (Appendix A Page A –10) if anti-icing liquids are used.

APPENDIX B-4: Snow And Ice Maintenance: FREEZING RAIN

Surface		Initial Maintenance Action			Follow Up Maintenance Action			Comments
Temp (°F)	Condition	Action	Rock Salt (lbs/LM)		Action	Rock Salt (lbs/LM)		
			Dry.	Pre-Wet		Dry	Pre-Wet	
Above 32	Wet or Slushy	Apply pre-wetted or dry rock salt, plow if plowable.	115	90	Monitor precipitation and temperature.			1) Monitor pavement closely and anticipate drops toward 32°F and below. 2) Adjust application rates as surface conditions and precipitation intensities change.
Above 32, dropping to 32 or below soon	Wet or Slushy	Apply pre-wetted or dry rock salt, plow if plowable.	180	115	Re-apply pre-wetted or dry rock salt as needed.	180	115	1) Monitor pavement temperatures and precipitation closely. 2) Treat icy patches and colder areas with higher applications. 3) Increase applications if precipitation intensity increase or surface shows signs of icing.
23 to 32	Wet or Slushy	Apply pre-wetted or dry rock salt, plow if plowable.	275	225	Re-apply pre-wetted or dry rock salt as needed.	275	225	1) Monitor pavement temperatures and precipitation closely and adjust application rates as surface conditions and precipitation intensities change. 2) Treat icy patches and colder areas with higher applications. 3) Increase applications if precipitation intensity increase or surface shows signs of icing.
23 to 32	Icy	Apply pre-wetted or dry rock salt.	360	320	Re-apply pre-wetted or dry rock salt as needed.	360	320	1) Use Application Rate for “wet and slushy” when icing condition is removed. 2) Increase application rate if precipitation intensity increases or if pavement shows signs of refreezing.
15 to 23	Wet or Slushy	Apply pre-wetted or dry rock salt, plow if plowable.	360	275	Re-apply pre-wetted or dry rock salt as needed.	360	275	1) Monitor pavement temperatures and precipitation closely and adjust application rates as surface conditions and precipitation intensities change. 2) Treat icy patches and colder areas with higher applications. 3) Increase applications if precipitation intensity increase or surface shows signs of icing.
15 to 23	Icy	Apply pre-wetted or dry rock salt.	450	360	Re-apply pre-wetted or dry rock salt as needed.	450	360	1) Use Application Rate for “wet and slushy” when icing condition is removed. 2) Increase application rate if precipitation intensity increases or if pavement shows signs of refreezing.
Below 15	Dry, wet or icy	Apply abrasives			Re-apply abrasives			Refer to Snow and Ice Guidelines Section 5.440 (B) for application rates.

Notes: 1) Freezing Rain requires a timely and aggressive response to prevent ice formation; application rates should be increased if not effective or cycle times are increased due to difficult driving.

APPENDIX B-5: Snow And Ice Maintenance: SLEET

Surface		Initial Maintenance Action			Follow Up Maintenance Action			Comments
Temp (°F)	Condition	Action	Rock Salt (lbs/LM) Dry. Pre-Wet		Action	Rock Salt (lbs/LM) Dry Pre-Wet		
Above 32	Dry	Patrol and spot treat as needed. See comments			Patrol and spot treat as needed. See comments			1) Monitor pavement temperatures closely and anticipate drops toward 32 F and below. 2) Treat icy patches with pre-wetted rock salt at 115 lbs./lm.
Above 32	Snow, slush or wet	Apply pre-wetted or dry rock salt, plow if plowable.	115	90	Re-apply pre-wetted or dry rock salt as needed.	115	90	1) Monitor pavement temperatures closely and anticipate drops toward 32F. 2) Treat icy patches and colder areas with higher applications. 3) Increase rates if precipitation intensity increases.
Above 32, but dropping to 32 or below soon	Snow, slush or wet	Apply pre-wetted or dry rock salt, plow if plowable.	180	115	Re-apply pre-wetted or dry rock salt as needed.	180	115	1) Monitor pavement temperatures and precipitation closely. 2) Treat icy patches and colder areas with higher application rates. 3) Increase application rates if precipitation intensity increases.
23 to 32	Snow, slush or wet	Apply pre-wetted or dry rock salt, plow if plowable.	225	180	Re-apply pre-wetted or dry rock salt as needed.	225	180	1) Monitor pavement temperatures and precipitation closely. 2) Treat icy patches and colder areas with higher application rates. 3) Increase application rates if precipitation intensity increases.
15 to 23	Snow, slush or wet	Apply pre-wetted or dry rock salt, plow if plowable.	275	225	Re-apply pre-wetted or dry rock salt as needed.	275	225	1) Monitor pavement temperatures and precipitation closely. 2) Treat icy patches and colder areas with higher application rates. 3) Increase application rates if precipitation intensity increases.
Below 15	Any condition	Apply abrasives			Re-apply abrasives			1) Refer to Snow and Ice Guidelines Section 5.4406 (B) for abrasive application rates.

Notes: 1) Sleet that creates accumulating ice will require more aggressive treatment.

APPENDIX B-6: Snow And Ice Maintenance: LIGHT SNOW

Surface		Initial Maintenance Action			Follow Up Maintenance Action			Comments
Temp (°F)	Condition	Action	Rock Salt (lbs/LM) Dry. Pre-Wet	Action	Rock Salt (lbs/LM) Dry Pre-Wet			
Above 32	Wet, slush or light snow covered.	Patrol and spot treat as needed. See comments.			Patrol and spot treat as needed. See comments.			1) Monitor pavement temperature for drops toward 32 F. 2) Blast isolated icy patches with salt, treat slushy areas beginning to freeze with 225 dry/180 pre-wet, lbs./lm and plow as needed
Above 32, dropping to 32 or below soon	Dry	Apply pre-wetted rock salt or direct liquids. Spot treat as needed. See comments.		180	Patrol and spot treat as needed. See comments.			1) Monitor pavement temperature and precipitation and use select appropriate follow up as conditions change. 2) Refer to Snow and Ice Guidelines for appropriate direct application of liquid anti-icing chemicals.
Above 32, dropping to 32 or below soon	Wet, slush, or light snow covered	Apply pre-wetted or dry rock salt, plow as needed.	225	180	Plow and re-apply pre-wetted or dry rock salt as needed.	115	90	1) Application will need to be more frequent at lower temperature and higher snowfall rates. 2) Adjust application rates as surface conditions and precipitation intensities change.
23 to 32	Dry	Apply pre-wetted rock salt or direct liquids		180	See comments			1) Monitor pavement temperature and precipitation and use select appropriate follow up as conditions change. 2) Refer to Snow and Ice Guidelines for appropriate direct application of liquid anti-icing chemicals.
23 to 32	Wet, slush, or light snow covered	Apply pre-wetted or dry rock salt, plow as needed.	225	180	Plow and re-apply pre-wetted or dry rock salt as needed.	115	90	1) Application will need to be more frequent at lower temperature and higher snowfall rates. 2) Adjust application rates as surface conditions and precipitation intensities change.
15 to 23	Wet, slush, or light snow covered	Apply pre-wetted or dry rock salt, plow as needed.	275	225	Plow and re-apply pre-wetted or dry rock salt as needed.	180	115	1) If sufficient moisture is present, dry rock salt can be applied. Dry pavement at these temperatures is better left untreated if snow does not track to surface.
Below 15	Dry or light snow covered.	Plow as needed			Plow as needed			1) Abrasives can be applied to enhance traction, a heavy salt mix will create glazing. Refer to Snow & Ice Guidelines Section 5.4406 (B) for abrasive application rates. Apply rock salt in anticipation of rising temperatures.

- Notes: 1) Rush Period Traffic on high volume highways may require more aggressive initial treatments.
 2) Use weather information to anticipate changes in storm intensity, surface temperatures and adapt the storm treatment accordingly. Use guidelines for moderate/heavy snow during periods of heavier intensity.
 3) Refer to direct liquid chemical application guides lines (Appendix A, Page A –10) if anti-icing liquids are used.

APPENDIX B-7: Snow And Ice Maintenance: MODERATE OR HEAVY SNOW

Surface		Initial Maintenance Action			Follow Up Maintenance Action			Comments
Temp (°F)	Condition	Action	Rock Salt (lbs/LM) Dry Pre-Wet		Action	Rock Salt (lbs/LM) Dry Pre-Wet		
Above 32	Wet, slush or light snow covered.	Patrol and spot treat as needed. See comments.			Patrol and spot treat as needed. See comments.			1) Monitor pavement temperature for drops toward 32 F. 2) Blast isolated icy patches with salt, treat slushy areas beginning to freeze with 225 dry/180 pre-wet, lbs./lm and plow as needed.
Above 32, dropping to 32 or below soon	Dry	Apply pre-wetted rock salt or direct liquids. Spot treat as needed. See		180	Patrol and spot treat as needed. See comments.			1) Monitor pavement temperature and precipitation and use select appropriate follow up as conditions change. 2) Refer to Snow and Ice Guidelines for appropriate direct application of liquid anti-icing chemicals.
Above 32, dropping to 32 or below soon	Wet, slush, or light snow covered.	Apply pre-wetted or dry rock salt, plow as needed.	225	180	Plow and re-apply pre-wetted or dry rock salt as needed.	225	180	1) If normal cycle times can not be maintained, the application rates can be increased to 275 dry / 225 pre-wet, lbs./lm to accommodate longer cycles. 2) Rates may be reduced during periods of light snow but use full applications in anticipation of heavy intensities/falling surface temperatures.
23 to 32	Dry	Apply pre-wetted or direct liquids		180	See comments.			1) Monitor pavement temperature and precipitation and use select appropriate follow up as conditions change. 2) Refer to Snow and Ice Guidelines for appropriate direct application of liquid anti-icing chemicals.
23 to 32	Wet, slush or light snow covered.	Apply pre-wetted or dry rock salt, plow as needed.	225	180	Plow and re-apply pre-wetted or dry rock salt as needed.	225	180	1) If normal cycle times can not be maintained, the application rates can be increased to 275 dry / 225 pre-wet, lbs./lm to accommodate longer cycles. 2) Rates may be reduced during periods of light snow but use full applications in anticipation of heavy intensities/falling surface temperatures.
15 to 23	Wet, slush or light snow covered.	Apply pre-wetted rock salt, plow as needed.	275	225	Plow and re-apply pre-wetted or dry rock salt as needed.	275	225	1) If normal cycle times can not be maintained, the application rates can be increased to 360 dry / 275 pre-wet, lbs./lm to accommodate longer cycles. 2) Rates may be reduced during periods of light snow but use full applications in anticipation of heavy intensities.
Below 15	Dry or light snow covered	Plow as needed			Plow as needed			1) Abrasives can be applied to enhance traction, a heavy salt mix will create glazing. Refer to Snow & Ice Guidelines Section 5.4406 (B) for abrasive application rates. Apply rock salt in anticipation of rising temperatures.

Notes: 1) Rush Period Traffic on high volume highways may require more aggressive initial treatments. 2) Increased cycle times will require heavier application rates. Anticipate changes in storm intensity and surface temperatures and use appropriate chart selection. 3) Refer to direct liquid chemical application guides lines (Appendix A, Page A –10) if anti-icing liquids are used.

APPENDIX B-8: GLOSSARY OF TERMS

Black Ice	Popular term for a very thin coating of clear, bubble free, homogenous ice which forms on a pavement with temperature at or slightly above 32°F when the temperature of the air in contact with the ground is below the freeze-point of water and small super cooled water droplets deposit on the surface and coalesce (flow together) before freezing. Most often occurs when pavement temperature is 32°F or below and is at or below Dew Point.
Chemical Spread Rate.	Also known as chemical application rate. For solid applications it is simply the weight of the chemical applied per lane mile. For liquid applications it is in gallons per lane mile when applied straight and gallons per ton when used to pre-wet solid chemicals.
Freezing Rain	Super cooled droplets of liquid precipitation falling on a surface whose temperature is below or slightly above freezing, resulting in a hard, slick, generally thick coating of ice commonly called a glaze or clear ice. Non-super cooled raindrops falling on a surface whose temperature is well below freezing will also result in a glaze.
Frost	Also called hoarfrost. Ice crystals in the form of scales, needles, feathers or fans deposited on the surfaces cooled by radiation or other process. The deposits may be composed of drops of dew frozen after deposition and of ice formed directly from water vapor at a temperature below 32°F (sublimation). Most often occurs when pavement temperature is 32°F or below and is at or below Dew Point.
Light Snow	Snow falling at the rate of less than ½ inch per hour: visibility is not affected adversely.
Liquid Chemical	A chemical solution; with a specified percentage of chemical that is applied at the rate of gallons per lane when applied straight and gallons per ton when used to pre-wet solid chemicals.
Moderate or Heavy Snow	Snow falling a rate of ½ inch per hour or greater; visibility may be reduced.
Sleet	A mixture of rain and snow which has been partially melted by falling through the atmosphere with a temperature slightly above freezing.
Slush	Accumulation of snow which lies on an impervious base and is saturated with water in excess of the freely drained capacity. It will not support any weight when stepped or driven on but will “squish” until the base support is reached.

Storm Log - Daily Run Sheet

Contract rental Agreement # _____ Plow Route Run Sheet for _____ Maintenance

Date(s) _____ Truck _____ Driver _____ Route _____

Odometer Start _____ Odometer End _____ Total Miles _____

Contractor Start Time _____ End Time _____ Signature _____ PF Signature _____

Run #	Plow (Y/N)	Start Time	End Time	Temp	Weather (see Below)	Length (LM)	Salt Used (tons)	Sand Used (tons)	Application Rate	Gate Height Inches	Liquid		
											Used (Gallons)	Type Used	Application Type
Run # 1													
Run # 2													
Run # 3													
Run # 4													
Run # 5													
Run # 6													
Run # 7													
Run # 8													
Run # 9													
Run # 10													

Notes:

1. Indicate Weather Conditions as follows

2. Application Type:

- 1 - Snowing (indicate accum) 5 - Sleetng 9 - Drifting 13 - Visibility poor
- 2 - Snowing and Raining 6 - Storm Over 10 - Heavy fog 14 - Visibility near zero
- 3 - Raining 7 - Cloudy 11 - Heavy winds 15 - Black ice
- 4 - Freezing 8 - Clear 12 - Gale winds

- PT - Pretreating
- PW - Prewetting

Notes: _____



Salt Tonnage & Lane Mile Chart

		Application Rate (lbs/LM)													
		100	125	150	175	200	225	250	275	300	325	350	375	400	
# Lane Miles	1	0.05	0.06	0.08	0.09	0.10	0.11	0.13	0.14	0.15	0.16	0.18	0.19	0.20	1
	2	0.10	0.13	0.15	0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.35	0.38	0.40	2
	3	0.15	0.19	0.23	0.26	0.30	0.34	0.38	0.41	0.45	0.49	0.53	0.56	0.60	3
	4	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	4
	5	0.25	0.31	0.38	0.44	0.50	0.56	0.63	0.69	0.75	0.81	0.88	0.94	1.00	5
	6	0.30	0.38	0.45	0.53	0.60	0.68	0.75	0.83	0.90	0.98	1.05	1.13	1.20	6
	7	0.35	0.44	0.53	0.61	0.70	0.79	0.88	0.96	1.05	1.14	1.23	1.31	1.40	7
	8	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	8
	9	0.45	0.56	0.68	0.79	0.90	1.01	1.13	1.24	1.35	1.46	1.58	1.69	1.80	9
	10	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	10
	11	0.55	0.69	0.83	0.96	1.10	1.24	1.38	1.51	1.65	1.79	1.93	2.06	2.20	11
	12	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.25	2.40	12
	13	0.65	0.81	0.98	1.14	1.30	1.46	1.63	1.79	1.95	2.11	2.28	2.44	2.60	13
	14	0.70	0.88	1.05	1.23	1.40	1.58	1.75	1.93	2.10	2.28	2.45	2.63	2.80	14
	15	0.75	0.94	1.13	1.31	1.50	1.69	1.88	2.06	2.25	2.44	2.63	2.81	3.00	15
	16	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	16
	17	0.85	1.06	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.76	2.98	3.19	3.40	17
	18	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.48	2.70	2.93	3.15	3.38	3.60	18
	19	0.95	1.19	1.43	1.66	1.90	2.14	2.38	2.61	2.85	3.09	3.33	3.56	3.80	19
	20	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	20
	21	1.05	1.31	1.58	1.84	2.10	2.36	2.63	2.89	3.15	3.41	3.68	3.94	4.20	21
	22	1.10	1.38	1.65	1.93	2.20	2.48	2.75	3.03	3.30	3.58	3.85	4.13	4.40	22
	23	1.15	1.44	1.73	2.01	2.30	2.59	2.88	3.16	3.45	3.74	4.03	4.31	4.60	23
	24	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.30	3.60	3.90	4.20	4.50	4.80	24
	25	1.25	1.56	1.88	2.19	2.50	2.81	3.13	3.44	3.75	4.06	4.38	4.69	5.00	25
	26	1.30	1.63	1.95	2.28	2.60	2.93	3.25	3.58	3.90	4.23	4.55	4.88	5.20	26
	27	1.35	1.69	2.03	2.36	2.70	3.04	3.38	3.71	4.05	4.39	4.73	5.06	5.40	27
	28	1.40	1.75	2.10	2.45	2.80	3.15	3.50	3.85	4.20	4.55	4.90	5.25	5.60	28
	29	1.45	1.81	2.18	2.54	2.90	3.26	3.63	3.99	4.35	4.71	5.08	5.44	5.80	29
	30	1.50	1.88	2.25	2.63	3.00	3.38	3.75	4.13	4.50	4.88	5.25	5.63	6.00	30
	31	1.55	1.94	2.33	2.71	3.10	3.49	3.88	4.26	4.65	5.04	5.43	5.81	6.20	31
	32	1.60	2.00	2.40	2.80	3.20	3.60	4.00	4.40	4.80	5.20	5.60	6.00	6.40	32
	33	1.65	2.06	2.48	2.89	3.30	3.71	4.13	4.54	4.95	5.36	5.78	6.19	6.60	33
	34	1.70	2.13	2.55	2.98	3.40	3.83	4.25	4.68	5.10	5.53	5.95	6.38	6.80	34
	35	1.75	2.19	2.63	3.06	3.50	3.94	4.38	4.81	5.25	5.69	6.13	6.56	7.00	35
	36	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.95	5.40	5.85	6.30	6.75	7.20	36
	37	1.85	2.31	2.78	3.24	3.70	4.16	4.63	5.09	5.55	6.01	6.48	6.94	7.40	37
	38	1.90	2.38	2.85	3.33	3.80	4.28	4.75	5.23	5.70	6.18	6.65	7.13	7.60	38
	39	1.95	2.44	2.93	3.41	3.90	4.39	4.88	5.36	5.85	6.34	6.83	7.31	7.80	39
	40	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	40
	41	2.05	2.56	3.08	3.59	4.10	4.61	5.13	5.64	6.15	6.66	7.18	7.69	8.20	41
	42	2.10	2.63	3.15	3.68	4.20	4.73	5.25	5.78	6.30	6.83	7.35	7.88	8.40	42
	43	2.15	2.69	3.23	3.76	4.30	4.84	5.38	5.91	6.45	6.99	7.53	8.06	8.60	43
	44	2.20	2.75	3.30	3.85	4.40	4.95	5.50	6.05	6.60	7.15	7.70	8.25	8.80	44
	45	2.25	2.81	3.38	3.94	4.50	5.06	5.63	6.19	6.75	7.31	7.88	8.44	9.00	45
	46	2.30	2.88	3.45	4.03	4.60	5.18	5.75	6.33	6.90	7.48	8.05	8.63	9.20	46
	47	2.35	2.94	3.53	4.11	4.70	5.29	5.88	6.46	7.05	7.64	8.23	8.81	9.40	47
	48	2.40	3.00	3.60	4.20	4.80	5.40	6.00	6.60	7.20	7.80	8.40	9.00	9.60	48
	49	2.45	3.06	3.68	4.29	4.90	5.51	6.13	6.74	7.35	7.96	8.58	9.19	9.80	49
	50	2.50	3.13	3.75	4.38	5.00	5.63	6.25	6.88	7.50	8.13	8.75	9.38	10.00	50
		100	125	150	175	200	225	250	275	300	325	350	375	400	

Application Rate (lbs/LM)
Lane Mile (LM) = one mile of 12 foot wide roadway



NH DOT Salt Sampling Procedures

10/9/17

Purpose of Correct Salt Sampling

- Observing trucks dump salt allows us to visual inspect salt and reject loads that have excessive moisture or foreign matter in the salt.
- Samples are sent to the Lab (Material and Research) and are tested for moisture, chemical composition, and gradation (particle size).
- Penalties and bonuses are paid according to results of test results from the lab as the contract is written.
- Penalties reduce the cost of the salt to the state, while bonuses are awarded for higher quality material than what the contract requires.

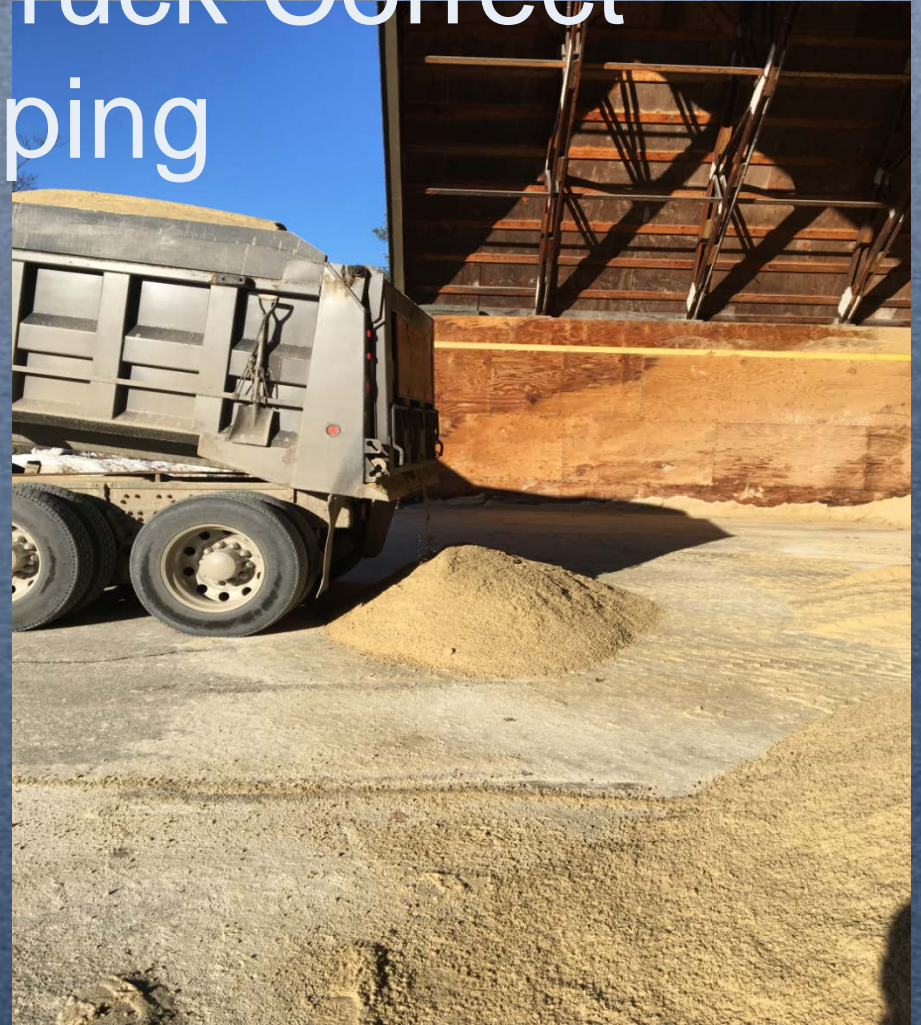
Salt Deliver Truck Incorrectly Dumping

- Unable to reject load if needed due to being mixed with other salt.
- No one watching the salt being dumped for foreign objects or clumping or excessive moisture.



Salt Deliver Truck Correct Dumping

- Away from the existing stockpile of salt.
- Each delivery of salt should be inspected for foreign items before the truck leaves.



Salt Deliver Truck Correct Dumping

- Delivered salt is not touching other salt.
- If there were debris in the salt it could be scooped up by the loader and reloaded into the truck and sent back .



General uniformity in sampling procedures

- Each truck will be sampled after it has been dumped
- 3 equal samples of the salt is to be taken level with the ground inserting pipe 1' into the pile
- Each sample put into a covered 5 gallon bucket until end of the day

Items required

- ❑ Instructions
- ❑ 4-ft long 2-inch diameter PVC pipe with a 1-ft black marked end
- ❑ Bucket with cover
- ❑ 4-ft x 4-ft or larger plastic
- ❑ Salt sample bag (clear plastic bag)
- ❑ Wire or zip ties
- ❑ Salt Sampling Report

First Representative Sample

Approximately 2 feet above
the ground



Second Representative Sample

Approximately 2-ft from the
top of the pile



Third Sample

About half way between the
first and second samples



Each sample needs to be placed into bucket throughout the day

Put cover on the bucket in between each sample to prevent moisture loss and place the bucket in the shade



End of Day

Empty bucket sample onto the plastic to form a cone



Flatten the cone to
approximately 5-inches



Quartering

Quarter the pile on a
North
South
East
West axis



Quartering Continued

Discard two opposite corners
while keeping the other two
still on the plastic



Quartering Cont.



Repeat Process

Pick up bag to reform another
cone; flatten, quarter and
discard again until pile weighs
4-8 lbs.



This process represents a
sample of the entire days
deliveries



Take the 4-8 lb. sample put
into a clear bag



Fill out a Salt Sample Report

SALT SAMPLE REPORT DISTRICT 4

Type of Material Rock Solar

Date Sampled: 9-18-10

Patrol Shed 406 Town Swanzy

Sampled from: Truck Other _____

Quantity Represented: 780 tons

Sampled by: Tyler Tommika

Salt Company: Granite State

Check One:
Visually OK Too Fine Too Coarse Too Wet Red Tag

Send Report to: District Engineer

Remarks: _____

Please add any comments about the salt in the remarks section i.e (wet, dry, too fine, too coarse, dirty, looks great)

- In case of load of wet material the process should be done as quickly as possible to prevent moisture loss and put into its own bag for that load
- Each bag should be sealed so it is air tight to prevent any affects on the moisture
- Each salt bag will be brought to the District Office and then up to Materials and Research or directly to Materials and Research in Concord for analysis whichever is easier for the shed and as soon as possible from the time of the sampling

Delivery Slips

- Delivery slips should not be signed until the load has been completely dumped, inspected, and accepted by the NHDOT employee overseeing the delivery.

Rejection of salt

- There are times when a load of salt should be rejected.
- Excessive moisture i.e (water coming out of truck before it dumps)
- Excessive clumping of salt
- Contamination of salt (foreign matter in the salt)

Contamination of salt



Excessive Moisture



Contaminated salt or foreign matter in the salt



Excessive clumping of salt



01/07/2017 22:48

Rejection of salt

- When rejecting a load of salt it is to be loaded back into the truck it was dumped from. The driver of the truck is to be told to return it to the vendor. The Foreman or equipment operator is to contact their Maintenance Supervisor and the Winter Maintenance Program Specialist immediately to inform them of this.

Questions

- Questions concerning salt sampling please contact the Winter Maintenance Program Specialist.

David Gray 603-419-9017

david.gray@dot.nh.gov

ENVIRONMENTAL Fact Sheet



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

WMB-3

2007

Snow Disposal Guidelines

Introduction

During each snowfall season from November to April, the Department of Environmental Services receives many 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. These can be initially categorized as aesthetic concerns, such as minimizing the visibility of debris and huge snow piles, and environmental concerns, such as protection of groundwater quality, surface water quality, and aquatic life.

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 siting or operation of snow dumps within classified wellhead protection areas.

Refer to the following guidelines for siting legal snow dumps and protecting the environment.

Recommended Guidelines for Snow Disposal

By following these guidelines you will find a safe place to dump plowed snow. Please note that snow dumps are kept out of water bodies due to litter and debris. 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.

For more information about snow storage contact DES Watershed Management Bureau at (603) 271-2457.

Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

Page 1 of 4
Date: 11/16/12

1.0 PURPOSE:

- 1.1 To provide guidance for the proper washing of NHDOT fleet vehicles at NHDOT Bureau of Highway Maintenance (BHM) facilities in an effort to maintain compliance with local, state, and federal requirements. This work instruction implements restrictions on methods and locations of outside vehicle and equipment washing.

2.0 SCOPE

- 2.1 This work instruction is intended to assist all BHM employees with the proper vehicle and equipment washing procedures to reduce potential negative environmental impacts. Proper vehicle and equipment washing includes washing of the exterior portion of the vehicle body and vehicle frame, tires, and wheels that do not contain excessive accumulations of oil, grease, and road salt that could have a negative environmental impact. Proper vehicle washing does not include washing of the engine compartment, transmission, rear end, undercarriage, or vehicle interior.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator or District Engineer:

- 3.1.1 Develop work instructions and provide training to all appropriate personnel.
- 3.1.2 Register vehicle washing locations with New Hampshire Department of Environmental Services (NHDES).
- 3.1.3 Comply with NHDES registration conditions, if any.
- 3.1.4 Provide the equipment necessary to perform vehicle washing in a safe and environmentally correct manner.

3.2 Safety and Environmental Coordinator:

- 3.2.1 Provide technical assistance and training to District personnel as needed.
- 3.2.2 Propose revisions to the work instruction, as appropriate, to the BHM EMS Team.
- 3.2.3 Maintain records related to employee training.

3.3 Maintenance Supervisor:

- 3.3.1 Provide technical assistance to the Highway Patrol Foreman as necessary.

3.4 Patrol Foreman:

- 3.4.1 Provide guidance to all Crew Members and hired equipment operators pertaining to vehicle washing.
- 3.4.2 Correct deficiencies within the means of the position.
- 3.4.3 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety Environmental Coordinator.

3.5 Crew Members and Hired Equipment Operators:

- 3.5.1 Comply with all parts of this work instruction.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the BHM as needed.
- 3.6.2 Provide relevant Best Management Practices to the BHM as they are released to the industry.
- 3.6.3 Communicate changes in local, state, or federal requirements to the BHM.

Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

Page 2 of 4
Date: 11/16/12

4.0 REFERENCES

- 4.1 NHDES WD-DWGB-22-10 Wastewater Discharges from Vehicle Washing.
- 4.2 NHDES WD-DWGB-12-10 Wellhead Protection for Small Public Water Supply Systems.
- 4.3 NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 4.4 NHDES Code of Administrative Rules Env-Wq 402 Groundwater Discharge Permit and Registration.

5.0 RECORDS:

- 5.1 NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 5.2 Maintain training records at District Office.
- 5.3 MSDSs for all approved vehicle washing soaps.
- 5.4 NHDES Approved Soaps for Vehicle Washing, latest version.

6.0 PROCEDURE

- 6.1 Do follow NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 6.2 Review site specific NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 6.3 Do not wash vehicles within any of the following setbacks:
 - 6.3.1 50 feet of surface water;
 - 6.3.2 75 feet of private water supply wells;
 - 6.3.3 75 feet of onsite water supply wells;
 - 6.3.4 50 feet of storm drains; or
 - 6.3.5 Protective radius of any public water supply well
- 6.4 Wash less than 30 vehicles per week at any registered vehicle washing location.
- 6.5 Remove and properly dispose of, or recycle, gross accumulation of oil, grease, road salt, or other materials that could negatively impact the environment using a rag or other absorbent material (not wash water) prior to washing.
- 6.6 Sweep truck beds with broom prior to washing. Collect and properly dispose of, or recycle, sweepings.
- 6.7 Wash vehicle exterior, frame, and body only.
- 6.8 Do not wash engine compartment, transmission, rear end, or undercarriage.
- 6.9 Wash with low pressure or power washer, with hot or cold water, including brush and hose. Do not use a steam cleaner.
- 6.10 Wash in the NHDES approved vehicle washing location only as shown on the NHDES Registration Form.
- 6.11 Discharge to onsite infiltration including gravel and vegetated areas in accordance with NHDES registration requirements.



Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

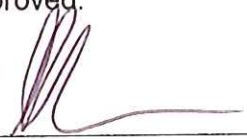
Page 3 of 4
Date: 11/16/12

- 6.12 Wash responsibly. For example, if you would not wash the vehicle next to your private water supply well due to contaminants on the vehicle, do not wash the vehicle until the contaminants have been properly removed and disposed of or recycled.
- 6.13 Do not discharge directly into septic systems or within 50 feet of dry wells.
- 6.14 Wash using only washing materials approved by NHDES for use at NHDOT facilities. No other chemicals or acids should be used.
- 6.15 Do not discharge directly into or within 50 feet of catch basins, wetlands, or surface waters.
- 6.16 Do not wash out gross accumulations of salt. Remove the salt and recycle to onsite salt storage facility.
- 6.17 Wash only NHDOT owned, leased, hired, or rented vehicles and equipment.

7.0 TRAINING

- 7.1 Initial New Employee training for all employees.
- 7.2 Refresher training as determined by the Maintenance Supervisor, Patrol Foreman, Safety and Environmental Coordinator, Assistant District Engineer, or District Engineer.

8.0 DOCUMENT CONTROL

Approved:  <hr/> Name Title STATE MAINT ENGINEER		REVISION NO.: 1.0 DATE: 11/13/12 SUPERSEDES EDITION:
Date 11/16/12		

Title: Vehicle Washing

Document #: TURN- EMS – WI - 004

Revision #: 2.0

Page 1 of 3
Date: 12/12/2014

1.0 PURPOSE:

- 1.1 To provide guidance for the proper washing of NHDOT fleet vehicles at NHDOT Bureau of Turnpikes (BOT) facilities in an effort to maintain compliance with local, state, and federal requirements. This work instruction implements restrictions on methods and locations of outside vehicle and equipment washing.

2.0 SCOPE

- 2.1 This work instruction is intended to assist all BOT employees with the proper vehicle and equipment washing procedures to reduce potential negative environmental impacts. Proper vehicle and equipment washing includes washing of the exterior portion of the vehicle body and vehicle frame, tires, and wheels that do not contain excessive accumulations of oil, grease, and road salt that could have a negative environmental impact. Proper vehicle washing does not include washing of the engine compartment, transmission, or vehicle interior.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator:

- 3.1.1 Provide management support, adequate resources, and ensure funding for materials, products and equipment.
- 3.1.2 Register vehicle-washing locations with New Hampshire Department of Environmental Services (NHDES).
- 3.1.3 Comply with NHDES registration conditions, if any.
- 3.1.4 Provide the equipment necessary to perform vehicle washing in a safe and environmentally correct manner.

3.2 Safety and Environmental Coordinator:

- 3.2.1 Provide technical assistance and training to Bureau personnel as needed.
- 3.2.2 Propose revisions to the work instruction, as appropriate, to the BOT EMS Team and/or BOT S&E Safety Committee.
- 3.2.3 Maintain records related to employee training.

3.3 Maintenance Superintendent / Supervisors:

- 3.3.1 Provide technical assistance to the Highway Patrol Foreman as necessary.

3.4 Patrol Foreman:

- 3.4.1 Provide guidance to all Crew Members and hired equipment operators pertaining to vehicle washing.
- 3.4.2 Correct deficiencies within the means of the position.
- 3.4.3 Report deficiencies outside of the means of the position to the Maintenance Superintendent / Supervisors or Safety Environmental Coordinator.

3.5 Crew Members and Hired Equipment Operators:

- 3.5.1 Comply with all parts of this work instruction.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the BOT as needed.

Title: Vehicle Washing

Page 2 of 3

Document #: TURN-EMS – WI - 004

Revision #: 2.0

Date: 12/12/2014

3.6.2 Provide relevant Best Management Practices to the BOT as they are released to the industry.

3.6.3 Communicate changes in local, state, or federal requirements to the BOT.

4.0 REFERENCES

- 4.1 NHDES WD-DWGB-22-10 Wastewater Discharges from Vehicle Washing.
- 4.2 NHDES WD-DWGB-12-10 Wellhead Protection for Small Public Water Supply Systems.
- 4.3 NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 4.4 NHDES Code of Administrative Rules Env-Wq 402 Groundwater Discharge Permit and Registration.
- 4.5 City of Dover Industrial Discharge Permit with BOT.
- 4.6 Registration and Notification form for the Discharge of Nondomestic Nonhazardous (Dust and Salt water/rinse) Wastewater to the Ground Surface for Infiltration dated February 12, 2013.

5.0 RECORDS:

- 5.1 NHDOT Registration and Notification Form for Floor Drains and Discharges Groundwater.
- 5.2 Maintain training records at Hooksett Administration Office.
- 5.3 MSDSs for all approved vehicle washing soaps.
- 5.4 NHDES Approved Soaps for Vehicle Washing, latest version.

6.0 PROCEDURE

- 6.1 Follow NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 6.2 Review site specific NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 6.3 Do not wash vehicles within any of the following setbacks:
 - 6.3.1 50 feet of surface water;
 - 6.3.2 75 feet of private water supply wells;
 - 6.3.3 75 feet of onsite water supply wells;
 - 6.3.4 50 feet of storm drains; or catch basins
 - 6.3.5 Protective radius of any public water supply well
- 6.4 Wash less than 30 vehicles (29 washes) per week at any registered vehicle washing location. One vehicle can be washed in an area measuring 16' x 35'. Two vehicles can be washed simultaneously in a wash area measuring 35' x 35' (reference 4.6)
- 6.5 Dover and Nashua may wash their vehicles inside since they are connected to the City's sewer system per our agreements with the city. BOT shall comply to the requirements of the permit (attached)
- 6.6 Remove and properly dispose of, or recycle, gross accumulation of oil, grease, road salt gasoline, diesel fuel, or other materials that could negatively impact the environment using a rag or other absorbent material (not wash water) prior to washing.



Title: Vehicle Washing

Document #: TURN-EMS – WI - 004

Revision #: 2.0

Date: 12/12/2014


- 6.7 Sweep truck beds with broom prior to washing. Collect and properly dispose of, or recycle, sweepings, including salt.
- 6.8 Wash vehicle exterior, frame, fuel tanks and body only.
- 6.9 The parts of the vehicle that cannot be washed include engine compartment, transmission or vehicle interior.
- 6.10 Wash with low pressure or power washer, with hot or cold water, including brush and hose. Do not use a steam cleaner.
- 6.11 Wash in the NHDES approved vehicle-washing location only as shown on the NHDES Registration Form. Copies are available at the sheds or administration office.
- 6.12 Discharge to onsite infiltration including gravel and vegetated areas in accordance with NHDES registration requirements.
- 6.13 Wash responsibly. For example, if you would not wash the vehicle next to your private water supply well due to contaminants on the vehicle do not wash the vehicle until the contaminants have been properly removed and disposed of or recycled.
- 6.14 Do not discharge directly into septic systems or within 50 feet of dry wells.
- 6.15 Wash using only washing materials approved by NHDES for use at NHDOT facilities. No other chemicals or acids should be used.
- 6.16 Do not discharge directly into or within 50 feet of catch basins, wetlands, or surface waters.
- 6.17 Do not wash out gross accumulations of salt. Remove the salt and recycle to onsite salt storage facility.
- 6.18 Wash only NHDOT owned, leased, hired, or rented vehicles and equipment.

7.0 TRAINING

- 7.1 Initial New Employee training for all employees shall be completed within 30 days.
- 7.2 Refresher training as determined by the Maintenance Superintendent, Supervisors, Patrol Foreman, Safety and Environmental Coordinator, Assistant Administrator, or Bureau Administrator. Review original work instructions every six years or as needed.

8.0 DOCUMENT CONTROL

- 8.1 Revision #2 – revised to allow washing fuel tanks and undercarriage of the vehicle

<p>Approved:</p>  <p>_____ Christopher M. Waszczuk, P.E. Administrator, Bureau of Turnpikes</p>	<table> <tr> <td>REVISION NO.:</td> <td>#2</td> </tr> <tr> <td>DATE:</td> <td>12/12/2014</td> </tr> <tr> <td>SUPERSEDES EDITION:</td> <td>2/13/2014</td> </tr> </table>	REVISION NO.:	#2	DATE:	12/12/2014	SUPERSEDES EDITION:	2/13/2014
REVISION NO.:	#2						
DATE:	12/12/2014						
SUPERSEDES EDITION:	2/13/2014						
<p>12/12/14 Date</p>							



Approved Soaps for Vehicle Washing

Product Name	Manufacturer		Availability
CAR-162	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 There is a distributor in Sandown, NH
GUNK	Distributed by Radiator Specialty Company (RSC)		Car Parts
Simple Green	Sunshine Makers		Home Depot / Ace hardware Shaws Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Simple Green d	Sunshine Makers		Home Depot / Ace hardware Shaws Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Special Foamer	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 (distributor in Sandown, NH)
Nu-Tralize	ATCO International		(770) 424-7550

\\:\common\hydrology\conservation\programs\cic\2013\nd\approved cleaners\dot

<p>Approved Soaps / Vehicle Wash Revised 11/09/2012</p>
--

City of Dover
Wastewater Treatment Facility
484 Middle Road
Dover, NH 03820
Phone: 603-516-6475
Fax: 603-516-6477

City of Dover, New Hampshire
INDUSTRIAL PRETREATMENT

LEGAL NAME: NH Dept. of Transportation, Bureau of Turnpikes
INDUSTRIAL DISCHARGE PERMIT

LEGAL AUTHORITY: ENFORCEMENT

Pursuant to Title 40 of the Code of Federal Regulations Part 403 the authority to implement, and enforce Dover's Industrial Pretreatment Program using this control mechanism (Permit) is as noted. (U.S. EPA REGION I, NH RSA 149-1:6, NH RSA 485-A:4,5,6, Env-Wq 305, Dover S.U. O. Chapter 147)

In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information provided as part of the Industrial Discharge Permit (IDP) shall be available to the public without restriction except as specified in 40 CFR. It is from the information provided on the Industrial Discharge Application or waste survey that an IDP for the individual applicant and/or facility will be issued.

In accordance with all terms and conditions of the Code of the City of Dover, New Hampshire, Chapter 147, Article II, Section 147-13 thru 147-24 Industrial Pretreatment, all persons discharging process wastes into the City's wastewater facilities shall comply with applicable federal, state and local Industrial Pretreatment rules.

This permit is in effect for the duration of time indicated below. Reapplication is required by the above named business or industry 60 days prior to it's expiration. No permit shall exceed 5 years in duration.

Permit Serial Number: 1130
Date of Issuance: 09/17/14
Date of Expiration: 09/16/19
Categorical Standard: N/A
City Official or Authorized
City Representative: *Arnold Power*
Title: Pretreatment Coordinator

Dennis Merrill ON BEHALF OF TED ROWLAND

1) Company Name: NH DOT Bureau of Turnpikes
 Address: P.O. Box 2950
Dover, NH 03820
 Phone Number: 603-485-3806
 Responsible Official: Alan Barrington
 Contact Person: Ted Rowland

- 2) It is the responsibility of the permittee to understand all the requirements of this Industrial Discharge Permit.
- 3) Slug Discharge: Immediate notification must be given to the POTW in the event of a slug discharge. In emergency situations after working hours call DOVER (PD) 742-4646.
- 4) Source & Max Daily Flow:

1. waste water from truck garage GPD
2. and domestic - 100 -200 GPD
3. _____ GPD
4. _____ GPD
5. _____ GPD

5) Pretreatment Operations:

Oil & Grit Separator

6) Self Monitoring Required: Yes
 Chain of Custody Required: Yes

Parameters	Method	Frequency	Type Sample	Sample Locations
Oil & Grease	EPA 40 CFR Part 136	annually	grab	sampling manhole

7) Applicable Discharge Limits:

All of Chapter 147 applies, see 147-6
of Dover Sewer Use Ordinance
limit for oil & grease 100 mg/L

8) Sampling Equipment: - Flow Measurement: - N/A
Plastic Bottle for metals, BOD, COD, pH; - N/A
Glass Bottles VOCs, SVOCs, & Oil&Grease;- *
Sampling, Analysis, and Sample N/A
Preservation as indicated in 40 CFR Part 136 N/A

9) Reporting Requirements: Noncompliance immediately
And as indicated below,
Dates: June
Results of Self Monitoring: indicate with lab analysis if applicable
Production Figures: N/A

Certification, Compliance
or Non Compliance

During reporting period: Lab results or cleaning record

Actions taken to meet compliance:

Notify POTW

10) Record keeping Requirements: Lab Reports

11) Special Conditions and/or

Compliance Schedules: Spot inspections of oil & grit separator and applicable records by POTW staff at any time.

12) Right of Entry: The Superintendent or his authorized agent shall be permitted to enter all properties, including dwellings, for the purposes of inspection, observation, measurement, sampling, and testing.

13) Enforcement Remedies: Any person violating any provisions of this Industrial Discharge Permit shall be subject to the following enforcement responses- Notice of Violation, Administrative Orders, fines not to exceed \$10,000 a violation (each day a violation continues shall be deemed a separate offence), Termination of service, Civil Litigation, or Criminal Prosecution.

14) Standard Conditions: Non-transferable; may be revoked for noncompliance; may be modified to reflect newly promulgated rules; change in flow or pollutant characteristics requires new application 60 days in advance; there will be an annual fee to defray costs of administration of the pretreatment program; industry specific costs to the community will be passed along to the industry; compliance must be maintained with Sewer Use Ordinance; slugs, spills or emergencies must be reported immediately; and special monitoring may be required when non-compliance occurs.

15) STANDARD CONDITIONS FOR PERMIT

SECTION A. GENERAL CONDITIONS AND DEFINITIONS

1. Severability

The provisions of this permit are available, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

2. Duty to comply

The permittee must comply with all conditions of this permit. Failure to comply with the requirements of this permit may be grounds for administrative action, or enforcement proceedings including civil or criminal penalties, injunctive relief, and summary abatements.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact to the public treatment plant or the environment resulting from non-compliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

4. permit modification

This permit may be modified for good causes including, but not limited to, the following:

- a. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements.
- b. Material or substantial alterations or additions to the discharger's operation processes, or discharge volume or character which were not considered in drafting the effective permit.
- c. A change in any condition in either the industrial user of the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge
- d. Information indicating that the permitted discharge poses a threat to the Control Authority's collection and treatment systems, POTW personnel or the receiving waters
- e. Violation of any terms or conditions of the permit
- f. Misrepresentation or failure to disclose fully all relevant facts in the permit application or in any required reporting

- g. Revision of or a grant of variance from such categorical standards pursuant to 40 CFR 403.13, the S.U.O.; or
- h. To correct typographical or other errors in the permit.
- i. To reflect transfer of the facility ownership and/or operation to a new owner/operator.
- j. Upon request of the permittee, provided such request does not create a violation of any applicable requirements, standards, laws, or rules and regulations.

The filing of a request by the permittee for a permit modification, revocation and reissue, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.

a. Permit Termination

This permit may be terminated for the following reasons:

- i. Falsifying self-monitoring reports
- ii. Tampering with monitoring equipment
- iii. Refusing to allow timely access to the facility premises and records.
- iv. Failure to meet effluent limitations.
- v. Failure to pay fines.
- vi. Failure to pay sewer charges.
- vii. Failure to meet compliance schedules.

b. Permit Appeals

The permittee may petition to appeal the terms of this permit within thirty (30) days of the notice. This petition must be in writing; failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to be placed in the permit.

The effectiveness of this permit shall not be stayed pending reconsideration by the Board. If, after considering the petition and any arguments put forth by the Superintendent, the Board determines that reconsideration is proper, it shall remand the permit back to the Superintendent for reissue. Those permit provisions being reconsidered by the Superintendent shall be stayed pending reissue.

c. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any violation of Federal, State, or local laws or regulations.

d. Continuation of Expired Permits

An expired permit will continue to be effective and enforceable until the permit is reissued if:

- i. The permittee has submitted a compliance permit application at least sixty (60) - days prior to the expiration date of the user's existing permit.
- ii. The failure to reissue the permit, prior to expiration of the previous permit, is not due to any act or failure to act on the part of the permittee.

e. Dilution

The permittee shall not increase the use of potable or process water or, in any way, attempt to dilute an effluent as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

f. Definitions

- i. Bi-Weekly – Once every other week.
- ii. Bi-Monthly – once every other month.
- iii. BOD – (denoting "biochemical oxygen demand") –the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at twenty degrees Celsius (20 degrees C.), express in milligrams per liter.
- iv. Bypass – Shall mean the intentional diversion of waste streams from any portions of an industrial user's pretreatment facility.
- v. Composite Sample – A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may be composited either as a time composite sample: composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or as a flow proportional composite sample: collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots. (The permit writer should determine the most appropriate composite sampling method to be used by the permittee.)
- vi. Cooling Water –
 1. Uncontaminated: Water used for cooling purposes only which has no contact with any raw material, intermediate, or final product and which does not contain a level of contaminants detectably higher than that of the intake water.
 2. Contaminated: Water used for cooling purposes only which may become contaminated either thorough the use of water treatment chemicals used for corrosion inhibitors or biocides, or by direct contact with process materials and/or wastewater.

- vii. Daily Maximum – The maximum allowable discharge of pollutant during a calendar day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.
- viii. Dilute – To reduce in concentration, or thin down, or weaken by mixing with water or other liquids.
- ix. Grab Sample – A single sample collected at a particular time and place, which represents the composition of the waste-stream.
- x. Excessive – Amounts or concentration of a constituent of a wastewater which, in the judgment of the Superintendent.
 1. Will cause damage to the City's wastewater facility.
 2. Will be harmful to a wastewater treatment process.
 3. Cannot be removed in the city treatment works to the degree required to meet the limiting stream classification standards of the receiving water and/or EPA effluent standards.
 4. Can otherwise endanger life, limb or public property.
 5. Can constitute a nuisance.
- xi. Industrial Discharge Permit -- (IDP) is the official document issued by the POTW to a Industrial User of the Dover sewer system and treatment works that outlines the general and specific conditions under which the Industrial User may discharge wastewaters into the City's collection system or POTW.
- xii. Industrial User – Shall mean a person who discharges industrial wastes to the wastewater facilities of Dover.
- xiii. Industrial Waste – The liquid wastes from industrial manufacturing processes, trade or business as distinct from domestic wastewater. (Amended 3-14-79 by Ord. No. 3-79).
- xiv. Instantaneous Maximum Concentration – The maximum concentration allowed in any single grab sample.
- xv. Interference – Shall mean a Discharge by an Industrial User which, alone or in conjunction with discharges by other sources, inhibits or disrupts the POTW, its treatment process 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 use or disposal by the POTW in accordance with ground water protection rules, Ws 410, solid waste rules, He-P 1901.05, hazardous waste rules, He-P 1905.03 and Appendix III, the Clean Air Act, the Toxic Substance Control Act, and the Marine Protection Research and Sanctuaries Act.

- xvi. Monthly Average – The arithmetic mean of the values for effluent samples collected during a calendar month or specified 30-day period (as opposed to a rolling 30 day window.)
- xvii. National Categorical Pretreatment Standard or Pretreatment Standard – Shall mean 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 and which are found in the Code of Federal Regulations 40 CFR, Chapter 1, Subchapter N, parts 403 through 471.
- xviii. Pass Through – Shall mean the discharge of Pollutants through the 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 requirements of the POTW's NPDES permit (including and increase in the magnitude or duration of a violation) or of applicable water quality criteria.
- xix. Person – Any individual, firm, company association, society, corporation, group, or government facility or governmental subdivision.
- xx. pH – The logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.
- xxi. Pollutant – Includes but is not limited to the materials identified in Chapter 147-6 of the S.U.O. and Article II Section 10. (Added 3-14-79 as Ord. No. 3-79.)
- xxii. POTW or Publicly Owned Treatment Works – Shall mean a wastewater treatment works which a state or a municipality owns. This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial waste of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW wastewater treatment works. The term also means the municipality, which has jurisdiction over discharges to and the discharges from such a treatment works.
- xxiii. S – BEST MANAGEMENT PRACTICES or BMPs – Means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in 40 CFR 403.5(a)(1) and (b). 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 materials storage.
- xxiv. Screening Level – Shall mean that concentration of a pollutant that under baseline conditions, would cause a threat to personnel exposed

to the pollutant, or would cause a threat to structures of wastewater facilities. To be administered as limits applicable to a particular discharge, the screening levels must be adjusted to account for conditions at the point of discharge, which differ from baseline conditions.

xxv. Significant Industrial User – All categorical industrial users or any non-categorical industrial user that:

1. Discharges ten thousand (10,000) gallons per day or more of process wastewater, excluding sanitary, non-contact cooling and boiler blow down wastewater.
2. Contributes a process waste stream which makes up five percent (5%) or more of the average dry-weather hydraulic or organic (BOD,) total suspended solids, etc.) capacity of the treatment plants.
3. Has a reasonable potential, in the opinion of the Superintendent, to adversely affect the POTW.
4. Are subject to National Categorical Pretreatment Standards as outlined in 40 CFR 403.6, 40 CFR 403.8, and 40CFR Chapter I, Subchapter N.
5. is a discharger of medical/infectious waste, pharmaceutical waste, radiological waste, or wastewater from a hospital process or system, that in the opinion of the City's authorized representative could have an adverse effect on the POTW.

xxvi. Slug – Any discharge of water, sewage or wastewater which, in concentration of any given constituent or in quantity of flow, exceeds for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration, or flow, during normal operation or which shall adversely effect the collection system and/or the performance of the treatment works.

u) Spill – Shall mean the release, accidental or otherwise, of any material not normally released to the facilities, which by virtue of its volume, concentration or physical or chemical characteristics creates a hazard to the facilities, their operation or their personnel. Such characteristics shall include but are not limited to, volatile, explosive toxic, or otherwise unacceptable materials.

xxvii. S.U.O. – Sewer Use Ordinance (Chapter 147)

aa) Superintendent – Shall mean the Superintendent of the Sewer Department, and/or Wastewater Facilities, and/or of Wastewater Treatment Works, and/or Water Pollution Control of the City of Dover, or his authorized deputy, agent, or representative.

bb) TTO's -- Total Toxic Organics, any of the organic substances alone or in combination, as determined by the Superintendent, to sufficiently inhibit the operation of the Public Treatment Works, endanger its employees, which may result in violation of air or

water quality criteria, or which could result in sludge re-use limitations.

cc) Upset—Means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee, excluding such factors as operational error, improperly designed or inadequate treatment facilities, or improper operation and maintenance or lack thereof.

dd) User – Shall mean any person who discharges wastewater to the facilities of the City.

11) General Prohibitive Standards

The permittee shall comply with all the general prohibitive discharge standards in Chapter 147-6. Namely, the industrial user shall not discharge wastewater to the sewer system:

- a) Having a temperature higher than 104 degrees F (40 degrees C);
- b) Containing more than 100 ppm by weight of fats, oils, and grease, or 100 ppm petroleum or mineral based oil or grease.
- c) Containing any gasoline, benzene, naphtha, fuel oil or other flammable or explosive liquids, solids or gases; and in no case pollutants with a closed cup flashpoint of less than one hundred forty (140) degrees Fahrenheit (60 degrees C), or pollutants which cause an exceedance of 10 percent of the Lower Explosive Limit (LEL) at any point within the POTW.
- d) Containing any garbage that has not been ground by household type or other suitable garbage grinders;
- e) Containing any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch, manure, or any other solids or viscous substances capable of causing obstructions or other interferences with proper operation of the sewer system;
- f) Having a pH lower than 6.0 or higher than 11.0, or having any other corrosive property capable of causing damage or hazards to structures, equipment or personnel of the sewer system;
- g) Containing toxic or poisonous substances in sufficient quantity to injure or interfere with any wastewater treatment process, to constitute hazards to humans or animals, or to create any hazard in waters, which receive, treated effluent from the sewer system treatment plant. Toxic wastes containing cyanide, chromium, cadmium, mercury, copper, and nickel ions;
- h) Containing noxious or malodorous gases or substances capable of creating a public nuisance; including pollutants which result in the presence of toxic gases, vapors, or fumes;
- i) Containing solids of such character and quantity that special and unusual attention is required for their handling;

- j) Containing any substance which may affect the treatment plant's effluent and cause violation of the NPDES permit requirements;
- k) Containing any substance which would cause the treatment plant to be in non-compliance with sludge use, recycle or disposal criteria pursuant to guidelines or regulations developed under section 405 of the Federal Act, the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act or other regulations or criteria for sludge management and disposal as required by the State.
- l) Containing color which is not removed in the treatment processes;
- m) Containing any medical or infectious wastes;
- n) Containing any radioactive wastes or isotopes; or
- o) Containing any pollutant, including BOD pollutants, released at a flow rate and/or pollutant concentration, which would cause interference with the treatment plant.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROL

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

Upon reduction of efficiency of operation, or loss or failure of all or part of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

- a) Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury, or severe property damage or no feasible alternatives exist.

- b) The permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is also for essential maintenance to assure efficient operation, and after notifying POTW.
- c) Notification of bypass:
 - (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, at least ten days before the date of the bypass, to the POTW.
 - (2) Unanticipated bypass. The permittee shall immediately notify the POTW and submit a written notice to the POTW within 5 days. This report shall specify:
 - (i) A description of the bypass, and its cause, including its duration;
 - (ii) Whether the bypass has been corrected; and
 - (iii) The steps being taken or to be taken to reduce, eliminate and prevent a reoccurrence of the bypass.

4. Removed Substances

Solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in accordance with section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected and maintained to ensure their accuracy. Monitoring points shall not be changed without notification to and the approval of the POTW.

2. Flow Measurements

If flow measurement is required by this permit, the appropriate flow measurement devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Analytical Methods to Demonstrate Continued Compliance

All sampling and analysis required by this permit shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto, otherwise approved by EPA, or as specified in this permit.

4. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures identified in Section C.3, the results of this monitoring shall be included in the permittee's self-monitoring reports.

5. Inspection and Entry

The permittee shall allow the Superintendent, or an authorized representative, upon the presentation of credentials and other documents as may be required by law.

- a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b) B) Have access to any copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;
- d) Sample or monitor, for the purposes of assuring permit compliance, and substances or parameters at any location; and
- e) Inspect any production, manufacturing, fabricating, or storage area where pollutants, regulated under the permit, could originate, be stored, or be discharged to the sewer system.

6. Retention of Records

- a) The permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of the sample, measurement, report or application. This period may be extended by request of the Superintendent at any time.
- b) All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities brought by the POTW shall be retained and preserved by the permittee until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

7. Record Contents

Records of sampling and analyses shall include:

- a) The date, exact place, time, and methods of sampling or measurements, and sample preservation techniques or procedures;
- b) Who performed the sampling or measurements;
- c) The date (s) analyses were performed;
- d) Who performed the analyses;
- e) The analytical techniques or methods used; and
- f) The results of such analyses.

8. Falsifying Information

Knowingly making any false statement on any report or other document required by this permit or knowingly rendering any monitoring device or method inaccurate, is a crime any may result in the imposition of criminal sanctions and/or civil penalties.

SECTION D. ADDITIONAL REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the POTW sixty (60) - days prior to any facility expansion, production increase, or process modifications, which results in new or substantially increased discharges or a change in the nature of the discharge.

2. Anticipated Noncompliance

The permittee shall give advance notice to the POTW of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

3. Automatic Re-sampling

If the results of the permittee's wastewater analysis indicates a violation has occurred, the permittee must notify the POTW within twenty-four (24) hours of becoming aware of the violation and repeat the sampling and pollutant analysis and submit, in writing, the results of this repeat analysis within thirty- (30) days after becoming aware of the violation.

4. Duty to Provide Information

The permittee shall furnish to the POTW any information which the POTW may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also, upon request, furnish to the POTW copies of any records required by this permit.

5. Signatory Requirements [use whichever alternative best applies]

All applications, reports, or information submitted to the POTW must contain the following certification statement and be signed as required in Sections (a), (b), (c), or (d) below:

"I certify under penalty of law that this document and all attachments were prepared under by 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, 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."

By a responsible corporate officer, if the Industrial User submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:

- a.) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendation, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
- b.) By a general partner or proprietor if the Industrial User submitting the reports is a partnership or sole proprietorship respectively.
- c.) The principal executive officer or director having responsibility for the overall operation of the discharging facility if the Industrial User submitting the reports is a Federal, State or local governmental entity, or their agents.
- d.) By a duly authorized representative of the individual designated in paragraph (a), (b), or (c);
 - (i) The authorization is made in writing by the individual described in paragraph (a), (b), or (c);
 - (ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originates, such as the position of plant manager, operator of a well, or a well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and
 - (iii) The written authorization is submitted to the City.
- e.) If an authorization under paragraph (d) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for the environmental matters for the company, a new authorization satisfying the requirements of paragraph (d) of this section must be submitted to the City prior to or together with any reports to be signed by an authorized representative.

6. Operating Upsets

Any permittee that experiences an upset in operations that places the permittee in a temporary state of noncompliance with the provisions of either this permit or with Chapter 147 shall inform the POTW within twenty-four (24) hours of becoming aware of the upset at (603) 516-6475.

A written follow-up report of the upset shall be filed by the permittee with the POTW within five days. The report shall specify:

- a) Description of the upset, the cause (s) thereof and the upset's impact on the permittee's compliance status;
- b) Duration of noncompliance, including exact dates and times of noncompliance, and if not corrected, the anticipated time the noncompliance is expected to continue; and
- c) All steps taken or to be taken to reduce, eliminate and prevent recurrence of such an upset.

The report must also demonstrate that the facility was being operated in a prudent and workmanlike manner.

A documented and verified operating upset shall be an affirmative defense to any enforcement action brought against the permittee for violations attributable to the upset event.

7. Annual Publication

A list of all industrial users, which are subject to enforcement proceedings during the twelve (12) previous months, shall be annually published by the POTW in the largest daily newspaper within its service area. Accordingly, the permittee is apprised that noncompliance with this permit may lead to an enforcement action and may result in publication of its name in an appropriate newspaper in accordance with this section.

8. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil and/or criminal penalties for noncompliance.

9. Penalties for Violations of Permit Conditions

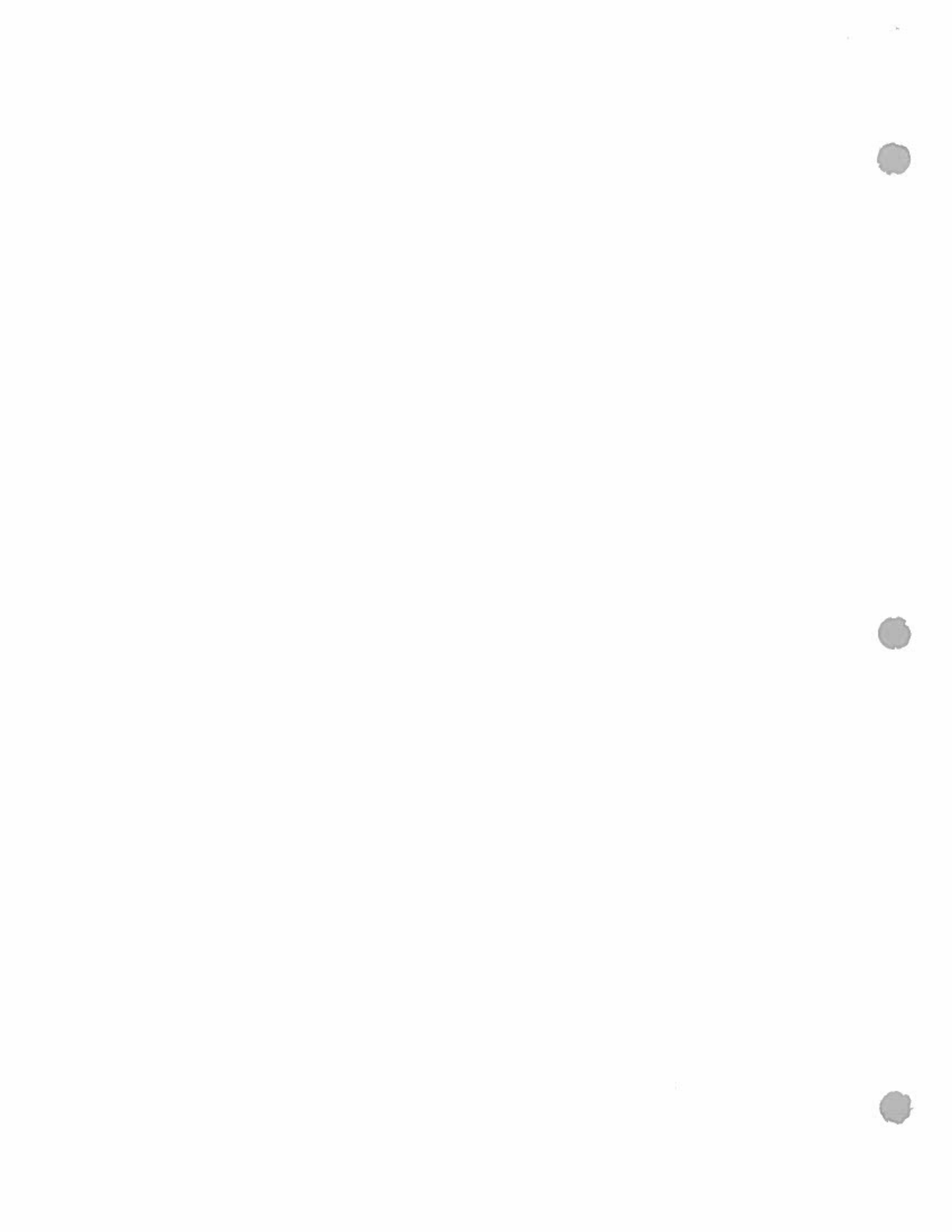
Chapter 147-12 (A) provides that any person who violates a permit condition is subject to a civil penalty of at least \$10,000.00 per day per violation. Any person who willfully or negligently violates permit conditions is subject to criminal penalties of a fine of up to \$10,000.00 per day per violation. The permittee may also be subject to sanctions under State and/or Federal law.

10. Recovery of Costs Incurred

In addition to civil and criminal liability, the permittee violating any of the provisions of this permit or Chapter 147 or causing damage to or otherwise inhibiting the POTW wastewater disposal system shall be liable to the POTW for any expense, loss, or damage caused by such violation or discharge. The POTW shall bill the permittee for the costs incurred by the POTW for any compliance monitoring, cleaning, repair, or replacement work caused by the violation or discharge.

11. Compliance with Applicable Pretreatment Standards and Requirements

Compliance with this permit does not relieve the permittee from its obligations regarding compliance with any and all applicable local, State and Federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.



NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

BUREAU OF HIGHWAY MAINTENANCE

MAINTENANCE DISTRICT: 2

REPORT WEEK NO. 15

FY 2019 SALT & SAND REPORT (NOV.2018 - APRIL 2019)

REPORT DATE: 08-FEB-2019 to 15-FEB-2019

Winter Salt															
Winter Salt INVENTORY (TONS)							Winter Salt USAGE (TONS)								
Patrol Sector	Storage Capacity	Rec'd To Date	Rec'd This Week	Transfer This Week	Adjust To Pile	On Hand at End of Week	Used During Week	TONS LN/MI Week	Used For Brine Week	Used For Brine To Date	Used To Date	TONS LN/MI To Date	Normal Season Quant	Salt Lane Miles	% +/- Normal Season
201	1700	2340.3	565	0	0	665	217	2.14	0	0	2158	21.24	2308	102	93.50%
201-L	230	0	0	0	0	50	0	0	0	0	0	0	0	0	0.00%
202	2200	1798	996	0	0	1051	213	2.71	0	0	2842	36.12	2237	79	127.05%
203	1500	2163.5	0	0	0	818	318	3.87	0	0	2684	32.64	2108	82	127.32%
204	2400	1904.2	0	0	0	367	223	2.3	0	0	3077.2	31.79	2783	97	110.57%
205	3300	2400.7	0	0	0	1643	279	3.18	0	0	2677	30.5	2157	88	124.11%
206	1500	1279.2	0	0	0	270	200	2.33	0	0	2320	27.04	2149	86	107.96%
207	1500	2310.7	0	401	0	747	316	3.09	0	0	3059	29.87	3117	102	98.14%
210	1500	2851.3	1048	-401	-524.3	927	274	3.37	0	0	1864.3	22.9	1936	81	96.30%
211	2000	2364.4	0	0	0	418	210	3.19	0	0	2260	34.33	1676	66	134.84%
212	1500	458	0	0	0	642	127	1.36	0	0	1402	15.02	1186	93	118.21%
213	1450	1975.9	0	0	0	304	247	1.78	0	0	3016.9	21.79	2300	138	131.17%
214	2000	2736.2	0	0	0	888	215	2.23	0	0	2091.2	21.68	2103	96	99.44%
215	1700	1506.8	0	0	0	497	163	1.94	0	0	1218.8	14.51	827	84	147.38%
215-A	400	0	0	0	0	119	0	0	0	0	31	31	0	0	3100.00%
216	2200	805.4	0	0	0	1805	0	0	0	0	1720	1720	1460	0	117.81%
224-I	3750	2591	0	0	0	2269	424.5	3.23	0	0	3524	26.85	4463	131	78.96%
224-P	0	0	0	0	0	31	9	.81	0	0	145	13.11	108	11	134.26%
Sub Total															
INT	3750	2591	0	0	0	2269	424.5	3.24	0	0	3524	26.9	4463	131	78.96%
P_S	27080	26894.6	2609	0	-524.3	11242	3011	2.5	0	0	32566.4	27.03	28455	1205	114.45%
Totals	30830	29485.6	2609	0	-524.3	13511	3435.5	2.57	0	0	36090.4	27.01	32918	1336	109.64%

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

BUREAU OF HIGHWAY MAINTENANCE

MAINTENANCE DISTRICT: 2

REPORT WEEK NO. 15

FY 2019 SALT & SAND REPORT (NOV.2018 - APRIL 2019)

REPORT DATE: 08-FEB-2019 to 15-FEB-2019

Winter Sand													
Winter Sand INVENTORY (CY)							Winter Sand USAGE (CY)						
Patrol Sector	Storage Capacity	Rec'd To Date	Rec'd This Week	Transfer This Week	Adjust To Pile	On Hand at End of Week	Used During Week	CY LN/MI Week	Used To Date	CY LN/MI To Date	Normal Season Quant	Sand Lane Miles	% +/- Normal Season
201	0	0	0	0	0	233	66	.65	378	3.72	2048	102	18.46%
201-L	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
202	0	0	0	0	0	133	22	.28	345	4.38	2401	79	14.37%
203	0	100	0	0	0	69	7	.09	188	2.29	2554	82	7.36%
204	0	0	0	0	0	624	0	0	1096	11.32	1333	97	82.22%
205	0	0	0	0	0	0	0	0	32.8	.37	2262	88	1.45%
206	0	0	0	0	0	109	10	.12	130	1.52	2034	86	6.39%
207	0	0	0	0	0	10	0	0	0	0	627	102	0.00%
210	0	0	0	0	0	151	24	.29	249	3.06	2071	81	12.02%
210-A	0	0	0	0	0	507	0	0	0	0	0	0	0.00%
211	0	0	0	0	0	3	0	0	0	0	1735	66	0.00%
212	0	0	0	0	0	106	0	0	29	.31	593	93	4.89%
213	0	0	0	0	0	0	0	0	8	.06	1156	138	0.69%
214	0	0	0	0	0	0	0	0	0	0	1391	96	0.00%
215	0	0	0	0	0	67	0	0	68	.81	2494	84	2.73%
215-A	0	0	0	0	0	132	0	0	0	0	0	0	0.00%
216	0	0	0	0	0	16	0	0	0	0	641	0	0.00%
224-I	0	0	0	0	0	411	22.5	.17	502.5	3.83	2076	131	24.21%
224-P	0	0	0	0	0	46	3	.27	66	5.97	382	11	17.28%
Sub Total													
INT	0	0	0	0	0	411	22.5	.17	502.5	3.84	2076	131	24.21%
P_S	0	100	0	0	0	2206	132	.11	2589.8	2.15	23722	1205	10.92%
Totals	0	100	0	0	0	2617	154.5	.12	3092.3	2.31	25798	1336	11.99%

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

BUREAU OF HIGHWAY MAINTENANCE

MAINTENANCE DISTRICT: 2

FY 2019 SALT & SAND REPORT (NOV.2018 - APRIL 2019)

REPORT WEEK NO. 15

REPORT DATE: 08-FEB-2019 to 15-FEB-2019

Liquid CaCL												
Liquid CaCL INVENTORY (GAL)						Liquid CaCL USAGE (GAL)						
Patrol Sector	Rec'd To Date	Rec'd This Week	Transfer This Week	Adjust To Pile	On Hand at End of Week	Used During Week	GAL LN/MI Week	Used To Date	GAL LN/MI To Date	Normal Season Quant	CaCL Lane Miles	% +/- Normal Season
201	0	0	0	0	2450	0	0	0	0	0	102	0.00%
202	0	0	0	0	40	95	1.21	775	9.85	1000	79	77.50%
203	0	0	0	0	1600	0	0	0	0	1000	72	0.00%
204	0	0	0	0	2400	0	0	0	0	0	87	0.00%
205	0	0	0	0	2000	0	0	0	0	1000	88	0.00%
206	0	0	0	0	1250	0	0	200	2.09	1000	96	20.00%
207	0	0	0	0	1400	0	0	0	0	1000	102	0.00%
210	0	0	0	0	310	0	0	0	0	1000	81	0.00%
224	0	0	0	0	466	0	0	0	0	0	11	0.00%
224-I	0	0	0	0	1548	0	0	500	3.81	0	131	50000.00%
Sub Total												
INT	0	0	0	0	1548	0	0	500	3.82	0	131	50000.00%
P_S	0	0	0	0	11916	95	.13	975	1.36	6000	718	16.25%
Totals	0	0	0	0	13464	95	.11	1475	1.74	6000	849	24.58%

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

BUREAU OF HIGHWAY MAINTENANCE

MAINTENANCE DISTRICT: 2

REPORT WEEK NO. 15

FY 2019 SALT & SAND REPORT (NOV.2018 - APRIL 2019)

REPORT DATE: 08-FEB-2019 to 15-FEB-2019

Flake CaCL												
Flake CaCL INVENTORY (LBS)						Flake CaCL USAGE (LBS)						
Patrol Sector	Rec'd To Date	Rec'd This Week	Transfer This Week	Adjust To Pile	On Hand at End of Week	Used During Week	LBS LN/MI Week	Used To Date	LBS LN/MI To Date	Normal Season Quant	CaCL Lane Miles	% +/- Normal Season
201	0	0	0	0	50	100	.98	100	.98	750	102	13.33%
202	0	0	0	0	350	0	0	0	0	750	79	0.00%
203	0	0	0	0	1200	0	0	0	0	750	72	0.00%
204	0	0	0	0	1100	0	0	0	0	750	87	0.00%
205	0	0	0	0	200	0	0	0	0	750	88	0.00%
206	0	0	0	0	550	0	0	0	0	750	86	0.00%
207	0	0	0	0	0	0	0	0	0	750	102	0.00%
210	0	0	0	0	1400	200	2.46	200	2.46	750	81	26.67%
211	0	0	0	0	0	0	0	0	0	750	66	0.00%
212	0	0	0	0	150	0	0	0	0	750	93	0.00%
213	0	0	0	0	1300	0	0	0	0	750	138	0.00%
214	0	0	0	0	0	0	0	0	0	750	96	0.00%
215	0	0	0	0	70	0	0	0	0	750	84	0.00%
216	0	0	0	0	3300	0	0	0	0	750	0	0.00%
224	0	0	0	0	7950	0	0	0	0	750	131	0.00%
Sub Total												
P_S	0	0	0	0	17620	300	.23	300	.23	11250	1305	2.67%
Totals	0	0	0	0	17620	300	.23	300	.23	11250	1305	2.67%

NHDOT Salt Storage Capacity & Locations

Storage Shed Number and Location	Capacity
0101 Pittsburg Shed	1,400
0102 Columbia/Colebrook Shed	1,900
0103 Errol/Dixville Shed	1,300
0104 Groveton Shed	1,300
0105 West Milan Shed	800
0106 Milan Shed	500
0107 Lancaster/Whitefield Shed	1,900
0108 Jefferson Shed	1,500
0109 Gorham/Pinkham Shed	1,950
0111 Littleton Shed	500
0112 Crawford Notch Shed	1,850
0113 Glen Shed	850
0114 Lisbon Shed	650
0115 Lincoln Shed	1,650
0116 Franconia Shed	2,400
0124 Franconia/Butterhill Shed	2,650
0125 Littleton Shed	1,450
0201 Orford Shed	2,030
0202 Wentworth Shed	2,200
0203 Rumney Shed	1,500
0204 North Haverhill Shed	2,400
0205 Canaan Shed	3,300
0206 Bristol Shed	1,500
0207 Lebanon Shed	1,500
0210 Andover Shed	1,500
0211 Franklin Shed	2,000
0212 Cornish Shed	1,500
0213 Sunapee Shed	1,450
0214 New London Shed	2,000
0215 Lempster Shed	2,100
0216 Newbury Shed	2,200
0224 Enfield Shed	3,750
0301 Conway Shed	3,500
0302 Tamworth Shed	1,500
0303 Freedom Shed	2,500
0304 Ashland Shed	2,500
0305 Moultonboro Shed	1,200
0307 Ossipee Shed	1,500
0309 Meredith Shed	2,500
0311 Tuftonboro Shed	1,500
0312 Wakefield Shed	2,500
0313 Tilton Shed	2,500
0314 Belmont Shed	2,500
0315 Alton Shed	3,000
0316 Loudon Shed	1,000
0324 New Hampton Shed	3,500
0325 Thornton Shed	5,000
0401 Charlestown/Walpole Shed	1,950
0403 Marlow/Alstead Shed	1,950

0404 Hillsborough Shed	1,500
0405 Westmoreland Shed	1,950
0406 Swanzey Shed	1,500
0407 Nelson/Stoddard Shed	1,800
0408 Hancock	1,800
0409 Greenfield	1,500
0410 Hinsdale/Winchester Shed	1,800
0411 Troy	1,500
0412 Marlborough	1,500
0413 Rindge	1,800
0414 Temple	1,500
0415 Greenville	1,800
0501 Warner Shed	1,900
0503 Chichester Shed	1,500
0504 Henniker Shed	1,900
0505 Bow/Concord Shed	3,600
0506 Allenstown Shed	1,000
0507 Goffstown Shed	2,500
0508 Hooksett Shed	1,500
0509 Candia Shed	3,600
0510 Milford Shed	2,500
0511 Bedford Shed	4,700
0512 Londonderry Shed	2,000
0513 Raymond/Chester Shed	2,300
0514 Salem Shed	1,500
0515 Hollis Shed	1,500
0516 Londonderry II Shed	2,000
0525 Canterbury Shed	3,600
0526 Warner II Shed	3,000
0527 Manchester Shed	3,600
0528 Derry Shed	3,600
0601 Milton Shed	2,000
0602 Strafford Shed	1,300
0603 Gonic Shed	2,400
0604 Northwood Shed	2,000
0605 Lee Shed	2,000
0606 Dover Shed	2,000
0607 Exeter Shed	3,500
0608 Epping Shed	2,000
0609 Newfields Shed	2,000
0610 North Hampton/Rye Shed	2,000
0611 South Kingston Shed	2,000
0612 North Hampton Shed	2,000
0615 Kingston Shed	2,100
7010 - South Nashua Maintenance Shed	2,000
7011 - Hooksett Maintenance Shed	5,500
7012 - Merrimack Maintenance Shed	3,500
7014 - Dover Maintenance Shed	1,200
7015 - Hampton Maintenance Shed	5,500
7023 - Rochester Maintenance Shed	3,000

Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 1 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

1.0 PURPOSE

- 1.1 To provide guidance for the proper storage and handling of road salt and other anti-icing and deicing chemicals including, but not limited to, sodium chloride (solid & brine), calcium chloride (solid & liquid), magnesium chloride, potassium acetate [all hereinafter referred to as "salt"] on NHDOT Bureau of Highway Maintenance (BHM) facilities.
- 1.2 To prevent the intrusion of salt into the environment as a result of leaching, runoff or erosion of NHDOT-owned stockpiles of salt in an effort to prevent environmental damage, maintain compliance with local, state and federal requirements, and reduce liability.

2.0 SCOPE

- 2.1 This document is intended to assist all employees within the BHM concerning all salt and anti-icing material handled and stored on NHDOT property.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator or District Engineer:

- 3.1.1 Develop work instructions and provide training to all appropriate personnel. Provide the equipment and PPE necessary to perform work in a safe and environmentally correct manner.

3.2 Maintenance Supervisor:

- 3.2.1 Provide technical assistance to the Highway Patrol Foreman as necessary.
- 3.2.2 Inspect salt storage areas at least annually.

3.3 Patrol Foreman:

- 3.3.1 Review salt storage and handling requirements with employees annually.
- 3.3.2 Inspect salt storage areas monthly and document on facility's inspection report.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety and Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this work instruction.

3.5 Safety and Environmental Coordinator:

- 3.5.1 Provide technical assistance and training to all District personnel.
- 3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when handling and storage requirements change.
- 3.5.3 Maintain the Maintenance District's MSDS inventory.
- 3.5.4 Maintain records related to employee training.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the Bureau as needed.
- 3.6.2 Provide relevant Best Management Practices to the Bureau as they are released to the industry.
- 3.6.3 Communicate changes in State and Federal requirements to the Bureau.



Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 2 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

4.0 REFERENCES

- 4.1 NH DOT Salt Management Plan (in development).
- 4.2 WD-DWGB-22-30 Storage and Management of Salt Deicing Materials (NH DES).
- 4.3 NH DOT Winter Maintenance Snow Removal and Ice Control Policy.
- 4.4 EHS-CH300-SAFE-003 (NHDOT).
- 4.5 Vehicle Washing and Rinsing Procedural Guideline.

4.0 RECORDS

- 5.1 Maintain training records at District Office.
- 5.2 MSDSs shall be maintained in accordance with 29 CFR 1910.1200

6.0 PROCEDURE

- 6.1 Storage facilities shall be properly maintained to ensure that roofs are weather-tight and that storm water is kept off the stockpile. Site grading shall provide for positive drainage away from the storage building to prevent the intrusion of storm water into the stockpiled salt. Salt stored under tarps shall be regularly inspected to confirm that tarps are free of holes and deterioration that allows water to penetrate through the tarp. Tarps that have holes or deterioration that allows water penetration shall be replaced. Tarps shall be sufficiently anchored to prevent displacement by wind.
- 6.2 Impervious surface shall be provided within the salt storage building and loading areas for all material loading and transfer. This provides for easier clean up of spillage and inhibits infiltration of chemicals into the surface and ground waters.
- 6.3 Stockpiles shall be uniform in shape and maintained in a safe condition at all times. Excess salt off-loaded from plow trucks shall be pushed back into the main pile in a timely manner and kept within the building. Steep or vertical faces shall be knocked down to prevent collapse.
- 6.4 Summer fill-up salt orders shall be placed as early in the fiscal year as possible to receive the fall fill-ups during periods of good weather, reducing the exposure of salt to the elements. This early delivery should result in drier salt and fewer delivery problems. An additional benefit to early deliveries is that salt supplies are usually more plentiful as opposed to winter deliveries when demand can outstrip inventory.
- 6.5 Do not order salt quantities in excess of the inside rated storage capacity of the storage facility. Overstressing of buildings or storage of salt beyond the protection of the building is unacceptable. On-site personnel shall coordinate with office personnel to halt deliveries before the building capacity is exceeded.

- 6.6 When loading vehicles, care shall be taken to avoid overloading the plow truck's body or spreader. Spillage can occur at the loading site or as the truck is traveling along the highway. Either situation wastes salt and money, as well as being environmentally



Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 3 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

unacceptable. A chart of application rates and corresponding tonnage and lane mile can be found in the Salt Management Plan.

- 6.7 Loading ramps shall be of sufficient height to permit the loader to safely place salt in the spreader without spilling material.
- 6.8 Loading ramps, shed yards, and storage areas shall be cleaned of any spilled material following each storm event and at other times as necessary. Any spillages shall be placed back in the stockpile.
- 6.9 The operators shall keep an accurate record of the tons of salt loaded on the truck during a storm as well as the quantity returned to the stockpile unused. Accurate material usage records shall be kept and weekly inspections made to confirm that reported usage is consistent with the material remaining in the storage pile.
- 6.10 Salt shall be added to sand piles in sufficient quantity to prevent freeze up of the covered sand stockpiles. Generally that quantity would be about 100 pounds per cubic yard of sand.
- 6.11 Sand stockpiles shall be covered to prevent leaching of the salt into surface and groundwater.
- 6.12 Storage tanks containing liquid deicers such as calcium chloride, sodium chloride brine, and potassium chloride shall be protected from physical damage.
- 6.13 Tanks and associated piping shall be inspected monthly for leaks and deterioration and documented.
- 6.14 Equipment shall be cleaned in accordance to the NHDOT Vehicle Washing and Rinsing Procedural Guideline.

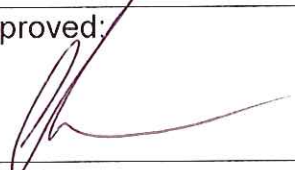
7.0 TRAINING

- 7.1 Initial New Employee training for all employees except office clerical and administrative staff.
- 7.2 As determined by the Maintenance Supervisor, Foreman, or Safety and Environmental Coordinator.

8.0 FORMS

- 8.1 Inspection Form

9.0 DOCUMENT CONTROL

<p>Approved: </p> <hr/> <p>Name _____ Date <u>3/13/12</u></p> <p>Title <u>STATE MAINT ENGINEER</u></p>	<p>REVISION NO.: <u>1.0</u></p> <p>DATE: <u>3/05/2012</u></p> <p>SUPERSEDES EDITION: _____</p>
---	--

Title: Salt & anti-icing chemicals, storage & handling Page 1 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

1.0 PURPOSE

- 1.1 To provide guidance for the proper storage and handling of road salt and other anti-icing and deicing chemicals including, but not limited to, sodium chloride (solid & brine), calcium chloride (solid & liquid), magnesium chloride, potassium acetate [all hereinafter referred to as "salt"] on NHDOT Bureau of Highway Maintenance facilities.
- 1.2 To prevent the intrusion of salt into the environment as a result of leaching, runoff or erosion of NHDOT-owned stockpiles of salt, thereby reducing liability, preventing environmental damage, and maintaining compliance with local, state and federal requirements.

2.0 SCOPE

This document is intended to assist all employees within the Bureau of Turnpikes concerning all salt handled and stored on NHDOT property.

3.0 RESPONSIBILITIES

3.1 All Employees:

- 3.1.1 Should comply with the provisions outlined in this work instruction.

3.2 Maintenance Supervisor:

- 3.2.1 Understand all aspects of this work instruction and provide technical assistance to the Highway Patrol Foreman as necessary.

3.3 Foreman:

- 3.3.1 Review salt storage and handling requirements with employees annually.
- 3.3.2 Inspect salt storage areas monthly and document on facility's inspection report.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety and Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this work instruction.

3.5 Safety/Environmental Coordinator

- 3.5.1 Understand all aspects of this work instruction and provide technical assistance to the Maintenance District as needed.
- 3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when handling and storage requirements change.
- 3.5.3 Inspect salt storage areas at least annually.
- 3.5.4 Maintain the Maintenance District's MSDS inventory.

3.6 Office of Stewardship and Compliance

- 3.6.1 Provide technical assistance to the Bureau as needed.
- 3.6.2 Provide relevant Best Management Practices to the Bureau as they are released to the industry.
- 3.6.3 Communicate changes in State and Federal chemical disposal requirements to the Bureau.

4.0 REFERENCES

- NH DOT Salt Management Plan (in development)
WD-DWGB-22-30 Storage and Management of Salt Deicing Materials (NH DES)



Title: Salt & anti-icing chemicals, storage & handling Page 2 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

5.0 RECORDS

- 5.1 Training records for EHS-CH300-SAFE-001 and 003 shall be entered in the NHDOT training database or maintained at the Turnpikes Administration Office for each current employee.
- 5.2 MSDS's shall be maintained in accordance with 29 CFR 1910.1200

6.0 PROCEDURE

- 6.1 Storage facilities shall be properly maintained to ensure that roofs are weather-tight and that stormwater is kept off the stockpile. Site grading shall provide for positive drainage away from the storage building to prevent the intrusion of stormwater into the stockpiled salt.
- 6.2 Sufficient impervious surface shall be provided around the salt storage building and loading areas for all material loading and transfer. This provides for easier clean-up of spillage and inhibits infiltration of chemicals into the surface and ground waters.
- 6.3 Stockpiles shall be uniform in shape and maintained in a safe condition at all times. Excess salt off-loaded from plow trucks shall be pushed back into the main pile in a timely manner and kept within the building. Steep or vertical faces shall be knocked down to prevent collapse.
- 6.4 Summer fill-up salt orders shall be placed as early in the fiscal year as possible to receive the fall fill-ups during periods of good weather, reducing the exposure of salt to the elements. This early delivery should result in drier salt and fewer delivery problems. An additional benefit to early deliveries is that salt supplies are usually more plentiful as opposed to winter deliveries when demand can outstrip inventory.
- 6.5 Do not order salt quantities in excess of the inside rated storage capacity of the storage facility. Overstressing of buildings or storage of salt beyond the protection of the building is unacceptable. On-site personnel shall coordinate with office personnel to halt deliveries before the building capacity is exceeded.
- 6.6 When loading vehicles, care shall be taken to avoid overloading the plow truck's body or spreader. Spillage can occur at the loading site or as the truck is traveling along the highway. Either situation wastes salt and money, as well as being environmentally unacceptable. A chart of application rates and corresponding tonnage and lane mile can be found in the Salt Management Plan. If funding permits, scales attached to the loader's bucket would provide an accurate method of determining how much material is placed during loading.
- 6.7 Loading ramps shall be of sufficient height to permit the loader to safely place salt in the spreader without spilling material.
- 6.8 Loading ramps, shed yards, and storage areas shall be cleaned of any spilled material following each storm event and at other times as necessary. Any spillages should be placed back in the stockpile.
- 6.9 The loader operator and each truck driver shall keep an accurate record of the tons of salt loaded on the truck during a storm as well as the quantity returned to the stockpile unused. Accurate material usage records shall be kept and weekly inspections made to confirm that reported usage is consistent with the material remaining in the storage pile.

Title: Salt & anti-icing chemicals, storage & handling Page 3 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

- 6.10 Salt shall be added to sand piles in sufficient quantity to prevent freeze up of the covered sand stockpiles. Generally that quantity would be about 100 pounds per cubic yard of sand.
- 6.11 Sand stockpiles should be covered to prevent leaching of the salt into surface and groundwater.
- 6.12 Storage tanks containing liquid deicers such as calcium chloride, sodium chloride brine, and potassium chloride shall be protected from physical damage.
- 6.13 Tanks and associated piping shall be periodically inspected for leaks and deterioration.
- 6.14 Equipment should be cleaned in accordance to the NHDOT Vehicle Washing Policy.

7.0 TRAINING

- 7.1 Initial New Employee training for _____
- 7.2 Annual refresher training for _____
- 7.3 As determined by the Section Supervisor, Foreman, or Safety and Environmental Coordinator.

8.0 FORMS


- 8.1 TBD

9.0 ENVIRONMENTAL, HEALTH & SAFETY

- 9.1 TBD

10.0 DOCUMENT CONTROL

- 10.1 TBD

Approved:		REVISION NO.:	<u>1.0</u>
		DATE:	<u>2/9/2011</u>
Name Christopher M. Waszczuk, P.E.	Date <u>4/28/11</u>	SUPERSEDES EDITION:	_____
Title Bureau Administrator	04/28/2011		

Appendix L

Employee Training Work Instructions

Environmental Policy (ENV1) states that:

The New Hampshire Department of Transportation's (NHDOT) activities affect the cultural and natural environment through land use, natural resource consumption, and transportation corridor development/redevelopment and maintenance activities. Operating in compliance with applicable state and federal regulations, NHDOT will seek to avoid, minimize, and/or mitigate environmental impacts when planning, constructing, and maintaining the state's transportation infrastructure, and when providing for public safety and economic strength of the state.

Purpose:

The purpose of this document is to describe a path forward for the Department to meet its commitment to ENV1 and identify roles and responsibilities of the Bureau of Environment and the Division of Operations

Scope:

The Operations Management Section was created within the Bureau of Environment to implement the environmental review process with the Division of Operations similar to that which exists within the Division of Project Development. The responsibility of the Operations Management Section is to assist the Division of Operations in the planning and implementation of projects and maintenance activities in order to avoid, minimize, and/or mitigate impacts to environmental resources. The assistance and support provided by the Operations Management Section is intended evaluate the existing processes and procedures that are in place for the Division of Project Development and repurpose them for use by the Division of Operations. Where existing processes don't exist the Operations Management Section will be responsible for working with the Division of Operations to develop new ones and document them into the Standard Operating System (SOS). The intent is to provide a level of consistency in how the Department interprets environmental rules and regulations in relation to the work it performs. The Operations Management Section was created in recognition of the different needs that Operations Bureaus have to complete their primary mission of maintaining the existing infrastructure to provide safe and efficient movement of people, goods and services. The Operations Management Section staff will work with the Operations Bureaus and Subject Matter Experts to identify the maintenance activities which require no resource agency oversight other than normal implementation of Best management practices to minimize impacts and to identify those activities that warrant a higher level of environmental review. They will also identify the resource permitting needs for projects conducted by the bureaus and define a timely and cost effective process to meet the resource coordination or permitting requirements.

Definitions:

Task: A work effort assigned to obtain a specific goal.

Project: New Construction, Extensions/Changed Footprints, Standard Dredge and Fill Applications.

Maintenance Activity: Everyday Maintenance, keeps what you have operational Maintains existing line and Grade, No change in footprint, Routine Roadway Maintenance Activities, Shoreland Maintenance Exemptions.

Position Primarily Responsible: The position or group that is responsible for investigating and documenting the issues related to the assigned task, determining how the task will be executed, overseeing its implementation where appropriate, verifying the task has been completed and assessing whether the anticipated goal was achieved or, making revisions to achieve the goal.

Positions Secondarily Responsible: The position or group that is responsible for assisting the Position Primarily Responsible to establish goals & procedures to achieve the specified task. They will be responsible for reviewing and making recommendations on the processes, as needed, to make sure the tasks and goals are compliant with relevant internal, state and federal rules and regulations.

Position Support: The position or group that is responsible for providing local task-specific guidance and assistance to the Positions of Responsibility. These groups generally have project/task specific knowledge critical to the implementation of a procedure or definitions of a goal.

Process: TASK	Position Primarily Responsible	Position Secondly Responsible	Position Support
Identify the Environmental Resource Rules (state, Federal & local) that apply to work efforts conducted by Operation's Bureau staff.	BOE Program Manager (Subject Matter Expert)	BOE Operations Management Section	Operations Administrators
Interpret what the Environmental Resource rules mean and clarify	BOE Program Manager (Subject Matter Expert)	BOE Operations Management Section	Operations Administrators
Determine what Div. of Operation Bureau work tasks the Environmental Resource rules apply to	BOE Operations Management Section	Operations Administrators	S&E
Confirm or make recommendation on how Operations work tasks can be completed in compliance with Environmental Resource rules	BOE Operations Management Section	Operations Administrators	S&E
Establish internal BOE procedures and processes to review Operation's Bureau work instructions and work tasks for compliance with the Environmental Resource rules	BOE Operations Management Section	Operations Administrators	S&E
Develop and administer training for Operations personnel to identify what is needed and how to obtain compliance with Environmental Resource rules	BOE Operations Management Section	S&E	Operations Administrators
Provide support and reviews to help field people understand and follow the procedures	S&E	BOE Operations Management Section	Operations Administrators
Provide Peer reviews to ensure Environmental Resource rules are being followed	S&E	BOE Operations Management Section	Operations Administrators
Conduct External audits to ensure Environmental Resource rules are being followed	TBD	TBD	TBD

Communication with Regulators	Position Primarily Responsible	Position Secondly Responsible	Position Support
Direct Communication to determine what the DES / EPA or other Environmental resource rules mean	BOE Program Manager (Subject Matter Expert)	BOE Operations Management Section	Operations Administrators
Direct Communication with regulators in the development of permits and programs	BOE Operations Management Section	BOE Program Manager (Subject Matter Expert)	Operations Administrators
Direct Communication with regulators for waivers or exceptions to Environmental Resource rules	BOE Program Manager (Subject Matter Expert)	BOE Operations Management Section	Operations Administrators
Direct Communication and coordination with regulators for external inspections	Operations Administrators/S&E	BOE Operations Management Section	Operations Administrators
Direct Communication with regulators when spills or unexpected contamination are encountered based on visual and olfactory inspection	S&E	BOE Operations Management Section	Operations Administrators
Direct Communication with regulators when an error is identified that has caused non-compliance with Environmental Resource rules	BOE Program Manager (Subject Matter Expert)	BOE Operations Management Section	Operations Administrators

Environmental processes for activities inside the fence lines (inside the fence is defined as the properties used for Bureau of Operations Offices, Patrol sheds, garages, pits and other owned or managed properties that are outside the Highway ROW)	Position Primarily Responsible	Position Secondarily Responsible	Position Support
Patrol Sheds/Bridge Maintenance Sheds/Satellite Garages	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Permits/Plans	Bureau Administrator/District Engineer	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section	S&E
Fuel Sites	Bureau Administrator	F.D. supervisor	BOE Program Manager (Subject Matter Expert)
District Offices	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Pits	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Department Owned Lands/Mitigation Sites	BOE Operations Management Section	S&E	BOE Program Manager (Subject Matter Expert)
Collection of Hazardous or solid waste	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Transportation and disposal of contaminated or hazardous waste	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Vehicle Wash sites	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Training	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
BMP's	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
EMS	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Wastewater both sewage, and floor drain or other	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Material handling and storage	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Work on equipment	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section
Waste from equipment	Bureau Administrator/District Engineer	S&E	BOE Program Manager (Subject Matter Expert)/BOE Operations Management Section

Development of Environmental processes for activities outside the fence lines (Outside the	Position Primarily Responsible	Position Secondarily Responsible	Position Support

fence lines is defined as the area within the ROWs of all State Highways regardless of ROW type)			
Sweeping	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Ditching	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Catch Basin Cleaning	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Mowing	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Tree trimming/cutting	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Snow/Ice Removal	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Debris removal including illegal dumping	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Invasive Species Control	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
DOT Accidents	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Motor Vehicle Accidents	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Weather events	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Historical Contamination	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Current Contamination	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Excavation	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Permits	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Plans	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Training	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
BMP's	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
MS-4	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Water Quality Plans	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E
Salt Reduction Plans	BOE Operations Management Section/ BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	S&E

Implementation of Environmental processes for activities outside the fence lines (Outside the fence lines is defined as the area within the ROWs for all State Highways)	Position Primarily Responsible	Position Secondarily Responsible	Position Support
Sweeping	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Ditching	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Catch Basin Cleaning	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Mowing	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Tree trimming/cutting	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Snow/Ice Removal	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Debris removal including illegal dumping	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Invasive Species Control	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
DOT Accidents	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Motor Vehicle Accidents	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Weather events	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Historical Contamination	BOE Program Manager (Subject Matter Expert)	Bureau Administrator/District Engineer	BOE Operations Management Section
Current Contamination	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Excavation	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Permits	Bureau Administrator/District Engineer	S&E	BOE Operations Management Section
Plans	BOE Operations Management Section	Bureau Administrator/District Engineer	BOE Operations Management Section
Training	Bureau Administrator/District Engineer		BOE Operations Management Section
BMP's	Bureau Administrator/District Engineer		BOE Operations Management Section
MS-4	BOE Operations Management Section	Bureau Administrator/District Engineer	BOE Operations Management Section
Water Quality Plans	BOE Operations Management Section	Bureau Administrator/District Engineer	BOE Operations Management Section
Salt Reduction Plans	BOE Operations Management Section	Bureau Administrator/District Engineer	BOE Operations Management Section

Appendix M

Roadway/ROW Maintenance Work Instructions



Title: Road and Parking Lot Maintenance

Document #: Turnpikes EMS -002

Revision #: 3

Page 1 of 2
Date: 02/23/12

- 1.0 PURPOSE:** Develop and implement best management practices to inspect both state-owned and privately owned (rented) trucks and equipment for fluid leaks and determine the steps required when a leak is detected.
- 2.0 SCOPE:** All Turnpike maintenance facilities.
- 3.0 FORMS**
Vehicle fluid bi-weekly inspection sheets
Vehicle fluid corrective action report
- 4.0 RESPONSIBILITIES:**
- 4.1 All Employees:** Shall be aware of the hazards involved with fluid leaks and be diligent in looking for such leaks and reporting any leaks to the Patrol Foreman.
- 4.2 Foreman:** Shall perform a bi-weekly inspection of all state-owned and privately owned (rented) plow trucks and related equipment to ensure that no fluids are leaking. Shall complete a bi-weekly inspection form and forward it to the Safety and Environmental Coordinator. Shall ensure that a drip pan is placed to capture any fluid leaks found and take appropriate steps to have the leak repaired.
- 4.3 Safety/Environmental Officer:** Shall ensure that the bi-weekly inspection sheets are submitted and filed.
- 5.0 RECORDS**
Vehicle fluid bi-weekly inspection sheets
Vehicle fluid corrective action report
- 6.0 PROCEDURE**
- 6.1** On bi-weekly basis the shed foreman, or his designee, shall inspect all state-owned and privately owned (rented) plow trucks and related equipment at the facility for fluid leaks. If no fluid leaks are detected the bi-weekly inspection sheet is completed as such and forwarded to the Safety & Environmental Coordinator on a bi-weekly basis. The Safety & Environmental Coordinator shall then file the bi-weekly inspection form. If a fluid leak is detected a drip pan shall be placed to collect the leaking fluid as soon as reasonably possible. Action to repair the leak shall also be taken as soon as reasonably possible.

If the leak is generated from a state vehicle or piece of equipment an attempt should be made by shed personnel to stop the leak. If the leak cannot be stopped by shed personnel then the appropriate Mechanical Services personnel shall be notified. The drip pan shall be inspected periodically, i.e. -daily or bi-weekly, depending on the leakage and emptied as necessary to ensure that the fluid does not overflow onto the ground until such time that the leak is repaired.



Title: Road and Parking Lot Maintenance

Document #: Turnpikes EMS -002

Revision #: 3

Page 2 of 2
Date: 02/23/12

If the leak is detected on a privately owned (rented) truck the owner of the truck shall be notified immediately and instructed that steps must be taken to repair or stop the fluid leak as soon as reasonably possible. Again the drip pan shall be inspected periodically and emptied as necessary to ensure that the fluid does not overflow onto the ground until such time that the leak is repaired.

6.2 Once a fluid leak is detected a corrective action form must be generated. This form shall be used to document when the leak was detected, the vehicle/equipment that is leaking, what type of fluid is leaking, the approximate quantity of fluid that leaked onto the ground prior to the drip pan being placed, the approximate quantity of fluid that was captured, what steps were taken to stop the leak and by whom, and when the leak was stopped.

6.3 All captured fluid leaks shall be disposed of in a manner compliant with established regulations. This will most likely include placing in a container labeled "used (type of fluid) for recycle".

7.0 TRAINING

Foremen shall receive initial training on how to complete the bi-weekly inspection and corrective action forms.

8.0 ENVIRONMENTAL, HEALTH & SAFETY

Proper PPE (nitrile gloves) shall be used when handling waste fluids. All waste fluids shall be disposed of in a manner compliant with established regulations.

9.0 DOCUMENT CONTROL


9.1 Revision #2 – Attached necessary forms

- Procedure section numbered.

- The periodic inspection of the drip pan was clarified under section 6.1

9.2 Revision #3 –Change the weekly inspections to bi-weekly inspections

Approved:


Christopher M. Waszczuk, P.E
Administrator, Bureau of Turnpikes

3/9/12
Date

REV. NO. 3.0

DATE 2-23-12

SUPERSEDES 8-10-11



TURNPIKES MAINTENANCE OPERATIONS PROCEDURAL MEMORANDUM

DATE: MARCH 29, 2015
TO: PATROL FOREMAN, ASSISTANT PATROL FOREMAN, AND HIGHWAY MAINTAINERS,
DIX BAILEY, KEVIN O'NEIL, VINNY BENINCASA
CC: CHRISTOPHER WASZCZUK
FROM: JOHN CORCORAN
MEMO #: 004 – ROADSIDE MOWING PROCEDURES
REVISION: 001

Purpose: To provide direction and guidance in regard to when and where roadside mowing activities are performed. Operating a tractor/mower can result in serious injury or even death if not performed in a safe manner. Tractor rollovers can most likely cause a serious injury. Tractor rollovers are usually caused by traversing a steep slope or turning sharply at the base of a steep slope. While mowing roadside vegetation is an important component of highway maintenance; **mowing grass is not worth risking your life**. Therefore, it is imperative that the practices outlined in this memo be followed to ensure the safety of our operators.

The following practices shall apply to all NH DOT Bureau of Turnpike mowing operations.

General:

1. Any slope that is questionable as to whether it can be mowed safely **shall not** be mowed with a conventional mower. These slopes will either be cut with a boom mower, hand held equipment, or be left to grow. Any steep slope that is determined to be safe to mow with a conventional mower shall be mowed in an up-and-down manner and not traversed. Mowing slopes behind guardrail shall not be performed unless approved by the Maintenance Supervisor/Superintendent or Patrol Foreman or Assistant Patrol Foreman.
2. For each mowing operation, one employee shall be designated as the competent person in charge. This person shall have enough experience to know safe mowing practices vs .unsafe mowing practices. If there is no such person available amongst the mowing staff, then the Foreman or Assistant Foreman shall oversee the operation to ensure that all mowing procedures are performed in a safe manner and in compliance with this procedural memo.
3. Median Crossovers shall not be used to access the other side of the highway. Personnel shall travel to the next Exit to reverse direction.

4. Mowing areas shall be reviewed with your Maintenance Supervisor to determine the specific limits of your mowing. Whenever possible and as a general rule, the first mowing should be completed by Memorial Day weekend. The second mowing should be completed by mid-July. The third mowing should be completed by Labor Day weekend. The final overall mowing should be completed by mid-October. The first three mowing events shall be termed as “narrow” mowing events and shall generally include the following limits:
 - a. Roadside area along the right side of the highway / Turnpike shall be mowed using 6 passes or approximately 30’ wide, unless specifically directed otherwise by the Maintenance Supervisor. In areas where the ditch line is closer than 30’, mow to the ditch line and one pass on the other side of the ditch line.
 - b. Median area shall be mowed using 4 passes from the left edge of the highway/Turnpike or approximately 20’ wide, unless specifically directed otherwise by the Maintenance Supervisor. This may leave a strip of unmowed grass in the center of the median which is acceptable.
 - c. Interchange areas shall be mowed using the same philosophy as above with 6 passes, or approximately 30’ wide, along the right side and 4 passes, or approximately 20’ wide, along the left side unless specifically directed otherwise by the Maintenance Supervisor. Consideration shall be given for additional mowing in merge and yield areas to maintain adequate sight lines.
 - d. Final overall mowing shall be undertaken once a year during the final year end mowing event and shall include all roadside areas to the outer limits, entire medians areas, entire interchange areas and Toll Plaza yards.
 - e. Toll Plaza yards, Hilton Park, E-ZPass Walk-in-Centers and park’n’ride facilities owned by the Turnpike System may be mowed additional times depending on conditions, the workload and approval by your Supervisor.
 - f. Do not mow special flower bed areas or invasive plant areas. See attached document on Invasive plants
5. In most cases it is beneficial to park the tractors in close proximity to where mowing is completed for the day rather than driving the tractors back to the shed only to have to drive them back out to the mowing site the next morning. Careful consideration is required in regard to when to leave tractor/mowers out on the roadside vs. when to bring them back to the shed. Tractors should not be parked within the clear zone, which is typically thirty (30) feet from the edge of the travel way. Tractors should be parked a minimum of thirty (30) feet from the edge of the travel way, or parked behind guardrail if the slope is level enough to do so safely. If parked behind guardrail the tractor should be at least six (6) feet behind guardrail to allow for deflection in case of a vehicle crash. Do not park tractors overnight near walking paths or other areas that are easily accessible by the public. Tractors should be driven back to the shed if there are no safe or secure areas to leave them overnight. It is preferred that tractors not be left out on the roadside over a weekend, unless there is a high level of confidence that they are in a safe and secure area.

Mowing Operation:

- 1 Prepare to begin the mowing season by reviewing the appropriate JHA for mowing and trash pickup. If you have any questions contact your Patrol Foreman or Assistant.
- 2 Signs shall be placed to advise motorists that mowing operations are taking place. These signs shall be moved along with the operation so that the operation is never more than 2 miles beyond signage
- 3 Walk the area to be mowed prior to mowing and pick up any trash or debris in the area. This not only reduces the risk of objects being thrown from the mower deck but also keeps the area clean rather than seeing torn up trash scattered across the roadside from the mower deck.

- a. When walking the area look for sinkholes, electrical boxes, drainage structures, broken delineator posts or other items that could pose a hazard if struck. Identify these hazards with a cone and notify the foreman who will then take appropriate steps to address the hazard.
- 4 Flex hours are encouraged whenever there are 3 or more consecutive days of temperatures predicted to be in the 90's. Employees will be allowed to work from 5:00 AM to 1:30 PM in order to reduce the amount of time spent exposed to the sun. Employees are also encouraged to bring extra water and sunscreen during these hot summer days.
- 5 The Foreman or his designee shall keep apprised of the potential for severe weather and have a plan to retrieve the mower operators from the field in the event of a thunderstorm or other severe weather event.
- 6 Mowing Work Class Code is 467 for MATS charges and the unit of measure for mowing is square feet. Calculation of the area mowed is determined by the actual mowing hours multiplied by the width of the mower and by the average mowing speed.
 - a. For example: mowing for 1 hour with a mid-mount mower having a cutting width of 6 feet at an average speed of 6 miles per hour equals: $1(\text{hr.}) \times 6 (\text{ft. width}) \times 6 \text{ mph} \times 5,280 \text{ feet per mile}$ for an area cut of 190,880 square feet. **USE 190,000 sf per hour.**
 - b. Most of our rear-deck mowers have a cutting width of 5 feet at an average speed of 6 miles per hour equals: $1(\text{hr.}) \times 5 (\text{ft. width}) \times 6 \text{ mph} \times 5,280 \text{ feet per mile}$ for an area cut of 158,400 square feet. **USE 158,000 sf per hour.**
 - c. For mowing calculations only use actual mowing time. Do not include the time spent performing maintenance or travel time to and from the site when calculating the area mowed.

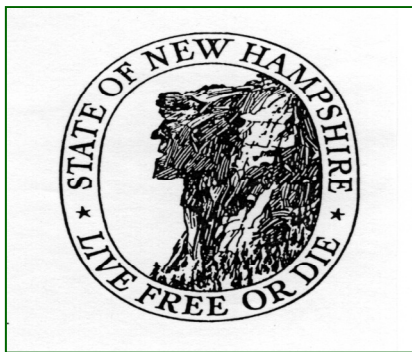
Revision # 1

- The major change was the yearly mowing procedure described under General #3 was rewritten describing the limits of mowing which is similar to Highway Maintenance procedure on their Interstates. There was other minor editing through the document.

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION



Winter Maintenance Snow Removal And Ice Control Policy.



Carol A. Murray
Commissioner

October 15, 2001
Revised, adopted (date)

State of New Hampshire Department of Transportation

SNOW REMOVAL & ICE CONTROL POLICY

GENERAL POLICY:

Winter weather in northern New England is difficult to predict. There are many variables affecting winter maintenance operations such as type of precipitation, air and pavement temperature, traffic, wind, time of day and day of week. Winter maintenance is considered an art, not a science.

The New Hampshire Department of Transportation's (NHDOT) snow removal and ice control policy has been based for many years on the goal of obtaining bare and dry pavements at the earliest practical time following cessation of a storm. It is virtually impossible to provide bare pavement during a winter storm and the NHDOT does not attempt to do so. Judgment based on experience is essential in conducting and timing remedial work to overcome ice and snow hazards. As each storm situation varies, it is important to emphasize that this policy be used as a guideline to assist foremen in making well informed, judgment decisions in the exercise of their snow removal and ice control responsibilities. The Commissioner recognizes that a rigid application of this policy is impossible given the varying conditions that exist in each storm across the 4,000+ miles of State highways. No policy could be prepared that could dictate set procedures under all the variants. Any attempt to dictate the timing of various winter maintenance operations from other than the specific location could create disastrous results. At many locations in the state the same problem does not exist within a single patrol section let alone an entire district or state.

Traffic volume and posted speed are the primary factors in determining the level of winter maintenance service with the highway grade also being an important factor. The Interstate System, Turnpike System and other heavily traveled highways are maintained in such a manner that bare pavement is produced as soon as practical after termination of a storm. On State highways with low traffic volumes, the NHDOT attempts to provide some bare pavement, but not necessarily from shoulder to shoulder, within a day or two after a storm ends.

It is impractical to develop specific rules on winter maintenance operations due to the numerous variables involved in winter storms. The judgment of the local highway patrol foreman governs the type, quantities and application schedule of materials used to control snow and ice. It is the intent of the NHDOT to use the minimum deicing or anti-icing material needed to restore safe travel conditions as soon as practical following termination of winter storms. Salting and sanding units are usually equipped with calibrated mechanical spreaders that accurately control the application rates of materials. Employees are instructed in the proper dispensing of the necessary quantity at the appropriate time.

The winter maintained State highway system is comprised of four roadway types defined as follows and as shown on the attached map:

Type 1 A - Highways on the Interstate and Turnpike Systems and those highways carrying 15,000 vehicles or more daily (green) should have full width bare pavement as soon as practical after a winter storm terminates.

Type 1 B - Highways on the State system and carrying 5,000 to 15,000 vehicles daily (blue) should have full width bare pavement as soon as practical after a winter storm terminates.

Type 2 - Highways on the State system carrying 1,000 to 5,000 vehicles daily (orange) should have some bare pavement as soon as practical after a winter storm terminates.

Type 3 - Highways on the State highway system carrying less than 1,000 vehicles daily (red) should have bare pavement in left wheel tracks near the center of the highway as soon as practical after the winter storm. Included in this classification are highways carrying less than 500 vehicles daily for which snow-covered pavement is deemed acceptable.

These designations have been determined by traffic volume primarily but have been modified to include consideration of posted speed, highway grade, truck volume, accessibility to hospitals and emergency services, special events, second and/or third shifts at major industrial complexes and major commercial traffic generators as well as to establish continuity between highway districts.

OPERATIONS:

Snow removal and ice control usually requires the timely application of either chemicals, abrasives or a chemical-abrasive mixture to roadway surfaces in combination with aggressive snow plowing operations. Choice of material is dependent upon the weather and road conditions. Occasionally conditions such as low temperatures do not require material application. Materials available include the following:

Sodium Chloride – The use of sodium chloride (common salt) combined with snow plowing is the most effective, most economical and safest snow and ice control method currently available. Salt is most effective for melting purposes at temperatures above 20 degrees F., with reduced melting ability as the temperature drops. In general, the purpose of salt is to (1) reduce adherence of snow to the pavement, (2) keep the snow in a “mealy” condition and thereby permit nearly full removal by plowing, and (3) prevent the formation of ice or snow ice (hard pack). Salt is not intended to take the place of snowplows. It is economically and environmentally unacceptable to attempt to melt snow accumulations that are plowable. Salt is also to be added to sand stockpiles to prevent freeze up of the abrasives.

Calcium Chloride. Calcium chloride is a chemical which melts ice at lower temperatures than sodium chloride. Flake calcium chloride is used as an additive to abrasives (sands) to prevent freezing in stockpiles, to thaw culverts and catch basins, to help hold the abrasive in place on the pavement and on rare occasions to trigger sodium chloride action. Liquid calcium chloride at 32% strength can be used to pre-wet solid sodium chloride to trigger the chemical reaction at low temperatures. The addition of liquid calcium chloride also is beneficial in retaining de-icing material on the roadway by increasing the adhesion of the material to the roadway.

Abrasives. Abrasives (sand and fine mineral aggregates) are used primarily for immediate traction on hills, curves, intersections, railroad crossings and other areas to increase traction and minimize the use of salt. Sodium chloride, calcium chloride or an appropriate mixture of the two are usually added to abrasives in amounts dependent upon existing weather conditions. Stockpiles of abrasives are usually treated with chloride at the start of the season to prevent subsequent freezing.

Alternative De-Icers

There is considerable research being done on new deicing chemicals. Non-corrosive and environmentally friendly chemicals, in solid or liquid form, are now available but widespread use is currently limited due to the high costs and the need for specialized equipment to store & dispense them. NHDOT has and will continue to experiment with new products as they come on the market in an effort to provide an affordable and acceptable level of service while being environmentally responsible. There is considerable research throughout the world going on in this area and NHDOT is an active participant.

Application of De-Icing Materials

The use of chemicals, abrasives or chemical-abrasive mixtures is dependent not only on present roadway and weather conditions, but also on anticipated changes in these conditions and fiscal or logistical constraints experienced by the NHDOT. The effects of peak traffic periods, approaching nightfall or daybreak, precipitation type, and predicted end of storm, are considered and evaluated prior to selecting the proper materials and rate of application.

Adverse roadway conditions existing during periods of low temperatures, which are predicted to rise would generally be treated in accordance with the recommendations for the higher temperature. If the time of day, trend and weather forecast is such that a drop in temperature may reasonably be expected, treatment would generally be in accordance with the recommendation for the lower temperature. Chemicals or abrasives should not be used at low temperatures if the pavement is dry and snow is blowing off the pavement as such use would be wasteful and may be counterproductive.

Rates of Application

Generally straight sodium chloride is the chemical of choice for most storm situations. Sodium chloride is used to prevent snow pack and ice build-up on the pavement and to aid removal of any build-up that occurs. The following instructional guidelines are recommended to adequately maintain highways under most conditions:

RECOMMENDED SNOW AND ICE TREATMENTS PER LANE MILE			
CONDITIONS	TEMPERATURE	TYPE 1A & 1B	TYPE 2 & 3
Sleet & Freezing Rain	Variable	Salt 300 lbs. per lane mile and/or abrasive as needed.	Salt 300 lbs. per lane mile and/or abrasive as needed. (2)
Snow	20° and up	Salt 250 lbs. per lane mile. (1)	Salt 250 lbs. per lane mile. (2)
Snow	Below 20°	Salt 250 lbs. per lane mile. (2&3)	Abrasive-Chemical Mix

- (1) For exceptionally high volume roads where traffic will enhance the action of the salt, this rate may be decreased to 200 lbs. per lane mile.
- (2) Abrasive – chemical mix may be needed at extremely low temperatures or on very lightly traveled highways.
- (3) An alternative low temperature treatment is to use a chemical mix of 2 parts salt to 1 part calcium chloride at 200 lbs. per lane mile.

Chemicals or mixes are normally applied to the middle 1/3 of pavement width and on the high side of banked curves. Spread width may be increased or decreased depending on the action of traffic. Materials are applied early in the storm so that a brine develops on the pavement and prevents build-up of packed snow. It takes much less deicing chemical to remove compacted snow when the treatment is placed between the pavement/snow layer than if it is placed on top of the snow. If snow continues and accumulates on the pavement, plowing should continue and additional chemical or mix treatments should be made if compaction develops.

There are many additional circumstances which will necessitate modification to these treatments. Some of these circumstances are:

1. Rising or falling temperatures.
2. When pavement is cold and dry and snow is falling, chemicals are not applied. Plowing and treatment of icy spots, if they develop, is recommended.
3. As stated in footnote (2) an abrasive-chemical mix may be needed at extremely low temperatures or on very lightly traveled highways. Under these conditions the effectiveness of salt is reduced and abrasives may be needed for traction.

Spreading Practices

Each spreading unit is calibrated to insure that selected rates of application are attained. Timing of the initial application during each storm is very critical. It should be delayed until there is sufficient accumulation on the pavement to hold and contain the material spread. However, the pavement may become glazed prior to this time and may require an earlier treatment.

Portions of each patrol section are unique due to various physical conditions and will require a greater application rate or an additional application during some storms. However, these areas should be judged and treated separately and not used as a barometer to evaluate and subsequently direct complete applications over the entire section. In order to conduct an efficient operation, periodic observation of the pavement surface conditions must be performed.

Width of material spread (throw plus roll) should be restricted. Reduction of the spread width by windrowing chlorides will increase the concentration of the chemical where it is needed and therefore increase the effectiveness of the application. Spreading operations should generally be conducted at speeds less than 25 mph on two lane roads. Air turbulence created at speeds greater than 25 mph makes it difficult to retain all the material discharged within the desired width. Spinner and belt speeds and spread pattern must be adjusted to obtain the correct spread rate and to retain the material within the lane (s) where the additional material is required.

On a four lane undivided roadway the passing lane in either direction may be spread simultaneously from the adjacent travel lane. Belt speed, spinner speed and vehicle position need not be changed since the normal spread pattern on this type roadway is achieved by spreading simultaneously upon the two lanes during the singular directional pass of the spreading unit.

Special Attention For Bridges

Bridge decks normally freeze or glaze sooner than adjacent pavement sections, especially in the late fall and early winter. Special care and good judgment is required in the use of de-icing chemicals on all bridge decks.

Accumulations of snow along gutter lines and sidewalk or catwalk areas of all bridges should be removed when accumulation of snow and/or ice affects highway safety. Removal operations should commence on the high side of bridges on banked curves to minimize snowmelt and re-freezing or glazing of the travel lanes.

Plowing Operations

Plowing operations are generally initiated after one to two inches of snow have fallen and continue until the storm has ended. Widening and intersection view clearing is performed following cessation of the storm as necessary, and generally during daylight hours when best visibility prevails.

For snow storms with a predicted accumulation in excess of two inches, plowing usually begins after the initial salt application has formed a brine and after one to two inches of snow has fallen (dependent on intensity of snowfall) and continues for the duration of the storm. After a storm terminates, a final cleanup plow run is made and a light salt application is laid down as necessary to remove any remaining residue.

For light accumulation snowfalls, snow squalls, and so-called “Alberta Clippers” of short duration, plowing may begin immediately and may include simultaneous salting and/or sanding to provide the desired results quickly and efficiently.

Truck-mounted snowplows and wing plows are utilized to clear pavements and shoulders of frozen precipitation. Storm intensity (generally measured in inches per hour) varies considerably in New Hampshire but average major snow storms are approximately one inch per hour. This one-inch per hour intensity rate and the allowable snow accumulation is used in planning the availability of equipment necessary for snow removal operations.

SNOW AND ICE MANAGEMENT PLANNING CRITERIA			
HIGHWAY TYPE	PLANNED PLOWING FREQUENCY	PLANNED ALLOWABLE SNOW ACCUMULATION	AVE. MAX. ALLOWABLE ACCUMULATION
TYPE 1A	1½ hours	1½"	3"
TYPE 1B	2 hours	2"	4"
TYPE 2, 4	2½ hours	2½"	5"
TYPE 3, 5	3½ hours	3½"	6"

The preceding table is based on an average accumulation of one inch per hour under optimum conditions (i.e., no traffic tie-ups or accidents, and no equipment breakdowns) and excludes initial response time. The average maximum depth of snow or other accumulation a motorist may encounter on highway pavements, except during blizzard conditions and/or heavy wind and drifting conditions, is shown in the right-hand column of the table.

Frozen precipitation including sleet and the build-up of ice caused by freezing rain are special situations, and not subject to procedures indicated above. When a changeover from snow or sleet to freezing rain is predicted or anticipated, snow and/or sleet is left on the pavement to capture the freezing rain thereby preventing a glare ice situation, which without question is the most treacherous condition that occurs on highways. Treatment includes application of salt at a rate of 300 pounds per lane mile as needed throughout the storm. Heavy rain tends to wash off applied salt or sand, making it difficult to keep the pavement ice-free.

It is the policy of NHDOT to perform snow removal and ice control operations in a consistent and impartial manner throughout the state. There are a few plowing procedures that are frequently misunderstood. In an attempt to clarify our actions the following policies and procedures are explained.

Mailboxes And Other Structures Within The Highway Right-Of-Way

Occasionally mailboxes or other devices are damaged by snow plowing operations due to poor visibility, the mailbox being buried in a snow bank or the weight/volume of the snow being plowed. This damage is not deliberate and in most cases is unavoidable. NHDOT is not responsible for damage and does not repair, replace or re-erect boxes that are located within the highway right-of-way. These devices are located within the highway limits and are the responsibility of the property owner. NHDOT will work with the box owners to locate the box in the safest possible location and offer advice on its design to minimize potential damage.

Widening Or Pushing Back Snow Banks

Following storms with heavy snowfall or when several storms result in substantial snow bankings, NHDOT will undertake a roadway widening procedure, which will push back the snow banks. This is a necessary operation because it accomplishes the following:

- (A) Provides room for future snow storage.
- (B) Reduces or prevents melted snow from running out onto the roadway pavement and creating icing conditions.
- (C) Increases safe sight distance at intersections and driveways.
- (D) Maintains a uniform line by eliminating protrusions at driveways and intersections.

Unfortunately there is no way to prevent depositing snow in previously cleaned driveways or walkways except to leave a hazardous projecting mound of snow. With thousands of driveways of all sizes and descriptions along our highway system it is impossible to clear these individual drives as the cost would be prohibitive and would probably result in complaints of highway funds expended for the benefit of certain individuals.

Signalized Intersections

At those locations where there is steep highway grades law enforcement officials or authorized NHDOT employees may put traffic signals on flash for the duration of the storm.

Sidewalks

NHDOT in conjunction with construction projects occasionally reconstructs or constructs new sidewalks adjacent to highways. However, the maintenance of the sidewalks, including snow removal, is the responsibility of the local community. This policy is firm and longstanding statewide. In addition, in those communities where on-street parking is permitted, snow removal from the parking areas, including plowing and or hauling away, is a local responsibility. The local NHDOT crew will adjust its plow pattern when possible to assist the community if at all possible, which could include pushing back snow banks during No Parking hours, or leaving a windrow as close to the traveled way as possible. Usually these arrangements are made locally between the municipality and the NHDOT Patrol Foreman.

Reduced Winter Maintenance

The NHDOT will evaluate the feasibility of establishing low or no salt sections on selected low volume roadways following a written request from the local governing body. To facilitate this program two additional highway types are specified as follows:

Type 4—Highways on the State highway system carrying less than 2,500 vehicles daily for which all municipal officials, including all selectmen, the police chief, the fire chief, the chief of ambulance service, and the superintendent of schools or the school board, have signed and submitted a written request to establish low (minimum) salt sections on existing Type 2 highways (orange routes) shown on the winter maintenance system map.

Type 5—Highways on the State highway system carrying less than 1,000 vehicles daily for which all municipal officials, including all selectmen, the police chief, the fire chief, the chief of ambulance service, and the superintendent of schools or the school board, have signed and submitted a written request to establish no salt sections on existing Type 3 highways (red routes) on the winter maintenance system map.

RECOMMENDED SNOW & ICE TREATMENTS PER LANE MILE FOR REDUCED WINTER MAINTENANCE AREAS			
CONDITIONS	TEMPERATURE	TYPE 4	TYPE 5
Sleet & Freezing Rain	Variable	Salt 250 lbs. per lane mile and/or abrasives as needed	Abrasives only
Snow	20 degrees Fahrenheit	Salt 250 lbs. per lane at beginning and/or end of storm only	Abrasives only
Snow	Below 20 degrees Fahrenheit	Abrasives only except salt 250 lbs. per lane mile at end of storm	Abrasives only

The process to establish reduced winter maintenance areas commences when NHDOT receives a written inquiry from a municipality's authorized officials. The NHDOT will field review the section(s) requested to see if the section's geographic, traffic and environmental conditions would permit consideration of reduced winter maintenance. If NHDOT determines it is feasible to reduce the level of service, the municipality must submit signed approvals from governing town officials, police chief, fire chief, chief of ambulance service and the school board/superintendent of schools. A public meeting will be convened to accept comments from the public. The level of service anticipated will be discussed and will include items such as the amount of bare pavement that would be expected, the surface condition, and the time of treatment. If the conditions are acceptable the location will be approved and public notices made. Additionally, roadway signs will be erected delineating the area as a reduced winter maintenance zone. NHDOT officials reserve the right to change the designation if safety concerns arise and the designation is found to be inappropriate. Reclassification of the roadway to a Class V (town maintained highway) will also be discussed with the municipality's officials.

Title: Wastewater Handling and Disposal

Document #: BHM-EMS-WI-001

Revision #: 1.2

Page 1 of 6

Date: 4/4/14

1.0 PURPOSE: To provide guidance to improve waste water handling and disposal at NHDOT Bureau of Highway Maintenance facilities in an effort to improve and reduce costs, prevent environmental impacts, and maintain compliance with local, state, and federal wastewater handling, storage, and disposal requirements.

2.0 SCOPE: This document is intended to assist all employees within the Bureau of Highway Maintenance concerning proper wastewater handling, storage, and disposal practices at NHDOT facilities.

3.0 RESPONSIBILITIES:

3.1 All Employees:

3.1.1 Should comply with the provisions outlined in this work instruction.

3.2 Maintenance Supervisor:

3.2.1 Understand all aspects of this work instruction and provide technical assistance to Highway Patrol Foreman as necessary.

3.3 Foreman:

3.3.1 Review wastewater handling, storage, and disposal procedures with employees annually.

3.3.2 Perform and document inspections of the oil water separator (as appropriate) on a monthly basis.

3.3.3 Correct deficiencies within the means of the position

3.3.4 Report deficiencies outside means of the position.

3.4 Crew Members:

3.4.2 Comply with all parts of this work instruction as appropriate.

3.5 Safety & Environmental Coordinator:

3.5.1 Understand all aspects of this work instruction and provide technical assistance to the Maintenance District as necessary.

3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when handling, storage, and disposal rules and regulations change.

3.6 Office of Stewardship and Compliance:

3.6.1 Provide technical assistance to the Bureau as needed.

3.6.2 Inform the Bureau of all new rule changes.

3.6.3 Provide relevant Best Management Practices to the Bureau as they are released to the industry.

3.6.4 Advocate for a funding source for compliance issues.



Title: Wastewater Handling and Disposal

Document #: BHM-EMS-WI-001

Revision #: 1.2

Page 2 of 6

Date: 4/4/14

4.0 REFERENCES

- NHDES Rules, Chapter Env. Wq 400 Ground Water Protection
- NHDES Fact sheet WD-DWGB-22-4
- NHDES Fact sheet WD-DWGB-22-8
- NHDES Fact sheet WD-DWGB-22-9
- NHDOT Vehicle Washing Procedural Guideline (June 23,2003)

5.0 RECORDS

- 5.1 Each equipped facility should visually inspect the oil/water separator monthly and document the inspection on the NHDOT Monthly Oil/Water Separator inspection log.

6.0 PROCEDURE

- 6.1 **Best Management Practices (BMP's) for Blind sumps:** The purpose of this BMP is to provide guidance to limit the fluids that enter the blind sumps to snowmelt (water) from our vehicles and equipment.

- 6.1.1 Vehicle Washing in the Patrol Shed buildings is not allowed.

- 6.1.2 Floor Cleaning:

- 6.1.2.1 Facility floors, blind sumps, and adjacent floors around the sump should be clean and free of oil or other known contaminants. Floors sumps and the area adjacent to the sumps should be thoroughly cleaned monthly or as needed.

- 6.1.3 Monthly cleaning includes:

- 6.1.3.1 Clean grease, oil spills, incidental leaks, and speedi dry off the floor as soon as possible after the spill or at least monthly.
 - 6.1.3.2 Sweep all floor spaces and properly dispose of materials before it enters the drain or sump
 - 6.1.3.1 Shovel out solids that may collect in the sumps of the drains.

- 6.1.4 Control material that enters the Blind Sumps

- 6.1.4.1 Vehicle washing in the Patrol Shed building is not allowed.
 - 6.1.4.2 Vehicle and equipment leaks should be reported to Bureau of Mechanical Services and fixed as soon as possible.
 - 6.1.4.3 Incidental leaks from vehicles should be contained in drip pans as soon as they are found.
 - 6.1.4.4 Vehicle maintenance over the sumps/ drains is not allowed.
 - 6.1.4.5 Whenever possible, do not park vehicles with uncontained leaks over the sumps or drains.

Title: Wastewater Handling and Disposal

Document #: BHM-EMS-WI-001

Revision #: 1.2

Page 3 of 6

Date: 4/4/14

6.1.5 Procedures for oils entering the Blind Sump

6.1.5.1 Incidental spills are reported to District Safety and Environmental Coordinator and Maintenance Supervisor.

6.1.5.2 Absorbent pads and socks should be used to clean up oil.

6.1.5.3 All wastes should be properly disposed of in accordance with applicable rules and regulations.

6.2 BMP's for Floor Drains and Holding Tanks: The purpose of this BMP is to provide guidance to limit the fluids that enter the Floor drains and Holding tanks to snowmelt (water) from our vehicles and equipment.

6.2.1 Limit the amount of waste water generated

6.2.1.1 Vehicle Washing within the Patrol shed buildings is not allowed except when authorized by the District Engineer.

6.2.1.2 When possible, remove large collections of snow off trucks and equipment prior to entering the building

6.2.2 Floor Cleaning:

6.2.2.1 Facility floors and floor sumps should be clean and free of oil, grease, or other known contaminants. Floors and floor sumps should be thoroughly cleaned monthly or as needed.

6.2.3 Monthly cleaning includes:

6.2.3.1 Clean grease, incidental oil spills, leaks, and speedi dry off the floor as soon as possible after a spill or at least monthly.

6.2.3.2 Sweep all floor spaces and properly disposing of materials before it enters the drain or sump.

6.2.3.3 Shovel out solids that may collect in the sumps of the drains.

6.2.3.4 Inspect oil water separator.

6.2.3.5 Document oil water separator inspection.

6.2.4 Control Material that enters the Floor Sumps and Holding tanks:

6.2.4.1 State vehicle and equipment leaks should be reported to the Bureau of Mechanical Services and fixed as soon as possible.

6.2.4.2 Incidental leaks from vehicles shall be contained in drip pans as soon as they are observed.

6.2.4.3 Vehicle maintenance over the sumps/drains is not allowed.

6.2.4.4 When possible, do not park vehicles with uncontained leaks over the sumps/ drains.

6.2.4.5 Place oil absorbent pads at the outlet of the floor sump/drain to collect any oils that may enter the sump.

6.2.4.6 Place absorbent pads or socks in the oil/water separator of the holding tank to collect any oils that may enter the tank.

Title: Wastewater Handling and Disposal

Document #: BHM-EMS-WI-001

Revision #: 1.2

Page 4 of 6

Date: 4/4/14

- 6.2.5 Monthly Oil Water Separator Inspections:
 - 6.2.5.1 A visual inspect the oil/water separator should be performed monthly in conjunction with the Monthly Facility Inspection.
 - 6.2.5.2 Oil absorbent materials in the floor sumps and oil/water separators should be checked monthly and replaced as needed.
 - 6.2.5.3 Complete the monthly Oil/Water Separator Inspection log.

- 6.2.6 Procedures for oils entering the Holding tank:
 - 6.2.6.1 Report spills to District Safety and Environmental Coordinator and Maintenance Supervisor.
 - 6.2.6.2 Absorbent pads and socks should be used to clean up the oil.
 - 6.2.6.3 All wastes shall be properly disposed of in accordance with applicable rules and regulations.

- 6.2.7 Procedures for pumping oil / water separators:
 - 6.2.7.1 Notify District Safety and Environmental Coordinator and Maintenance Supervisor that the tank needs to be pumped.
 - 6.2.7.2 Safety and Environmental Coordinator will make arrangements to properly dispose of wastewater in accordance with applicable rules and regulations.

- 6.3 BMPs for Facilities with Drains and Oil/Water Separators Connected to Municipal Waste Water Systems:** The purpose of this BMP is to provide guidance to limit the fluids that enter the Floor drains and Holding tanks to snowmelt (water) from our vehicles and equipment for facilities connected to municipal waste water systems.
 - 6.3.1 Vehicle washing in the Patrol Shed buildings is not allowed except when authorized by the District Engineer.

 - 6.3.2 Floor Cleaning:
 - 6.3.2.1 Facility floors, floor drains, and sumps should be clean and free of oil or other known contaminants.
 - 6.3.2.2 Floors, floor drains, and sumps and the area adjacent to the sumps should be thoroughly cleaned monthly or as needed.

 - 6.3.3 Monthly cleaning and inspection includes:
 - 6.3.3.1 Clean grease, incidental oil spills, leaks, and speedi dry off the floor as soon as possible after a spill or at least monthly.
 - 6.3.3.2 Sweep all floor spaces and properly dispose of materials before it enters the drain or sump.
 - 6.3.3.3 Shovel out solids that may collect in the sumps of the drains.
 - 6.3.3.4 Inspect oil water separator.
 - 6.3.3.5 Document the inspection.

Title: Wastewater Handling and Disposal

Document #: BHM-EMS-WI-001

Revision #: 1.2

Date: 4/4/14

- 6.3.4 Controlling material that enters the floor drains and holding tanks:
 - 6.3.4.1 State vehicle and equipment leaks should be reported to Bureau of Mechanical Services and fixed as soon as possible.
 - 6.3.4.2 Incidental leaks from vehicles should be contained in drip pans as soon as they are found.
 - 6.3.4.3 Vehicle maintenance over the sumps/drains is not allowed.
 - 6.3.4.5 When possible, do not park vehicles with uncontained leaks over the sumps/ drains.
 - 6.3.4.6 Place oil absorbent pads at the outlet of the floor sump to collect any oils that may enter the sump.
 - 6.3.4.7 Place absorbent pads or socks in the oil/water separator of the holding tank to collect any oils that may enter the tank.

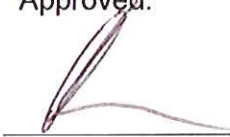
- 6.3.5 Procedures for oils entering the oil/water separator & holding tanks:
 - 6.3.5.1 Report spills to District Safety and Environmental Coordinator and Maintenance Supervisor
 - 6.3.5.2 Absorbent pads and socks should be used to clean up the oil.
 - 6.3.5.3 All wastes should be properly disposed of in accordance with applicable rule and regulations.

- 6.3.6 Procedures for pumping oil / water separators:
 - 6.3.6.1 Notify District Safety and Environmental Coordinator and Maintenance Supervisor that the tank needs to be pumped.
 - 6.3.6.2 District Safety and Environmental Coordinator will make arrangements to have wastewater properly disposed of in accordance with applicable rules and regulations.

7.0 TRAINING

- 7.1 Initial New Employee training for all employees except office, clerical, and administrative staff.
- 7.2 As determined by the Maintenance Supervisor, Foreman, or Safety and Environmental Coordinator.


8.0 DOCUMENT CONTROL

<p>Approved:</p>  <p>_____</p> <p>Name Title Caleb Dobbins, State Maintenance Engineer</p>	<p>REVISION NO.: <u>1.2</u></p> <p>DATE: <u>4/4/2014</u></p> <p>SUPERSEDES EDITION: 1.1</p> <p>_____</p>
<p><u>4/8/14</u></p> <p>Date</p>	

Appendix N

Material Handling Work Instructions



WORK INSTRUCTION NUMBER: <i>DOPS-WI-001</i>	WORK INSTRUCTION NAME: <i>Management of Limited Reuse Soil</i>
ADOPTION DATE: <i>November 8, 2018</i>	LAST UPDATED: <i>November 8, 2018</i>
APPROVED BY: <i>David Rodrigue, Director</i>	SIGNATURE: 
RESPONSIBLE OFFICE: <i>Division of Operations Office of Director</i>	CONTACT PERSON: <i>Mark Kirouac</i>
RELATED <POLICY/PROGRAM>: <ul style="list-style-type: none"> • NHDOT Environmental Policy • NHDES Waiver Request Approval No. DES-SW-WV16-003 Approved by NHDES Assistant Director of Waste Management Division • Division of Operations Limited Reuse Soils Memo, January 13, 2017 Approved by NHDOT Assistant Commissioner • Limited Reuse Soils Project Development Policy Directive, January 26, 2017 Approved by NHDOT Assistant Commissioner 	PROCEDURES AND RESOURCES: <ul style="list-style-type: none"> • Limited Reuse Soils (LRS) Issues/Clarification, May 22, 2017 from Administrator of NHDOT Bureau of Highway Maintenance to NHDOT Director of Operations • Limited Reuse Soils Clarifications, April 4, 2018 Approved by NHDOT Assistant Commissioner • NHDOT Division of Operations Catch Basin Solids Drying Bin Details, dated June 22, 2018

1.0 PURPOSE

To provide guidance for proper management of Limited Reuse Soil (LRS) generated during routine maintenance activities. LRS materials are defined in section 3 of this document. The reuse, management and disposal of LRS is limited in order to maintain compliance with local, state, and federal requirements and the intent of NHDES Waiver Approval # DES-SW-WV-16-003.

2.0 SCOPE

This work instruction is intended to provide all Division of Operations (Operations) employees with the proper procedures for performing activities/tasks that have the potential to generate LRS, and provide guidelines for the management of these materials during specified activities.

Projects that do not meet the definition of routine maintenance may require additional environmental review, permitting, and/or a soils management plan and will not be managed by this work instruction. Contact Bureau Administration for further direction when working on non-routine maintenance activities.



3.0 GENERAL PROVISIONS

3.1 Regulatory

3.1.1 NHDES Waiver Approval No. DES-SW-WV-16-003

3.1.1.1 NH Solid Waste Rules. Env-Sw 100 – Env-Sw 2000 shall not apply to the management of certain wastes generated by the Department when managed by NHDOT in accordance to the waiver provisions.

3.2 Internal Direction

3.2.1 Limited Reuse Soils Project Development Policy Directive, January 26, 2017 Approved by NHDOT Assistant Commissioner

3.2.2 Division of Operations Limited Reuse Soils Memo, January 13, 2017 Approved by NHDOT Assistant Commissioner

3.2.3 Limited Reuse Soils (LRS) Issues/Clarification, May 22, 2017 from Administrator of NHDOT Bureau of Highway Maintenance to NHDOT Director of Operations

3.2.4 Limited Reuse Soils Clarifications, April 4, 2018 Approved by NHDOT Assistant Commissioner

3.3 Specification/Detail

3.3.1 NHDOT Division of Operations approved Catch Basin Material Drying Bins Details, dated June 22, 2018

4.0 DEFINITIONS

4.1 **Limited Reuse Soils (LRS):** Surplus material from within the NHDOT rights-of-way (ROW) generated during routine maintenance activities that requires removal or relocation, and that are likely (based on generator knowledge) and/or demonstrated (through field screening or laboratory analyses) to contain contaminants with levels between naturally occurring background concentrations and NHDOT-specific Acceptable Reuse Concentrations (ARCs). LRS is associated with the topsoil within the roadway network due to the presence and breakdown of asphalt pavement, the normal operation of motor vehicles, and other “non-point sources” of pollution in these areas.

4.1.1 Unless obviously contaminated, street wastes (e.g., soils generated through various activities, such as street sweeping, ditch maintenance, catch basin cleanout, and stormwater management infrastructure maintenance) shall be considered LRS. This assumption is based on generator knowledge of the presence of contamination in these materials. The topsoil layer within the entire NHDOT ROW shall be considered LRS. In instances where topsoil is not present, LRS is assumed to be present in soil from the top of ground to a depth of six (6) inches.

- 4.1.2 Soil excavated from beyond and/or below the specified LRS limits, and which does not exhibit visual or olfactory evidence of potential contamination, or was under pavement shall not be considered LRS and shall not require the special handling and treatment that is outlined for LRS material in this work instruction.
- 4.2 **Street Waste:** A type of LRS Material collected through various routine maintenance activities, including street sweeping, ditch cleaning (ditching), and cleaning out catch basins and other stormwater management infrastructure, such as hydrodynamic separators and detention pond fore bays.
- 4.3 **Routine Maintenance:** Routine maintenance activities are generally considered those which are budgeted for and performed on a scheduled basis. These activities are intended to preserve and/or restore the highway facility/elements so that they substantially retain their original intended use and function. Tasks that are performed to preserve or restore the transportation systems to their original design or function including street sweeping, ditch and catch basin cleaning, and side slope repairs as well as reconstructing drainage features to original line and grade, hydraulic capacity, or drainage purpose.
- 4.4 **Obviously Contaminated Materials:** Materials containing liquids other than water, such as oils, non-organic sheens, gasoline, paints, and colored liquids; and materials that have petroleum, chemical, acrid, or noxious odors.
- 4.5 **Topsoil:** The surface layer of soil consisting of mineral soil mixed with organic matter and vegetative debris that is suitable for plant growth, and is typically darker in color than the underlying soil.

Any additional definitions related to this work instruction may be viewed on **EX 1-1 Form 1, Approved Definitions List**, located on the **SOS Index**.

5.0 RESPONSIBILITY

5.1 Director of Operations:

- 5.1.1 Approve work instructions and procedures for implementation by Bureau staff within the Division of Operations.
- 5.1.2 Approve and communicate Best Management Practices (BMPs) to be implemented by the Operations Bureau staff for the management of LRS, as they are released to the industry.
- 5.1.3 Provide equipment, materials, and resources necessary to appropriately manage or dispose of LRS.
- 5.1.4 Review and approve LRS reuse proposals that do not meet the definition of routine maintenance activities, and locations that do not meet the reuse or storage criteria outlined in this work instruction.

5.2 Bureau Administrator and/or District Engineer:

- 5.2.1 Implement approved work instruction and identify training requirements for appropriate personnel within their Bureau or District.
- 5.2.2 Facilitate the development and management of training materials, approved by the Director of Operations, in coordination with appropriate Bureaus within the Division of Operations
- 5.2.3 Disseminate relevant Best Management Practices approved by Director of Operations as they are released to the industry.
- 5.2.4 Request equipment, materials, and resources necessary to appropriately manage or dispose of LRS.
- 5.2.5 Review and approve proposed LRS reuse and storage locations as appropriate.

5.3 Safety and Environmental Coordinator (SEC)/ Environmental Program Specialist

- 5.3.1 Administer technical assistance and training to Bureau/District personnel as needed, with assistance from the Bureau of Environment staff where applicable.
- 5.3.2 Propose revisions to this work instruction, and associated training materials as appropriate.
- 5.3.3 Maintain records related to Bureau/District employee training.
- 5.3.4 Perform independent visual and olfactory evaluation of materials in the ROW if reported to be obviously contaminated.
- 5.3.5 Coordinate with the Bureau of Environment as necessary for contamination assessment.
- 5.3.6 Coordinate the assessment, and remediation and/or disposal of contaminated materials as necessary.
- 5.3.7 Coordinate with Bureau Administration to register approved Catch Basin Material Drying Bins with NHDES per Env-Wq 402.
- 5.3.8 Coordinate with the Bureau of Environment for technical questions related to LRS and other contamination as necessary and where applicable.

5.4 Maintenance Supervisor/Maintenance and Construction Engineer:

- 5.4.1 Provide technical assistance to maintenance crews as necessary.
- 5.4.2 Maintain and provide records related to LRS generation and storage as necessary.
- 5.4.3 Correct deficiencies within the scope of their position.
- 5.4.4 Report deficiencies outside scope of the position to appropriate Bureau/District personnel such as the Bureau Administrator/District Engineer or SEC, in a reasonable time frame.

5.4.5 Confirm and/or oversee that approved Catch Basin Material Drying Bins are constructed and maintained in accordance with design and construction criteria.

5.4.6 Confirm activities being performed comply with the definition of routine maintenance.

5.5 Highway Patrol Foreman/Bridge Superintendent:

5.5.1 Provide guidance to Crew Members and hired equipment operators pertaining to handling, storage, disposal, and reuse of LRS.

5.5.2 Correct deficiencies within the means of their position.

5.5.3 Report deficiencies outside means of the position to Maintenance Supervisor/Field Engineer or SEC.

5.5.4 Compile and Submit completed LRS Waste Summary Forms to Maintenance Supervisor/Field Engineer or maintain records as directed for maintenance activities.

5.6 Crew Members and Hired Equipment Operators:

5.6.1 Comply with all applicable parts of this work instruction.

5.6.2 Seek Highway Patrol Foreman/Bridge Superintendent or SEC for clarification and guidance.

5.7 Bureau of Environment:

5.7.1 Provide technical assistance to the Operations Bureau staff as needed and where applicable.

5.7.2 Communicate changes in local, state, or federal requirements to Bureau Administrators and Director of Operations.

6.0 WORK INSTRUCTION PROCEDURE

6.1 Inspection of work areas

6.1.1 Division of Operations staff shall perform visual and olfactory inspection of work areas prior to and during maintenance operations to determine if disturbed materials are obviously contaminated.

6.1.2 Observations/inspections shall be documented using the NHDOT LRS Waste Summary Form.

6.1.3 Obviously contaminated materials are considered to be: materials containing liquids other than water such as oils, non-organic sheens, gasoline, paints, and colored liquids; and materials that have petroleum, chemical, acid, or noxious odors.

6.1.4 Contact the SEC if visual or olfactory examination indicates that materials within the ROW are obviously contaminated. Do not handle or collect

obviously contaminated material, or material suspected to be contaminated.

6.1.5 The SEC will perform an independent visual and olfactory evaluation of material reported to be obviously contaminated by Division of Operations staff.

6.1.5.1 In situations where the independent observations do not indicate a condition of obviously contaminated materials, LRS material may be removed, reused, stored, or disposed of in accordance with this work instruction.

6.1.5.2 If visual or olfactory examination indicates that materials in the ROW are obviously contaminated, the SEC or their designated representative shall call NHDES Spill Response and Complaint Investigation Section (SRCIS, 603-271-3899) between the hours of 8:00 AM and 4:00 PM. Outside these hours the SEC or their designated representative shall contact the NH State Police Dispatch (603-223-4381). NH State Police will contact NHDES SRCIS and emergency response personnel.

6.1.6 Division of Operations staff shall perform a visual evaluation of work areas for invasive plant species prior to and during collection operations. They shall follow NHDOT Best Management Practices for Roadside Invasive Plants. In areas containing invasive plants that have the ability to sprout from stem and root fragments (Type II) such as: purple loosestrife, phragmites, and Japanese knotweed, use special care to be sure these plants are not spread. For assistance with plant species identification or BMP guidance please contact the BOE Operations Management Section or refer to the NH Department of Agriculture Guide to Upland Plant Species in NH, and NHDOT Best Management Practices for Roadside Invasive Plants documents.

6.2 Catch Basin Cleaning/Inspection

6.2.1 Division of Operations staff shall clean each catch basin at least once every five (5) years, or when sumps are more than 50% full during inspection.

6.2.1.1 Inspections shall be performed prior to cleaning.

6.2.1.2 Inspections should be performed prior to the eductor or clam shell arriving to clean them.

6.2.1.3 Catch basins to be cleaned shall be clearly and appropriately identified.

6.2.1.4 Catch basins that do not meet visual and olfactory examination shall be clearly identified.

- 6.2.2 Division of Operations staff shall accompany the educator or clam shell during catch basin cleaning operations to observe operation and that the activity is carried out in accordance with this work instruction.

6.3 Catch Basin Clean Out Material Staging

- 6.3.1 Material removed from catch basins shall be deposited in approved Catch Basin Material Drying Bins (Bins) in a manner that limits potential for erosion or down gradient sedimentation by wind or water, and allowed to dry.
- 6.3.2 Bins shall be registered in accordance with NHDES Env-Wq 402. Registration shall be coordinated with Bureau Administration.
- 6.3.3 Bins shall be located in accordance with criteria below:
 - 6.3.3.1 On Department-owned property.
 - 6.3.3.2 Constructed in accordance with NHDOT Catch Basin Solids Storage Bin Typical Detail identified in section 3.3.1.
- 6.3.4 Bins shall be cleaned of filter media and catch basin solids when emptied. The filter media and catch basins solids shall be thoroughly mixed for storage.
- 6.3.5 Sufficiently dried catch basin solids can be removed from Bins and storage in accordance with 6.6 (Storage of LRS).

6.4 Street Sweeping Operations

- 6.4.1 In Municipal Separate Storm Sewer System (MS4) urbanized areas, street sweeping shall be performed at least annually in curbed areas, including concrete barriers. Street sweeping in areas outside of MS4 urbanized areas shall be performed at least every three (3) years.
- 6.4.2 When collected, street sweeping materials may be mixed with other LRS prior to reuse.
- 6.4.3 When collected, street sweeping materials shall be stored in accordance with section 6.6.
- 6.4.4 When collected, street sweeping materials may be reused in accordance with section 6.7.

6.5 Ditching & Slope Operations

- 6.5.1 Operations shall be performed in a manner to minimize the amount of surplus material generated. The primary goal of ditching and slope maintenance operations is to reestablish the original line and grade and/or hydraulic function of the ditch line.
- 6.5.2 Sediment and erosion control BMPs shall be implemented when reworking ditching material during maintenance ditching operations.
- 6.5.3 LRS that cannot be reused, and must be removed from the active maintenance operation site may be stored and/or reused in other locations in accordance with section 6.6 and 6.7.

6.6 Storage of LRS

- 6.6.1 Litter and significant debris shall be removed from LRS material and disposed of properly.
- 6.6.2 LRS materials shall be stockpiled on Department-owned property utilizing appropriate BMPs that limit potential for erosion by wind or water, or down gradient sedimentation, and will not adversely affect human health or the environment.
- 6.6.3 Materials shall not be stockpiled in areas of intensive public use (i.e., rest areas, weigh stations, park and ride facilities).
- 6.6.4 LRS shall not be stored within any jurisdictional wetland/surface water or 100 year flood plain.
- 6.6.5 Any material to be stockpiled within 250 ft. of surface water shall be reviewed by the Bureau of Environment.
- 6.6.6 LRS shall not be stored within 50 ft. of a drinking water well.

6.7 Reuse of LRS

- 6.7.1 LRS that is removed from one location within a NHDOT controlled ROW, may be reused within another section of NHDOT controlled ROW, in locations where the LRS is not expected to be eroded and discharged to surface waters with the following limitations:
 - 6.7.1.1 Not in drainage features that provide for stormwater infiltration, unless more than four vertical feet of separation to the seasonal high groundwater table is provided;
 - 6.7.1.2 Not within a 100-year floodplain or wetland;
 - 6.7.1.3 Not within 50 feet of a drinking water well;
 - 6.7.1.4 Not in areas of intensive public use (i.e., rest areas, weigh stations, park and ride facilities) unless two feet of clean cover soils are placed over LRS;
- 6.7.2 Reuse areas within 250 ft. of surface water shall be reviewed by the Bureau of Environment.
- 6.7.3 LRS shall not be reused in the following locations without Director of Operations approval:
 - 6.7.3.1 Other DOT-owned property outside the ROW.
 - 6.7.3.2 On any Public property with the exception of properly licensed disposal facilities; or
 - 6.7.3.3 On any Private property with the exception of properly licensed disposal facilities.
- 6.7.4 The NHDOT Operations Bureau staff shall not accept or allow any LRS collected by private contractors to be stored at Bureau operated properties or facilities. The only exception to this is for temporary storage of LRS material by private contractors, hired by the



Department/Bureau/District office, operating under the direct management and control of NHDOT staff.

- 6.7.5 Areas of proposed LRS reuse shall be reviewed and approved by District Engineer/Bureau Administrator or Director of Operations as appropriate.
- 6.7.6 Sediment and erosion control BMPs shall be implemented during placement or reworking of roadway materials.
- 6.7.7 Any exceptions to these reuse criteria must be reviewed and approved by the Director of Operations in advance of any work.

7.0 TRAINING

- 7.1 Initial training is required for all employees that oversee or perform maintenance activities that handle or collect LRS materials.
- 7.2 Refresher training is required, as determined by the appropriate District/Bureau management, but no less frequently than every three (3) years.

8.0 COMMUNICATION

The SOSC will coordinate and execute final record keeping, posting of approved documents to the *Index*, and implement communication protocols for Department-wide dissemination in coordination with Division of Operations Directors Office.

9.0 AMENDMENT RECORD

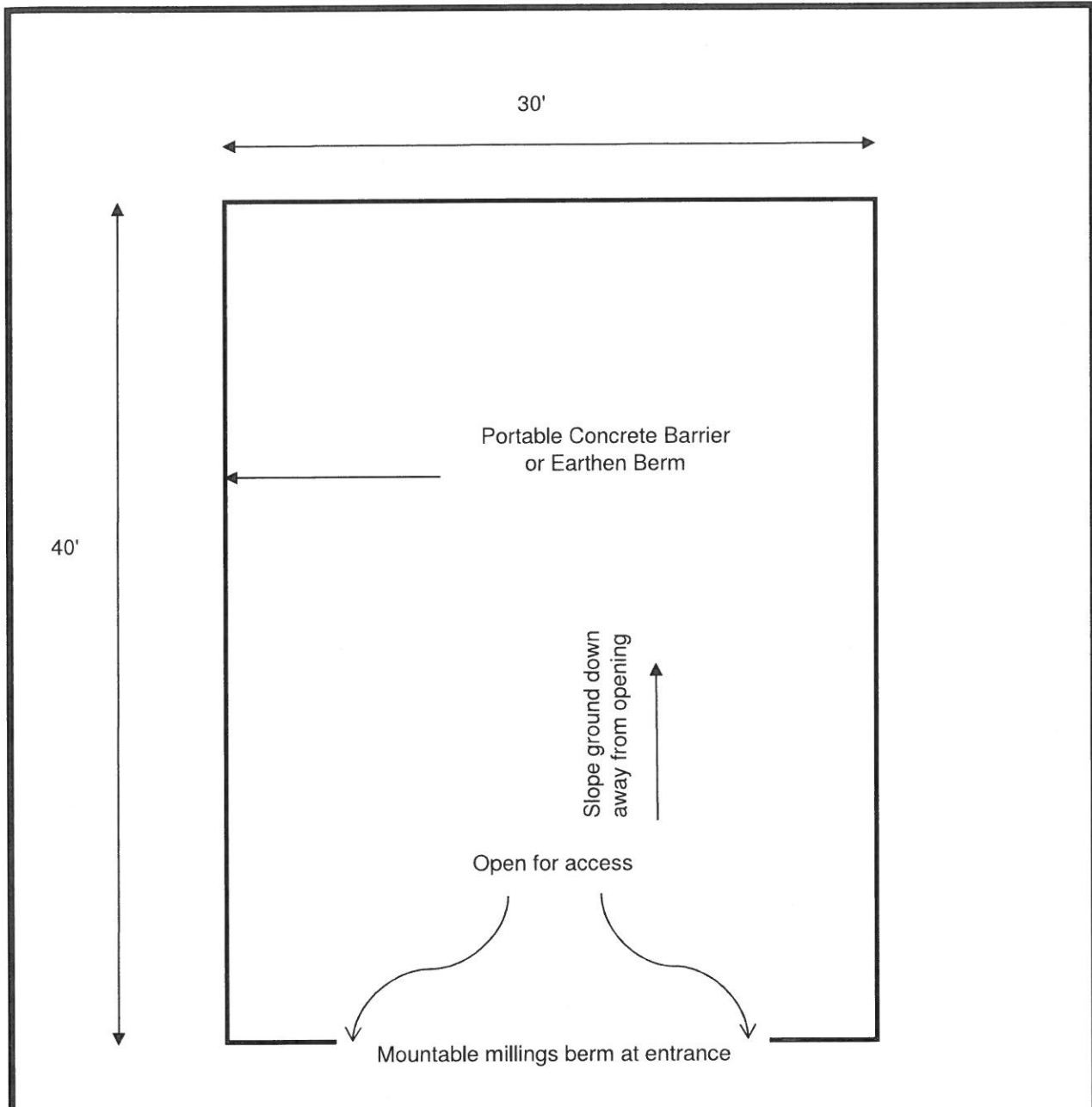
This work instruction and related policy shall be reviewed every two (2) years to ensure its continuing relevance and accuracy. The record of amendments is recorded below.

10.0 Forms

10.1 LRS Waste Summary Form

Date	Comments	Name	Authority
11/8/2018	Original Work Instruction Adopted	David Rodrigue	Director of Operations

Catch Basin Material Drying Bin Detail



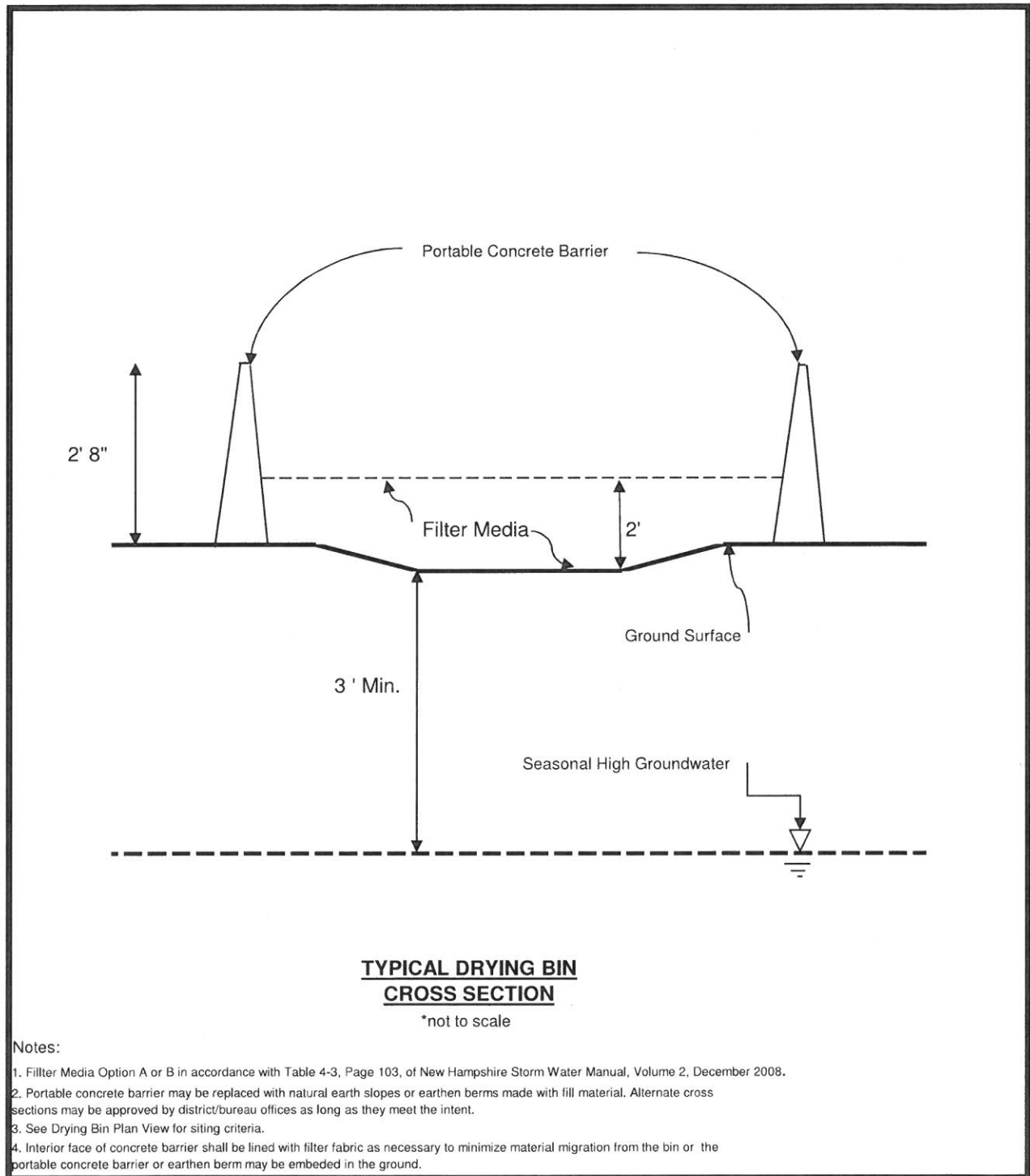
**TYPICAL DRYING BIN
PLAN VIEW**

*not to scale

Notes:

1. Actual dimensions to be determined based on site conditions and estimated storage requirements.
2. Catch Basin Material Drying Bin shall be registered with NHDES prior to use.
3. Siting criteria as follows:
 - a. Must be located on NHDOT Property.
 - b. Not located in wetlands, surface waters or 100 year flood plain.
 - c. Not within 50' of a drinking water well.

Catch Basin Material Drying Bin Detail



NH Division of Operations LRS Summary Form

Patrol Section: _____
 Inspector Name: _____
 Operator Name: _____

Date	Catch Basin	Street Sweeping	Ditching/Slope	Project	Accomplishment (each, lane mile)	Town/City Name	Roadway Name	Start and End Locations (MM, Street, GPS Coordinates)	Inspection (Pass-F or Fail-F)	Total Quantity Generated (CY)	Reuse/Storage Location	Comments
								Start End				
								Start End				
								Start End				
								Start End				
								Start End				

*Contact your Safety and Environmental Coordinator immediately if any locations Fail inspection.

Last Updated:
6/21/2018

Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 1 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

1.0 PURPOSE

- 1.1 To provide guidance for the proper storage and handling of road salt and other anti-icing and deicing chemicals including, but not limited to, sodium chloride (solid & brine), calcium chloride (solid & liquid), magnesium chloride, potassium acetate [all hereinafter referred to as "salt"] on NHDOT Bureau of Highway Maintenance (BHM) facilities.
- 1.2 To prevent the intrusion of salt into the environment as a result of leaching, runoff or erosion of NHDOT-owned stockpiles of salt in an effort to prevent environmental damage, maintain compliance with local, state and federal requirements, and reduce liability.

2.0 SCOPE

- 2.1 This document is intended to assist all employees within the BHM concerning all salt and anti-icing material handled and stored on NHDOT property.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator or District Engineer:

- 3.1.1 Develop work instructions and provide training to all appropriate personnel. Provide the equipment and PPE necessary to perform work in a safe and environmentally correct manner.

3.2 Maintenance Supervisor:

- 3.2.1 Provide technical assistance to the Highway Patrol Foreman as necessary.
- 3.2.2 Inspect salt storage areas at least annually.

3.3 Patrol Foreman:

- 3.3.1 Review salt storage and handling requirements with employees annually.
- 3.3.2 Inspect salt storage areas monthly and document on facility's inspection report.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety and Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this work instruction.

3.5 Safety and Environmental Coordinator:

- 3.5.1 Provide technical assistance and training to all District personnel.
- 3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when handling and storage requirements change.
- 3.5.3 Maintain the Maintenance District's MSDS inventory.
- 3.5.4 Maintain records related to employee training.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the Bureau as needed.
- 3.6.2 Provide relevant Best Management Practices to the Bureau as they are released to the industry.
- 3.6.3 Communicate changes in State and Federal requirements to the Bureau.



Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 2 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

4.0 REFERENCES

- 4.1 NH DOT Salt Management Plan (in development).
- 4.2 WD-DWGB-22-30 Storage and Management of Salt Deicing Materials (NH DES).
- 4.3 NH DOT Winter Maintenance Snow Removal and Ice Control Policy.
- 4.4 EHS-CH300-SAFE-003 (NHDOT).
- 4.5 Vehicle Washing and Rinsing Procedural Guideline.

4.0 RECORDS

- 5.1 Maintain training records at District Office.
- 5.2 MSDSs shall be maintained in accordance with 29 CFR 1910.1200

6.0 PROCEDURE

- 6.1 Storage facilities shall be properly maintained to ensure that roofs are weather-tight and that storm water is kept off the stockpile. Site grading shall provide for positive drainage away from the storage building to prevent the intrusion of storm water into the stockpiled salt. Salt stored under tarps shall be regularly inspected to confirm that tarps are free of holes and deterioration that allows water to penetrate through the tarp. Tarps that have holes or deterioration that allows water penetration shall be replaced. Tarps shall be sufficiently anchored to prevent displacement by wind.
- 6.2 Impervious surface shall be provided within the salt storage building and loading areas for all material loading and transfer. This provides for easier clean up of spillage and inhibits infiltration of chemicals into the surface and ground waters.
- 6.3 Stockpiles shall be uniform in shape and maintained in a safe condition at all times. Excess salt off-loaded from plow trucks shall be pushed back into the main pile in a timely manner and kept within the building. Steep or vertical faces shall be knocked down to prevent collapse.
- 6.4 Summer fill-up salt orders shall be placed as early in the fiscal year as possible to receive the fall fill-ups during periods of good weather, reducing the exposure of salt to the elements. This early delivery should result in drier salt and fewer delivery problems. An additional benefit to early deliveries is that salt supplies are usually more plentiful as opposed to winter deliveries when demand can outstrip inventory.
- 6.5 Do not order salt quantities in excess of the inside rated storage capacity of the storage facility. Overstressing of buildings or storage of salt beyond the protection of the building is unacceptable. On-site personnel shall coordinate with office personnel to halt deliveries before the building capacity is exceeded.

- 6.6 When loading vehicles, care shall be taken to avoid overloading the plow truck's body or spreader. Spillage can occur at the loading site or as the truck is traveling along the highway. Either situation wastes salt and money, as well as being environmentally



Title: Salt & Anti-Icing Chemicals, Storage & Handling Page 3 of 4

Document #: BHM-EMS-WI-006

Revision #: 1.0

Date: 3/05/2012

unacceptable. A chart of application rates and corresponding tonnage and lane mile can be found in the Salt Management Plan.

- 6.7 Loading ramps shall be of sufficient height to permit the loader to safely place salt in the spreader without spilling material.
- 6.8 Loading ramps, shed yards, and storage areas shall be cleaned of any spilled material following each storm event and at other times as necessary. Any spillages shall be placed back in the stockpile.
- 6.9 The operators shall keep an accurate record of the tons of salt loaded on the truck during a storm as well as the quantity returned to the stockpile unused. Accurate material usage records shall be kept and weekly inspections made to confirm that reported usage is consistent with the material remaining in the storage pile.
- 6.10 Salt shall be added to sand piles in sufficient quantity to prevent freeze up of the covered sand stockpiles. Generally that quantity would be about 100 pounds per cubic yard of sand.
- 6.11 Sand stockpiles shall be covered to prevent leaching of the salt into surface and groundwater.
- 6.12 Storage tanks containing liquid deicers such as calcium chloride, sodium chloride brine, and potassium chloride shall be protected from physical damage.
- 6.13 Tanks and associated piping shall be inspected monthly for leaks and deterioration and documented.
- 6.14 Equipment shall be cleaned in accordance to the NHDOT Vehicle Washing and Rinsing Procedural Guideline.

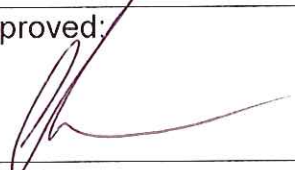
7.0 TRAINING

- 7.1 Initial New Employee training for all employees except office clerical and administrative staff.
- 7.2 As determined by the Maintenance Supervisor, Foreman, or Safety and Environmental Coordinator.

8.0 FORMS

- 8.1 Inspection Form

9.0 DOCUMENT CONTROL

<p>Approved: </p> <hr/> <p>Name _____ Date <u>3/13/12</u></p> <p>Title <u>STATE MAINT ENGINEER</u></p>	<p>REVISION NO.: <u>1.0</u></p> <p>DATE: <u>3/05/2012</u></p> <p>SUPERSEDES EDITION: _____</p>
---	--

Title: Salt & anti-icing chemicals, storage & handling Page 1 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

1.0 PURPOSE

- 1.1 To provide guidance for the proper storage and handling of road salt and other anti-icing and deicing chemicals including, but not limited to, sodium chloride (solid & brine), calcium chloride (solid & liquid), magnesium chloride, potassium acetate [all hereinafter referred to as "salt"] on NHDOT Bureau of Highway Maintenance facilities.
- 1.2 To prevent the intrusion of salt into the environment as a result of leaching, runoff or erosion of NHDOT-owned stockpiles of salt, thereby reducing liability, preventing environmental damage, and maintaining compliance with local, state and federal requirements.

2.0 SCOPE

This document is intended to assist all employees within the Bureau of Turnpikes concerning all salt handled and stored on NHDOT property.

3.0 RESPONSIBILITIES

3.1 All Employees:

- 3.1.1 Should comply with the provisions outlined in this work instruction.

3.2 Maintenance Supervisor:

- 3.2.1 Understand all aspects of this work instruction and provide technical assistance to the Highway Patrol Foreman as necessary.

3.3 Foreman:

- 3.3.1 Review salt storage and handling requirements with employees annually.
- 3.3.2 Inspect salt storage areas monthly and document on facility's inspection report.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety and Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this work instruction.

3.5 Safety/Environmental Coordinator

- 3.5.1 Understand all aspects of this work instruction and provide technical assistance to the Maintenance District as needed.
- 3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when handling and storage requirements change.
- 3.5.3 Inspect salt storage areas at least annually.
- 3.5.4 Maintain the Maintenance District's MSDS inventory.

3.6 Office of Stewardship and Compliance

- 3.6.1 Provide technical assistance to the Bureau as needed.
- 3.6.2 Provide relevant Best Management Practices to the Bureau as they are released to the industry.
- 3.6.3 Communicate changes in State and Federal chemical disposal requirements to the Bureau.

4.0 REFERENCES

- NH DOT Salt Management Plan (in development)
WD-DWGB-22-30 Storage and Management of Salt Deicing Materials (NH DES)



Title: Salt & anti-icing chemicals, storage & handling Page 2 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

5.0 RECORDS

- 5.1 Training records for EHS-CH300-SAFE-001 and 003 shall be entered in the NHDOT training database or maintained at the Turnpikes Administration Office for each current employee.
- 5.2 MSDS's shall be maintained in accordance with 29 CFR 1910.1200

6.0 PROCEDURE

- 6.1 Storage facilities shall be properly maintained to ensure that roofs are weather-tight and that stormwater is kept off the stockpile. Site grading shall provide for positive drainage away from the storage building to prevent the intrusion of stormwater into the stockpiled salt.
- 6.2 Sufficient impervious surface shall be provided around the salt storage building and loading areas for all material loading and transfer. This provides for easier clean-up of spillage and inhibits infiltration of chemicals into the surface and ground waters.
- 6.3 Stockpiles shall be uniform in shape and maintained in a safe condition at all times. Excess salt off-loaded from plow trucks shall be pushed back into the main pile in a timely manner and kept within the building. Steep or vertical faces shall be knocked down to prevent collapse.
- 6.4 Summer fill-up salt orders shall be placed as early in the fiscal year as possible to receive the fall fill-ups during periods of good weather, reducing the exposure of salt to the elements. This early delivery should result in drier salt and fewer delivery problems. An additional benefit to early deliveries is that salt supplies are usually more plentiful as opposed to winter deliveries when demand can outstrip inventory.
- 6.5 Do not order salt quantities in excess of the inside rated storage capacity of the storage facility. Overstressing of buildings or storage of salt beyond the protection of the building is unacceptable. On-site personnel shall coordinate with office personnel to halt deliveries before the building capacity is exceeded.
- 6.6 When loading vehicles, care shall be taken to avoid overloading the plow truck's body or spreader. Spillage can occur at the loading site or as the truck is traveling along the highway. Either situation wastes salt and money, as well as being environmentally unacceptable. A chart of application rates and corresponding tonnage and lane mile can be found in the Salt Management Plan. If funding permits, scales attached to the loader's bucket would provide an accurate method of determining how much material is placed during loading.
- 6.7 Loading ramps shall be of sufficient height to permit the loader to safely place salt in the spreader without spilling material.
- 6.8 Loading ramps, shed yards, and storage areas shall be cleaned of any spilled material following each storm event and at other times as necessary. Any spillages should be placed back in the stockpile.
- 6.9 The loader operator and each truck driver shall keep an accurate record of the tons of salt loaded on the truck during a storm as well as the quantity returned to the stockpile unused. Accurate material usage records shall be kept and weekly inspections made to confirm that reported usage is consistent with the material remaining in the storage pile.

Title: Salt & anti-icing chemicals, storage & handling Page 3 of 5

Document #: EMS001

Revision #: 1.0 Date: 4/28/2011

- 6.10 Salt shall be added to sand piles in sufficient quantity to prevent freeze up of the covered sand stockpiles. Generally that quantity would be about 100 pounds per cubic yard of sand.
- 6.11 Sand stockpiles should be covered to prevent leaching of the salt into surface and groundwater.
- 6.12 Storage tanks containing liquid deicers such as calcium chloride, sodium chloride brine, and potassium chloride shall be protected from physical damage.
- 6.13 Tanks and associated piping shall be periodically inspected for leaks and deterioration.
- 6.14 Equipment should be cleaned in accordance to the NHDOT Vehicle Washing Policy.

7.0 TRAINING

- 7.1 Initial New Employee training for _____
- 7.2 Annual refresher training for _____
- 7.3 As determined by the Section Supervisor, Foreman, or Safety and Environmental Coordinator.

8.0 FORMS


- 8.1 TBD

9.0 ENVIRONMENTAL, HEALTH & SAFETY

- 9.1 TBD

10.0 DOCUMENT CONTROL

- 10.1 TBD

Approved:		REVISION NO.:	<u>1.0</u>
		DATE:	<u>2/9/2011</u>
Name Christopher M. Waszczuk, P.E.	Date <u>4/28/11</u>	SUPERSEDES EDITION:	_____
Title Bureau Administrator	Date 04/28/2011		

Title: Chemical Disposal

Document #: BHM-EMS-WI-004

Revision #: 1.0

Page 1 of 4
Date: 3/05/2012

1.0 PURPOSE

- 1.1 To provide guidance for the proper disposal of chemicals that have been used on NHDOT Bureau of Highway Maintenance facilities and jobsites in an effort to prevent environmental damage, maintain compliance with local, state, and federal disposal requirements, and reduce liability.

2.0 SCOPE

- 2.1 This document is intended to assist all employees within the Bureau of Highway Maintenance concerning all chemicals to be disposed of after use on NHDOT property or jobsites.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator or District Engineer:

- 3.1.1 Develop work instructions and provide training to all appropriate personnel. Provide the equipment and PPE necessary to perform work in a safe and environmentally correct manner.

3.2 Maintenance Supervisor:

- 3.2.1 Provide technical assistance to the Highway Patrol Foreman as necessary.

3.3 Patrol Foreman:

- 3.3.1 Review chemical disposal requirements with employees annually.
- 3.3.2 Inspect chemical disposal areas monthly and document.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety and Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this work instruction.

3.5 Safety and Environmental Coordinator:

- 3.5.1 Provide technical assistance and training to District personnel as needed.
- 3.5.2 Propose revisions to this work instruction to the Bureau EMS Team when disposal requirements change.
- 3.5.3 Inspect chemical disposal areas at least annually.
- 3.5.4 Maintain the Maintenance District's MSDS inventory.
- 3.5.5 Maintain records related to employee training.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the Bureau as needed.
- 3.6.2 Provide relevant Best Management Practices to the Bureau as they are released to the industry.
- 3.6.3 Communicate changes in State and Federal chemical disposal requirements to the Bureau.
- 3.6.4 Develop department wide training programs.



Title: Chemical Disposal

Document #: BHM-EMS-WI-004

Revision #: 1.0

Page 2 of 4
Date: 3/05/2012

4.0 REFERENCES

- 4.1 EHS-CH300-SAFE-001 (NHDOT)
- 4.2 EHS-CH300-SAFE-003 (NHDOT)
- 4.3 29 CFR 1910.1200 (OSHA)

5.0 RECORDS

- 5.1 Maintain training records at the District Office.
- 5.2 MSDSs shall be maintained in accordance with 29 CFR 1910.1200.

6.0 PROCEDURE

- 6.1 Review all container labels and/or MSDS prior to disposal.
- 6.2 All chemical disposal areas shall be inspected at least monthly and documented on the Monthly Safety and Hazardous Materials Report Form.
- 6.3 Inspections of chemical disposal areas shall include: identification of labels, sealed containers, leaking containers, incompatible materials, secondary containment structures, and emergency response equipment.
- 6.4 All chemicals to be disposed of shall be in the original packaging or a properly labeled sound container with a closable lid and the contents clearly identified.

7.0 TRAINING

- 7.1 Initial New Employee training for EHS-CH300-SAFE-001 and 003 (NHDOT)
- 7.2 Annual refresher training for EHS-CH300-SAFE-001 (NHDOT)
- 7.3 Initial EMS Work Instruction training for all employees.
- 7.4 As determined by the Maintenance Supervisor, Foreman, or Safety and Environmental Coordinator.

8.0 FORMS

- 8.1 EHS-CH300-SAFE-003 Appendix A and B (Safety and Hazardous Materials Survey and Report Form).
- 8.2 District Safety and Hazardous Materials Report Form.

9.0 ENVIRONMENTAL, HEALTH & SAFETY

- 9.1 All chemicals shall be disposed of in accordance with Federal, State, and local laws.



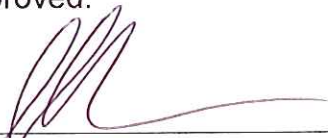
Title: Chemical Disposal

Document #: BHM-EMS-WI-004

Revision #: 1.0

Page 3 of 4
Date: 3/05/2012

10.0 DOCUMENT CONTROL

Approved:  Name Title STATE MAINT ENGINEER	Date 3/13/12	REVISION NO.: 1.0 DATE: 3/05/2012 SUPERSEDES EDITION:
--	-----------------	---

Title: Chemical Handling, Storage and Disposal

- 1.0 PURPOSE:** Develop and implement best management practices for all construction crews using chemical and/or other products as part of their daily work activities in order to comply with regulatory requirements. This work instruction will include the following guidelines:
- Information and Labeling
 - Container Management
 - Handling and Storage
 - Regulated Substance Handling and Storage
- 2.0 SCOPE:** All Bridge Maintenance construction crews.
- 3.0 DEFINITIONS:**
- 3.1** *Chemical(s)* – has a defined atomic or molecular structure that results from, takes part in, reactions involving changes in its structure, composition, and properties.
- 3.2** *Regulated Substances* – defined as “any substance that contains a regulated contaminant for which an ambient groundwater quality standard has been established”. Listed below are a few of our active products that are considered regulated substances:
- Certiplex Penseal 244, Silane Siloxane, Vexon, Sil-Act 42, Sil-Act 100, etc.
 - Diesel Fuel and Gasoline
 - Petroleum Distillates; i.e. hydraulic oil, motor oil, air tool lubricants, etc.
 - Savisol
 - Used Oil for Recycle
 - Paints (with lead, volatiles, methanol, etc.)
- 3.3** *Regulated Container* – a device in which a regulated substance is stored, transported, treated, disposed of, or otherwise handled, with a capacity greater than or equal to 5 gallons, other than fuel tank attached to a motor vehicle for the sole purpose of supplying fuel to that motor vehicle for that vehicle’s normal operation.
- 4.0 RESPONSIBILITY:**
- 4.1** Superintendents are responsible for ensuring that employees who handle and use chemicals and regulated substances are trained to this work instruction. The Superintendents will ensure that chemicals and regulated substances are labeled, stored properly and that MSDS (Material Safety Data Sheets) are available for all active products being utilized during their daily operations.
- 4.2** Construction Crew employees are responsible for following the guidelines within this work instruction and as identified in the MSDS. Employees are responsible for taking appropriate action while handling and/or using chemicals and regulated substances, to include: proper labeling, handling, storage and will report **any** spill or leak to their immediate supervisor.
- 4.3** The Bureau Administrator will ensure that adequate funds are available to purchase items needed for PPE, containment, storage and transportation.
- 4.4** The Safety & Environmental Coordinator will conduct annual training, including this work instruction, proper storage, handling, transporting and proper cleanup or disposal of chemicals and regulated substances.
- 4.5** The Safety & Environmental Coordinator will be the Administrator of the online Actio MSDS Management System and will work with Franklin Yard (inventory location) to ensure any new chemicals or products being placed into active inventory are uploaded into the system.
- 5.0 REFERENCES:**
- 5.1** NH DES, Best Management Practices for Groundwater Protection Env-wq 401.
- 5.2** NH DES Env-Hw 100-1100, Hazardous Waste Rules.
- 5.3** NH Department of Labor, Title XXIII Chapter 277-A Toxic Substances in the Workplace.
- 5.4** NH Department of Labor, Title XXIII Chapter 277-A:5 MSDS Record Retention.
- 5.5** Interim Guidance Document for Storing Regulated Substances dated 8-25-08.

Title: Chemical Handling, Storage and Disposal

- 5.6 Waiver granted by DES for Temporary Storage of Bulk Regulated Substances during washing and oiling season dated 9-24-08.
- 5.7 Actio MSDS Management System Flowchart
- 5.8 Bureau's Emergency Preparedness & Response Work Instruction GN-EMS-WI-004.

6.0 RECORDS (when forms completed):

- 6.1 Weekly Inspection Record at Fixed Facilities GN-EMS-FORM-005.
- 6.2 Weekly Inspection Checklist for Hazardous Waste and Regulated Substances GN-EMS-FORM-002 (Franklin and Portsmouth facilities only).
- 6.3 Spill Incident Report Form GN-EMS-FORM-004.

7.0 PROCEDURE:

7.1 MSDS Management

- 7.1.1 All facilities that store, utilize chemicals or products will maintain MSDS sheets and make them readily available to all employees so that proper safety precautions can be taken in case of an emergency; i.e. injury, chemical exposure or spill.
- 7.1.2 When a new chemical or product is introduced, the purchasing facility (Franklin Yard) is responsible for requesting the corresponding MSDS from the supplier, submit the MSDS to the Safety & Environmental Coordinator to be uploaded into the Actio MSDS Management System.
- 7.1.3 When construction crews purchase a "site specific" chemical or product from local suppliers they must request a copy of the MSDS sheet. The MSDS sheet will reside with that chemical or product only for as long as it remains active.
- 7.1.4 The S&E Coordinator will notify superintendents via e-mail when an MSDS on chemicals or products become inactive.
- 7.1.5 The S&E Coordinator will manage the Actio Management System and will be responsible for maintaining one master binder of the Bureau's in-active MSDS sheets.
- 7.1.6 Chemical or product MSDS(s) being used on a trial basis will be scanned and saved electronically by the S&E Coordinator. Trial basis will determine whether product will be purchased for inventory, which will require the MSDS to be uploaded into the Actio Management System as active.
- 7.1.7 All in-active MSDS will be retained for a period of thirty years and are subject to inspection by in-house auditors and external auditors contracted by the Department.

7.2 Information and Labeling of Chemicals or Products

- 7.2.1 All chemical or product containers should possess related labels and hazardous chemicals should contain the relevant hazard warning labels.
- 7.2.2 All labels should be legible.
- 7.2.3 Any labels that are worn or become illegible should be replaced.
- 7.2.4 Any chemical or product transferred from one container to another that will not be used within the normal eight-hour work shift shall be labeled accordingly.
- 7.2.5 Any plastic container regardless of size can be labeled using "permanent marker". If the container contents should change in order to re-use container for different chemical or product, it must be relabeled accordingly.
- 7.2.6 Any container that is not labeled and cannot be identified shall be marked as hazardous waste and removed from use until contents are identified. Contact the S&E Coordinator or the Maintenance & Construction Engineer to ensure proper labeling and disposal methods.

7.3 Container Management

- 7.3.1 All flammable/combustible products shall be stored in an NFPA rated flammable storage cabinet.

Title: Chemical Handling, Storage and Disposal

- 7.3.2 Chemicals or products; i.e. paints, solvents, aerosols, motor oils, air tool lubricants, etc. shall be stored in flammable storage cabinet and the combined total volumes shall not exceed the cabinet rating.
 - 7.3.2.1 Full or partial five-gallon containers of diesel fuel or gasoline shall not be stored in the flammable storage cabinet since they are considered regulated substances.
- 7.3.3 Purchase smaller quantities to reduce manual handling issues, storage space and waste.
 - 7.3.3.1 Purchasing liquids in ready to use packages instead of decanting from large containers is recommended.
- 7.3.4 Store chemicals or products as per manufacturer guidelines found in the MSDS.
- 7.3.5 Storage areas and/or cabinets need to be placarded for the type of chemicals or products being stored; i.e. Flammable/Combustible, No Smoking Signs, etc.
- 7.3.6 Chemicals or products must be separated or segregated by quantities and incompatibility of classes.
- 7.3.7 When reasonably practicable, chemicals or products should remain in original container. If decanting into new container, attention needs to be given to the compatibility of the container to the product, and any unique hazards; i.e. solvents which create explosive atmospheres or asphyxiates.
- 7.3.8 Do not store chemicals near heat or sunlight or near other substances, which may initiate a dangerous reaction if combined.
- 7.3.9 Do not store containers on top of one another.
- 7.3.10 Arrange storage cabinet or area so that smaller containers are on top shelves and larger containers are on lower shelves.
- 7.3.11 Do not pour chemicals down sink or toilet drains.
- 7.3.12 Check stored chemicals for deterioration and broken containers.
- 7.3.13 **Regulated substances being stored inside** must be stored on an impervious surface, allow ample aisle space (two-feet minimum) between rows and a weekly inspection is required (use Weekly Inspection Record at Fixed Facilities GN-EMS-FORM-005).
- 7.3.14 **Regulated substances being stored outside** must be secured from unauthorized entry, stored on an impervious surface, be under cover, have secondary containment and requires a weekly inspection record (use Weekly Inspection Record at Fixed Facilities GN-EMS-FORM-005).
- 7.3.15 **Regulated substances being stored inside or outside** must have spill kit materials accessible and release response information must be posted where regulated substances are being stored.
- 7.3.16 **Regulated substances (bulk silane siloxane drums) being stored during the washing and sealing season** must be stored inside the shed on concrete floor until used in the field. If storing outside, all drums must be secured from unauthorized entry, stored on an impervious surface and under cover until used in the field.
 - 7.3.15.1 Superintendents will notify the S&E Coordinator the day they pick up drums from Franklin and when sealing operations are complete in order to meet the eight-week storage provision outlined in the DES waiver.
 - 7.3.15.2 Any full or partial drums of products used (sealants as previously listed) must be returned to Franklin Yard.
 - 7.3.15.3 The majority of the products (listed previously under regulated substance definition) can easily be managed at the job site by using the established spill control containments and by conducting daily visual inspections.
 - 7.3.15.4 If employees are unsure of where a chemical or product should be stored or whether or not a chemical or product is a regulated substance, please contact the S&E Coordinator.

**Bureau of Bridge Maintenance
Work Instruction**



Title: Chemical Handling, Storage and Disposal

Document #: GN-EMS-WI-003

Revision #: 5

Revised Date: 6/27/2012

- 7.3.15.5** Routine housekeeping practices to include regular cleaning of work areas.
- 7.3.15.6** Clean up spills or leaks and dispose of as outlined in the Bureau's Emergency Preparedness and Response Work Instruction.

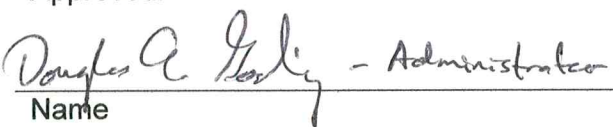
8.0 FORMS:

- 8.1** Weekly Inspection Record at Fixed Facilities GN-EMS-FORM-005.
- 8.2** Weekly Inspection Checklist for Hazardous Waste and Regulated Substances GN-EMS-FORM-002 (Franklin and Portsmouth facilities only).
- 8.3** Spill Incident Report Form GN-EMS-FORM-004.

9.0 ENVIRONMENTAL, HEALTH & SAFETY:

10.0 DOCUMENT CONTROL:

- 10.1** Original Revision 1 document dated 10/8/09.
- 10.2** Revision 2 dated 12/14/09 incorporated regulated substances.
- 10.3** Revision 3 dated 3/1/10 incorporated Definitions into Section 3.0.
- 10.4** Revision 4 dated 3/25/10 incorporated References under Section 5.0.
- 10.5** Revision 5 dated 6/18/12 incorporated changes by OSC under Section 7.3 and deleted use of linseed oil.

Approved:		REVISION #:	<u>5</u>
		DATE:	<u>6/27/2012</u>
Name	<u>Administrative</u>	SUPERSEDES EDITION:	<u>Original Rev. 1 dated 10/8/2009.</u>
Title			

Appendix O

Vehicle Maintenance Work Instructions

Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

Page 1 of 4
Date: 11/16/12

1.0 PURPOSE:

- 1.1 To provide guidance for the proper washing of NHDOT fleet vehicles at NHDOT Bureau of Highway Maintenance (BHM) facilities in an effort to maintain compliance with local, state, and federal requirements. This work instruction implements restrictions on methods and locations of outside vehicle and equipment washing.

2.0 SCOPE

- 2.1 This work instruction is intended to assist all BHM employees with the proper vehicle and equipment washing procedures to reduce potential negative environmental impacts. Proper vehicle and equipment washing includes washing of the exterior portion of the vehicle body and vehicle frame, tires, and wheels that do not contain excessive accumulations of oil, grease, and road salt that could have a negative environmental impact. Proper vehicle washing does not include washing of the engine compartment, transmission, rear end, undercarriage, or vehicle interior.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator or District Engineer:

- 3.1.1 Develop work instructions and provide training to all appropriate personnel.
3.1.2 Register vehicle washing locations with New Hampshire Department of Environmental Services (NHDES).
3.1.3 Comply with NHDES registration conditions, if any.
3.1.4 Provide the equipment necessary to perform vehicle washing in a safe and environmentally correct manner.

3.2 Safety and Environmental Coordinator:

- 3.2.1 Provide technical assistance and training to District personnel as needed.
3.2.2 Propose revisions to the work instruction, as appropriate, to the BHM EMS Team.
3.2.3 Maintain records related to employee training.

3.3 Maintenance Supervisor:

- 3.3.1 Provide technical assistance to the Highway Patrol Foreman as necessary.

3.4 Patrol Foreman:

- 3.4.1 Provide guidance to all Crew Members and hired equipment operators pertaining to vehicle washing.
3.4.2 Correct deficiencies within the means of the position.
3.4.3 Report deficiencies outside of the means of the position to the Maintenance Supervisor or Safety Environmental Coordinator.

3.5 Crew Members and Hired Equipment Operators:

- 3.5.1 Comply with all parts of this work instruction.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the BHM as needed.
3.6.2 Provide relevant Best Management Practices to the BHM as they are released to the industry.
3.6.3 Communicate changes in local, state, or federal requirements to the BHM.

Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

Page 2 of 4
Date: 11/16/12

4.0 REFERENCES

- 4.1 NHDES WD-DWGB-22-10 Wastewater Discharges from Vehicle Washing.
- 4.2 NHDES WD-DWGB-12-10 Wellhead Protection for Small Public Water Supply Systems.
- 4.3 NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 4.4 NHDES Code of Administrative Rules Env-Wq 402 Groundwater Discharge Permit and Registration.

5.0 RECORDS:

- 5.1 NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 5.2 Maintain training records at District Office.
- 5.3 MSDSs for all approved vehicle washing soaps.
- 5.4 NHDES Approved Soaps for Vehicle Washing, latest version.

6.0 PROCEDURE

- 6.1 Do follow NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 6.2 Review site specific NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 6.3 Do not wash vehicles within any of the following setbacks:
 - 6.3.1 50 feet of surface water;
 - 6.3.2 75 feet of private water supply wells;
 - 6.3.3 75 feet of onsite water supply wells;
 - 6.3.4 50 feet of storm drains; or
 - 6.3.5 Protective radius of any public water supply well
- 6.4 Wash less than 30 vehicles per week at any registered vehicle washing location.
- 6.5 Remove and properly dispose of, or recycle, gross accumulation of oil, grease, road salt, or other materials that could negatively impact the environment using a rag or other absorbent material (not wash water) prior to washing.
- 6.6 Sweep truck beds with broom prior to washing. Collect and properly dispose of, or recycle, sweepings.
- 6.7 Wash vehicle exterior, frame, and body only.
- 6.8 Do not wash engine compartment, transmission, rear end, or undercarriage.
- 6.9 Wash with low pressure or power washer, with hot or cold water, including brush and hose. Do not use a steam cleaner.
- 6.10 Wash in the NHDES approved vehicle washing location only as shown on the NHDES Registration Form.
- 6.11 Discharge to onsite infiltration including gravel and vegetated areas in accordance with NHDES registration requirements.



Title: Vehicle Washing

Document #: BHM-EMS-WI-007

Revision #: 1.0

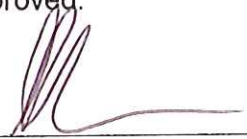
Page 3 of 4
Date: 11/16/12

- 6.12 Wash responsibly. For example, if you would not wash the vehicle next to your private water supply well due to contaminants on the vehicle, do not wash the vehicle until the contaminants have been properly removed and disposed of or recycled.
- 6.13 Do not discharge directly into septic systems or within 50 feet of dry wells.
- 6.14 Wash using only washing materials approved by NHDES for use at NHDOT facilities. No other chemicals or acids should be used.
- 6.15 Do not discharge directly into or within 50 feet of catch basins, wetlands, or surface waters.
- 6.16 Do not wash out gross accumulations of salt. Remove the salt and recycle to onsite salt storage facility.
- 6.17 Wash only NHDOT owned, leased, hired, or rented vehicles and equipment.

7.0 TRAINING

- 7.1 Initial New Employee training for all employees.
- 7.2 Refresher training as determined by the Maintenance Supervisor, Patrol Foreman, Safety and Environmental Coordinator, Assistant District Engineer, or District Engineer.

8.0 DOCUMENT CONTROL

Approved:  <hr/> Name Title STATE MAINT ENGINEER		REVISION NO.: 1.0 DATE: 11/13/12 SUPERSEDES EDITION:
Date 11/16/12		

Title: Vehicle Washing

Document #: TURN- EMS – WI - 004

Revision #: 2.0

Page 1 of 3
Date: 12/12/2014

1.0 PURPOSE:

- 1.1 To provide guidance for the proper washing of NHDOT fleet vehicles at NHDOT Bureau of Turnpikes (BOT) facilities in an effort to maintain compliance with local, state, and federal requirements. This work instruction implements restrictions on methods and locations of outside vehicle and equipment washing.

2.0 SCOPE

- 2.1 This work instruction is intended to assist all BOT employees with the proper vehicle and equipment washing procedures to reduce potential negative environmental impacts. Proper vehicle and equipment washing includes washing of the exterior portion of the vehicle body and vehicle frame, tires, and wheels that do not contain excessive accumulations of oil, grease, and road salt that could have a negative environmental impact. Proper vehicle washing does not include washing of the engine compartment, transmission, or vehicle interior.

3.0 RESPONSIBILITIES

3.1 Bureau Administrator:

- 3.1.1 Provide management support, adequate resources, and ensure funding for materials, products and equipment.
- 3.1.2 Register vehicle-washing locations with New Hampshire Department of Environmental Services (NHDES).
- 3.1.3 Comply with NHDES registration conditions, if any.
- 3.1.4 Provide the equipment necessary to perform vehicle washing in a safe and environmentally correct manner.

3.2 Safety and Environmental Coordinator:

- 3.2.1 Provide technical assistance and training to Bureau personnel as needed.
- 3.2.2 Propose revisions to the work instruction, as appropriate, to the BOT EMS Team and/or BOT S&E Safety Committee.
- 3.2.3 Maintain records related to employee training.

3.3 Maintenance Superintendent / Supervisors:

- 3.3.1 Provide technical assistance to the Highway Patrol Foreman as necessary.

3.4 Patrol Foreman:

- 3.4.1 Provide guidance to all Crew Members and hired equipment operators pertaining to vehicle washing.
- 3.4.2 Correct deficiencies within the means of the position.
- 3.4.3 Report deficiencies outside of the means of the position to the Maintenance Superintendent / Supervisors or Safety Environmental Coordinator.

3.5 Crew Members and Hired Equipment Operators:

- 3.5.1 Comply with all parts of this work instruction.

3.6 Office of Stewardship and Compliance:

- 3.6.1 Provide technical assistance to the BOT as needed.

Title: Vehicle Washing

Page 2 of 3

Document #: TURN-EMS – WI - 004

Revision #: 2.0

Date: 12/12/2014

3.6.2 Provide relevant Best Management Practices to the BOT as they are released to the industry.

3.6.3 Communicate changes in local, state, or federal requirements to the BOT.

4.0 REFERENCES

- 4.1 NHDES WD-DWGB-22-10 Wastewater Discharges from Vehicle Washing.
- 4.2 NHDES WD-DWGB-12-10 Wellhead Protection for Small Public Water Supply Systems.
- 4.3 NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 4.4 NHDES Code of Administrative Rules Env-Wq 402 Groundwater Discharge Permit and Registration.
- 4.5 City of Dover Industrial Discharge Permit with BOT.
- 4.6 Registration and Notification form for the Discharge of Nondomestic Nonhazardous (Dust and Salt water/rinse) Wastewater to the Ground Surface for Infiltration dated February 12, 2013.

5.0 RECORDS:

- 5.1 NHDOT Registration and Notification Form for Floor Drains and Discharges Groundwater.
- 5.2 Maintain training records at Hooksett Administration Office.
- 5.3 MSDSs for all approved vehicle washing soaps.
- 5.4 NHDES Approved Soaps for Vehicle Washing, latest version.

6.0 PROCEDURE

- 6.1 Follow NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 6.2 Review site specific NHDOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 6.3 Do not wash vehicles within any of the following setbacks:
 - 6.3.1 50 feet of surface water;
 - 6.3.2 75 feet of private water supply wells;
 - 6.3.3 75 feet of onsite water supply wells;
 - 6.3.4 50 feet of storm drains; or catch basins
 - 6.3.5 Protective radius of any public water supply well
- 6.4 Wash less than 30 vehicles (29 washes) per week at any registered vehicle washing location. One vehicle can be washed in an area measuring 16' x 35'. Two vehicles can be washed simultaneously in a wash area measuring 35' x 35' (reference 4.6)
- 6.5 Dover and Nashua may wash their vehicles inside since they are connected to the City's sewer system per our agreements with the city. BOT shall comply to the requirements of the permit (attached)
- 6.6 Remove and properly dispose of, or recycle, gross accumulation of oil, grease, road salt gasoline, diesel fuel, or other materials that could negatively impact the environment using a rag or other absorbent material (not wash water) prior to washing.



Title: Vehicle Washing

Document #: TURN-EMS – WI - 004

Revision #: 2.0

Date: 12/12/2014


- 6.7 Sweep truck beds with broom prior to washing. Collect and properly dispose of, or recycle, sweepings, including salt.
- 6.8 Wash vehicle exterior, frame, fuel tanks and body only.
- 6.9 The parts of the vehicle that cannot be washed include engine compartment, transmission or vehicle interior.
- 6.10 Wash with low pressure or power washer, with hot or cold water, including brush and hose. Do not use a steam cleaner.
- 6.11 Wash in the NHDES approved vehicle-washing location only as shown on the NHDES Registration Form. Copies are available at the sheds or administration office.
- 6.12 Discharge to onsite infiltration including gravel and vegetated areas in accordance with NHDES registration requirements.
- 6.13 Wash responsibly. For example, if you would not wash the vehicle next to your private water supply well due to contaminants on the vehicle do not wash the vehicle until the contaminants have been properly removed and disposed of or recycled.
- 6.14 Do not discharge directly into septic systems or within 50 feet of dry wells.
- 6.15 Wash using only washing materials approved by NHDES for use at NHDOT facilities. No other chemicals or acids should be used.
- 6.16 Do not discharge directly into or within 50 feet of catch basins, wetlands, or surface waters.
- 6.17 Do not wash out gross accumulations of salt. Remove the salt and recycle to onsite salt storage facility.
- 6.18 Wash only NHDOT owned, leased, hired, or rented vehicles and equipment.

7.0 TRAINING

- 7.1 Initial New Employee training for all employees shall be completed within 30 days.
- 7.2 Refresher training as determined by the Maintenance Superintendent, Supervisors, Patrol Foreman, Safety and Environmental Coordinator, Assistant Administrator, or Bureau Administrator. Review original work instructions every six years or as needed.

8.0 DOCUMENT CONTROL

- 8.1 Revision #2 – revised to allow washing fuel tanks and undercarriage of the vehicle

<p>Approved:</p>  <p>_____ Christopher M. Waszczuk, P.E. Administrator, Bureau of Turnpikes</p>	<table border="0"> <tr> <td>REVISION NO.:</td> <td>#2</td> </tr> <tr> <td>DATE:</td> <td>12/12/2014</td> </tr> <tr> <td>SUPERSEDES EDITION:</td> <td>2/13/2014</td> </tr> </table>	REVISION NO.:	#2	DATE:	12/12/2014	SUPERSEDES EDITION:	2/13/2014
REVISION NO.:	#2						
DATE:	12/12/2014						
SUPERSEDES EDITION:	2/13/2014						
<p>12/12/14 Date</p>							



Approved Soaps for Vehicle Washing

Product Name	Manufacturer		Availability
CAR-162	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 There is a distributor in Sandown, NH
GUNK	Distributed by Radiator Specialty Company (RSC)		Car Parts
Simple Green	Sunshine Makers		Home Depot / Ace hardware Shaws Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Simple Green d	Sunshine Makers		Home Depot / Ace hardware Shaws Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Special Foamer	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 (distributor in Sandown, NH)
Nu-Tralize	ATCO International		(770) 424-7550

\\:\common\hydrology\conservation\programs\c12013\nd\approved cleaners\dot

Approved Soaps / Vehicle Wash
Revised 11/09/2012

City of Dover
Wastewater Treatment Facility
484 Middle Road
Dover, NH 03820
Phone: 603-516-6475
Fax: 603-516-6477

City of Dover, New Hampshire
INDUSTRIAL PRETREATMENT

LEGAL NAME: NH Dept. of Transportation, Bureau of Turnpikes
INDUSTRIAL DISCHARGE PERMIT

LEGAL AUTHORITY: ENFORCEMENT

Pursuant to Title 40 of the Code of Federal Regulations Part 403 the authority to implement, and enforce Dover's Industrial Pretreatment Program using this control mechanism (Permit) is as noted. (U.S. EPA REGION I, NH RSA 149-1:6, NH RSA 485-A:4,5,6, Env-Wq 305, Dover S.U. O. Chapter 147)

In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information provided as part of the Industrial Discharge Permit (IDP) shall be available to the public without restriction except as specified in 40 CFR. It is from the information provided on the Industrial Discharge Application or waste survey that an IDP for the individual applicant and/or facility will be issued.

In accordance with all terms and conditions of the Code of the City of Dover, New Hampshire, Chapter 147, Article II, Section 147-13 thru 147-24 Industrial Pretreatment, all persons discharging process wastes into the City's wastewater facilities shall comply with applicable federal, state and local Industrial Pretreatment rules.

This permit is in effect for the duration of time indicated below. Reapplication is required by the above named business or industry 60 days prior to it's expiration. No permit shall exceed 5 years in duration.

Permit Serial Number: 1130
Date of Issuance: 09/17/14
Date of Expiration: 09/16/19
Categorical Standard: N/A
City Official or Authorized
City Representative: *Arnold Power*
Title: Pretreatment Coordinator

Dennis Merrill ON BEHALF OF TED ROWLAND

1) Company Name: NH DOT Bureau of Turnpikes
 Address: P.O. Box 2950
Dover, NH 03820
 Phone Number: 603-485-3806
 Responsible Official: Alan Barrington
 Contact Person: Ted Rowland

- 2) It is the responsibility of the permittee to understand all the requirements of this Industrial Discharge Permit.
- 3) Slug Discharge: Immediate notification must be given to the POTW in the event of a slug discharge. In emergency situations after working hours call DOVER (PD) 742-4646.
- 4) Source & Max Daily Flow:

1. waste water from truck garage GPD
2. and domestic - 100 -200 GPD
3. _____ GPD
4. _____ GPD
5. _____ GPD

5) Pretreatment Operations:

Oil & Grit Separator

6) Self Monitoring Required: Yes
 Chain of Custody Required: Yes

Parameters	Method	Frequency	Type Sample	Sample Locations
Oil & Grease	EPA 40 CFR Part 136	annually	grab	sampling manhole

7) Applicable Discharge Limits:

All of Chapter 147 applies, see 147-6
of Dover Sewer Use Ordinance
limit for oil & grease 100 mg/L

8) Sampling Equipment: - Flow Measurement: - N/A
Plastic Bottle for metals, BOD, COD, pH; - N/A
Glass Bottles VOCs, SVOCs, & Oil&Grease;- *
Sampling, Analysis, and Sample N/A
Preservation as indicated in 40 CFR Part 136 N/A

9) Reporting Requirements: Noncompliance immediately
And as indicated below,
Dates: June
Results of Self Monitoring: indicate with lab analysis if applicable
Production Figures: N/A

Certification, Compliance
or Non Compliance

During reporting period: Lab results or cleaning record

Actions taken to meet compliance:

Notify POTW

10) Record keeping Requirements: Lab Reports

11) Special Conditions and/or

Compliance Schedules: Spot inspections of oil & grit separator and applicable records by POTW staff at any time.

12) Right of Entry: The Superintendent or his authorized agent shall be permitted to enter all properties, including dwellings, for the purposes of inspection, observation, measurement, sampling, and testing.

13) Enforcement Remedies: Any person violating any provisions of this Industrial Discharge Permit shall be subject to the following enforcement responses- Notice of Violation, Administrative Orders, fines not to exceed \$10,000 a violation (each day a violation continues shall be deemed a separate offence), Termination of service, Civil Litigation, or Criminal Prosecution.

14) Standard Conditions: Non-transferable; may be revoked for noncompliance; may be modified to reflect newly promulgated rules; change in flow or pollutant characteristics requires new application 60 days in advance; there will be an annual fee to defray costs of administration of the pretreatment program; industry specific costs to the community will be passed along to the industry; compliance must be maintained with Sewer Use Ordinance; slugs, spills or emergencies must be reported immediately; and special monitoring may be required when non-compliance occurs.

15) STANDARD CONDITIONS FOR PERMIT

SECTION A. GENERAL CONDITIONS AND DEFINITIONS

1. Severability

The provisions of this permit are available, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

2. Duty to comply

The permittee must comply with all conditions of this permit. Failure to comply with the requirements of this permit may be grounds for administrative action, or enforcement proceedings including civil or criminal penalties, injunctive relief, and summary abatements.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact to the public treatment plant or the environment resulting from non-compliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

4. permit modification

This permit may be modified for good causes including, but not limited to, the following:

- a. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements.
- b. Material or substantial alterations or additions to the discharger's operation processes, or discharge volume or character which were not considered in drafting the effective permit.
- c. A change in any condition in either the industrial user of the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge
- d. Information indicating that the permitted discharge poses a threat to the Control Authority's collection and treatment systems, POTW personnel or the receiving waters
- e. Violation of any terms or conditions of the permit
- f. Misrepresentation or failure to disclose fully all relevant facts in the permit application or in any required reporting

- g. Revision of or a grant of variance from such categorical standards pursuant to 40 CFR 403.13, the S.U.O.; or
- h. To correct typographical or other errors in the permit.
- i. To reflect transfer of the facility ownership and/or operation to a new owner/operator.
- j. Upon request of the permittee, provided such request does not create a violation of any applicable requirements, standards, laws, or rules and regulations.

The filing of a request by the permittee for a permit modification, revocation and reissue, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.

a. Permit Termination

This permit may be terminated for the following reasons:

- i. Falsifying self-monitoring reports
- ii. Tampering with monitoring equipment
- iii. Refusing to allow timely access to the facility premises and records.
- iv. Failure to meet effluent limitations.
- v. Failure to pay fines.
- vi. Failure to pay sewer charges.
- vii. Failure to meet compliance schedules.

b. Permit Appeals

The permittee may petition to appeal the terms of this permit within thirty (30) days of the notice. This petition must be in writing; failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to be placed in the permit.

The effectiveness of this permit shall not be stayed pending reconsideration by the Board. If, after considering the petition and any arguments put forth by the Superintendent, the Board determines that reconsideration is proper, it shall remand the permit back to the Superintendent for reissue. Those permit provisions being reconsidered by the Superintendent shall be stayed pending reissue.

c. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any violation of Federal, State, or local laws or regulations.

d. Continuation of Expired Permits

An expired permit will continue to be effective and enforceable until the permit is reissued if:

- i. The permittee has submitted a compliance permit application at least sixty (60) - days prior to the expiration date of the user's existing permit.
- ii. The failure to reissue the permit, prior to expiration of the previous permit, is not due to any act or failure to act on the part of the permittee.

e. Dilution

The permittee shall not increase the use of potable or process water or, in any way, attempt to dilute an effluent as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

f. Definitions

- i. Bi-Weekly – Once every other week.
- ii. Bi-Monthly – once every other month.
- iii. BOD – (denoting "biochemical oxygen demand") –the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at twenty degrees Celsius (20 degrees C.), express in milligrams per liter.
- iv. Bypass – Shall mean the intentional diversion of waste streams from any portions of an industrial user's pretreatment facility.
- v. Composite Sample – A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may be composited either as a time composite sample: composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or as a flow proportional composite sample: collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots. (The permit writer should determine the most appropriate composite sampling method to be used by the permittee.)
- vi. Cooling Water –
 1. Uncontaminated: Water used for cooling purposes only which has no contact with any raw material, intermediate, or final product and which does not contain a level of contaminants detectably higher than that of the intake water.
 2. Contaminated: Water used for cooling purposes only which may become contaminated either thorough the use of water treatment chemicals used for corrosion inhibitors or biocides, or by direct contact with process materials and/or wastewater.

- vii. Daily Maximum – The maximum allowable discharge of pollutant during a calendar day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.
- viii. Dilute – To reduce in concentration, or thin down, or weaken by mixing with water or other liquids.
- ix. Grab Sample – A single sample collected at a particular time and place, which represents the composition of the waste-stream.
- x. Excessive – Amounts or concentration of a constituent of a wastewater which, in the judgment of the Superintendent.
 1. Will cause damage to the City's wastewater facility.
 2. Will be harmful to a wastewater treatment process.
 3. Cannot be removed in the city treatment works to the degree required to meet the limiting stream classification standards of the receiving water and/or EPA effluent standards.
 4. Can otherwise endanger life, limb or public property.
 5. Can constitute a nuisance.
- xi. Industrial Discharge Permit -- (IDP) is the official document issued by the POTW to a Industrial User of the Dover sewer system and treatment works that outlines the general and specific conditions under which the Industrial User may discharge wastewaters into the City's collection system or POTW.
- xii. Industrial User – Shall mean a person who discharges industrial wastes to the wastewater facilities of Dover.
- xiii. Industrial Waste – The liquid wastes from industrial manufacturing processes, trade or business as distinct from domestic wastewater. (Amended 3-14-79 by Ord. No. 3-79).
- xiv. Instantaneous Maximum Concentration – The maximum concentration allowed in any single grab sample.
- xv. Interference – Shall mean a Discharge by an Industrial User which, alone or in conjunction with discharges by other sources, inhibits or disrupts the POTW, its treatment process 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 use or disposal by the POTW in accordance with ground water protection rules, Ws 410, solid waste rules, He-P 1901.05, hazardous waste rules, He-P 1905.03 and Appendix III, the Clean Air Act, the Toxic Substance Control Act, and the Marine Protection Research and Sanctuaries Act.

- xvi. Monthly Average – The arithmetic mean of the values for effluent samples collected during a calendar month or specified 30-day period (as opposed to a rolling 30 day window.)
- xvii. National Categorical Pretreatment Standard or Pretreatment Standard – Shall mean 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 and which are found in the Code of Federal Regulations 40 CFR, Chapter 1, Subchapter N, parts 403 through 471.
- xviii. Pass Through – Shall mean the discharge of Pollutants through the 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 requirements of the POTW's NPDES permit (including and increase in the magnitude or duration of a violation) or of applicable water quality criteria.
- xix. Person – Any individual, firm, company association, society, corporation, group, or government facility or governmental subdivision.
- xx. pH – The logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.
- xxi. Pollutant – Includes but is not limited to the materials identified in Chapter 147-6 of the S.U.O. and Article II Section 10. (Added 3-14-79 as Ord. No. 3-79.)
- xxii. POTW or Publicly Owned Treatment Works – Shall mean a wastewater treatment works which a state or a municipality owns. This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial waste of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW wastewater treatment works. The term also means the municipality, which has jurisdiction over discharges to and the discharges from such a treatment works.
- xxiii. S – BEST MANAGEMENT PRACTICES or BMPs – Means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in 40 CFR 403.5(a)(1) and (b). 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 materials storage.
- xxiv. Screening Level – Shall mean that concentration of a pollutant that under baseline conditions, would cause a threat to personnel exposed

to the pollutant, or would cause a threat to structures of wastewater facilities. To be administered as limits applicable to a particular discharge, the screening levels must be adjusted to account for conditions at the point of discharge, which differ from baseline conditions.

xxv. Significant Industrial User – All categorical industrial users or any non-categorical industrial user that:

1. Discharges ten thousand (10,000) gallons per day or more of process wastewater, excluding sanitary, non-contact cooling and boiler blow down wastewater.
2. Contributes a process waste stream which makes up five percent (5%) or more of the average dry-weather hydraulic or organic (BOD,) total suspended solids, etc.) capacity of the treatment plants.
3. Has a reasonable potential, in the opinion of the Superintendent, to adversely affect the POTW.
4. Are subject to National Categorical Pretreatment Standards as outlined in 40 CFR 403.6, 40 CFR 403.8, and 40CFR Chapter I, Subchapter N.
5. is a discharger of medical/infectious waste, pharmaceutical waste, radiological waste, or wastewater from a hospital process or system, that in the opinion of the City's authorized representative could have an adverse effect on the POTW.

xxvi. Slug – Any discharge of water, sewage or wastewater which, in concentration of any given constituent or in quantity of flow, exceeds for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration, or flow, during normal operation or which shall adversely effect the collection system and/or the performance of the treatment works.

u) Spill – Shall mean the release, accidental or otherwise, of any material not normally released to the facilities, which by virtue of its volume, concentration or physical or chemical characteristics creates a hazard to the facilities, their operation or their personnel. Such characteristics shall include but are not limited to, volatile, explosive toxic, or otherwise unacceptable materials.

xxvii. S.U.O. – Sewer Use Ordinance (Chapter 147)

aa) Superintendent – Shall mean the Superintendent of the Sewer Department, and/or Wastewater Facilities, and/or of Wastewater Treatment Works, and/or Water Pollution Control of the City of Dover, or his authorized deputy, agent, or representative.

bb) TTO's -- Total Toxic Organics, any of the organic substances alone or in combination, as determined by the Superintendent, to sufficiently inhibit the operation of the Public Treatment Works, endanger its employees, which may result in violation of air or

water quality criteria, or which could result in sludge re-use limitations.

cc) Upset—Means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee, excluding such factors as operational error, improperly designed or inadequate treatment facilities, or improper operation and maintenance or lack thereof.

dd) User – Shall mean any person who discharges wastewater to the facilities of the City.

11) General Prohibitive Standards

The permittee shall comply with all the general prohibitive discharge standards in Chapter 147-6. Namely, the industrial user shall not discharge wastewater to the sewer system:

- a) Having a temperature higher than 104 degrees F (40 degrees C);
- b) Containing more than 100 ppm by weight of fats, oils, and grease, or 100 ppm petroleum or mineral based oil or grease.
- c) Containing any gasoline, benzene, naphtha, fuel oil or other flammable or explosive liquids, solids or gases; and in no case pollutants with a closed cup flashpoint of less than one hundred forty (140) degrees Fahrenheit (60 degrees C), or pollutants which cause an exceedance of 10 percent of the Lower Explosive Limit (LEL) at any point within the POTW.
- d) Containing any garbage that has not been ground by household type or other suitable garbage grinders;
- e) Containing any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch, manure, or any other solids or viscous substances capable of causing obstructions or other interferences with proper operation of the sewer system;
- f) Having a pH lower than 6.0 or higher than 11.0, or having any other corrosive property capable of causing damage or hazards to structures, equipment or personnel of the sewer system;
- g) Containing toxic or poisonous substances in sufficient quantity to injure or interfere with any wastewater treatment process, to constitute hazards to humans or animals, or to create any hazard in waters, which receive, treated effluent from the sewer system treatment plant. Toxic wastes containing cyanide, chromium, cadmium, mercury, copper, and nickel ions;
- h) Containing noxious or malodorous gases or substances capable of creating a public nuisance; including pollutants which result in the presence of toxic gases, vapors, or fumes;
- i) Containing solids of such character and quantity that special and unusual attention is required for their handling;

- j) Containing any substance which may affect the treatment plant's effluent and cause violation of the NPDES permit requirements;
- k) Containing any substance which would cause the treatment plant to be in non-compliance with sludge use, recycle or disposal criteria pursuant to guidelines or regulations developed under section 405 of the Federal Act, the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act or other regulations or criteria for sludge management and disposal as required by the State.
- l) Containing color which is not removed in the treatment processes;
- m) Containing any medical or infectious wastes;
- n) Containing any radioactive wastes or isotopes; or
- o) Containing any pollutant, including BOD pollutants, released at a flow rate and/or pollutant concentration, which would cause interference with the treatment plant.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROL

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

Upon reduction of efficiency of operation, or loss or failure of all or part of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

- a) Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury, or severe property damage or no feasible alternatives exist.

- b) The permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is also for essential maintenance to assure efficient operation, and after notifying POTW.
- c) Notification of bypass:
 - (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, at least ten days before the date of the bypass, to the POTW.
 - (2) Unanticipated bypass. The permittee shall immediately notify the POTW and submit a written notice to the POTW within 5 days. This report shall specify:
 - (i) A description of the bypass, and its cause, including its duration;
 - (ii) Whether the bypass has been corrected; and
 - (iii) The steps being taken or to be taken to reduce, eliminate and prevent a reoccurrence of the bypass.

4. Removed Substances

Solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in accordance with section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected and maintained to ensure their accuracy. Monitoring points shall not be changed without notification to and the approval of the POTW.

2. Flow Measurements

If flow measurement is required by this permit, the appropriate flow measurement devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Analytical Methods to Demonstrate Continued Compliance

All sampling and analysis required by this permit shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto, otherwise approved by EPA, or as specified in this permit.

4. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures identified in Section C.3, the results of this monitoring shall be included in the permittee's self-monitoring reports.

5. Inspection and Entry

The permittee shall allow the Superintendent, or an authorized representative, upon the presentation of credentials and other documents as may be required by law.

- a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b) B) Have access to any copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;
- d) Sample or monitor, for the purposes of assuring permit compliance, and substances or parameters at any location; and
- e) Inspect any production, manufacturing, fabricating, or storage area where pollutants, regulated under the permit, could originate, be stored, or be discharged to the sewer system.

6. Retention of Records

- a) The permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of the sample, measurement, report or application. This period may be extended by request of the Superintendent at any time.
- b) All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities brought by the POTW shall be retained and preserved by the permittee until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

7. Record Contents

Records of sampling and analyses shall include:

- a) The date, exact place, time, and methods of sampling or measurements, and sample preservation techniques or procedures;
- b) Who performed the sampling or measurements;
- c) The date (s) analyses were performed;
- d) Who performed the analyses;
- e) The analytical techniques or methods used; and
- f) The results of such analyses.

8. Falsifying Information

Knowingly making any false statement on any report or other document required by this permit or knowingly rendering any monitoring device or method inaccurate, is a crime any may result in the imposition of criminal sanctions and/or civil penalties.

SECTION D. ADDITIONAL REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the POTW sixty (60) - days prior to any facility expansion, production increase, or process modifications, which results in new or substantially increased discharges or a change in the nature of the discharge.

2. Anticipated Noncompliance

The permittee shall give advance notice to the POTW of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

3. Automatic Re-sampling

If the results of the permittee's wastewater analysis indicates a violation has occurred, the permittee must notify the POTW within twenty-four (24) hours of becoming aware of the violation and repeat the sampling and pollutant analysis and submit, in writing, the results of this repeat analysis within thirty- (30) days after becoming aware of the violation.

4. Duty to Provide Information

The permittee shall furnish to the POTW any information which the POTW may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also, upon request, furnish to the POTW copies of any records required by this permit.

5. Signatory Requirements [use whichever alternative best applies]

All applications, reports, or information submitted to the POTW must contain the following certification statement and be signed as required in Sections (a), (b), (c), or (d) below:

"I certify under penalty of law that this document and all attachments were prepared under by 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, 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."

By a responsible corporate officer, if the Industrial User submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:

- a.) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendation, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
- b.) By a general partner or proprietor if the Industrial User submitting the reports is a partnership or sole proprietorship respectively.
- c.) The principal executive officer or director having responsibility for the overall operation of the discharging facility if the Industrial User submitting the reports is a Federal, State or local governmental entity, or their agents.
- d.) By a duly authorized representative of the individual designated in paragraph (a), (b), or (c);
 - (i) The authorization is made in writing by the individual described in paragraph (a), (b), or (c);
 - (ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originates, such as the position of plant manager, operator of a well, or a well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and
 - (iii) The written authorization is submitted to the City.
- e.) If an authorization under paragraph (d) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for the environmental matters for the company, a new authorization satisfying the requirements of paragraph (d) of this section must be submitted to the City prior to or together with any reports to be signed by an authorized representative.

6. Operating Upsets

Any permittee that experiences an upset in operations that places the permittee in a temporary state of noncompliance with the provisions of either this permit or with Chapter 147 shall inform the POTW within twenty-four (24) hours of becoming aware of the upset at (603) 516-6475.

A written follow-up report of the upset shall be filed by the permittee with the POTW within five days. The report shall specify:

- a) Description of the upset, the cause (s) thereof and the upset's impact on the permittee's compliance status;
- b) Duration of noncompliance, including exact dates and times of noncompliance, and if not corrected, the anticipated time the noncompliance is expected to continue; and
- c) All steps taken or to be taken to reduce, eliminate and prevent recurrence of such an upset.

The report must also demonstrate that the facility was being operated in a prudent and workmanlike manner.

A documented and verified operating upset shall be an affirmative defense to any enforcement action brought against the permittee for violations attributable to the upset event.

7. Annual Publication

A list of all industrial users, which are subject to enforcement proceedings during the twelve (12) previous months, shall be annually published by the POTW in the largest daily newspaper within its service area. Accordingly, the permittee is apprised that noncompliance with this permit may lead to an enforcement action and may result in publication of its name in an appropriate newspaper in accordance with this section.

8. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil and/or criminal penalties for noncompliance.

9. Penalties for Violations of Permit Conditions

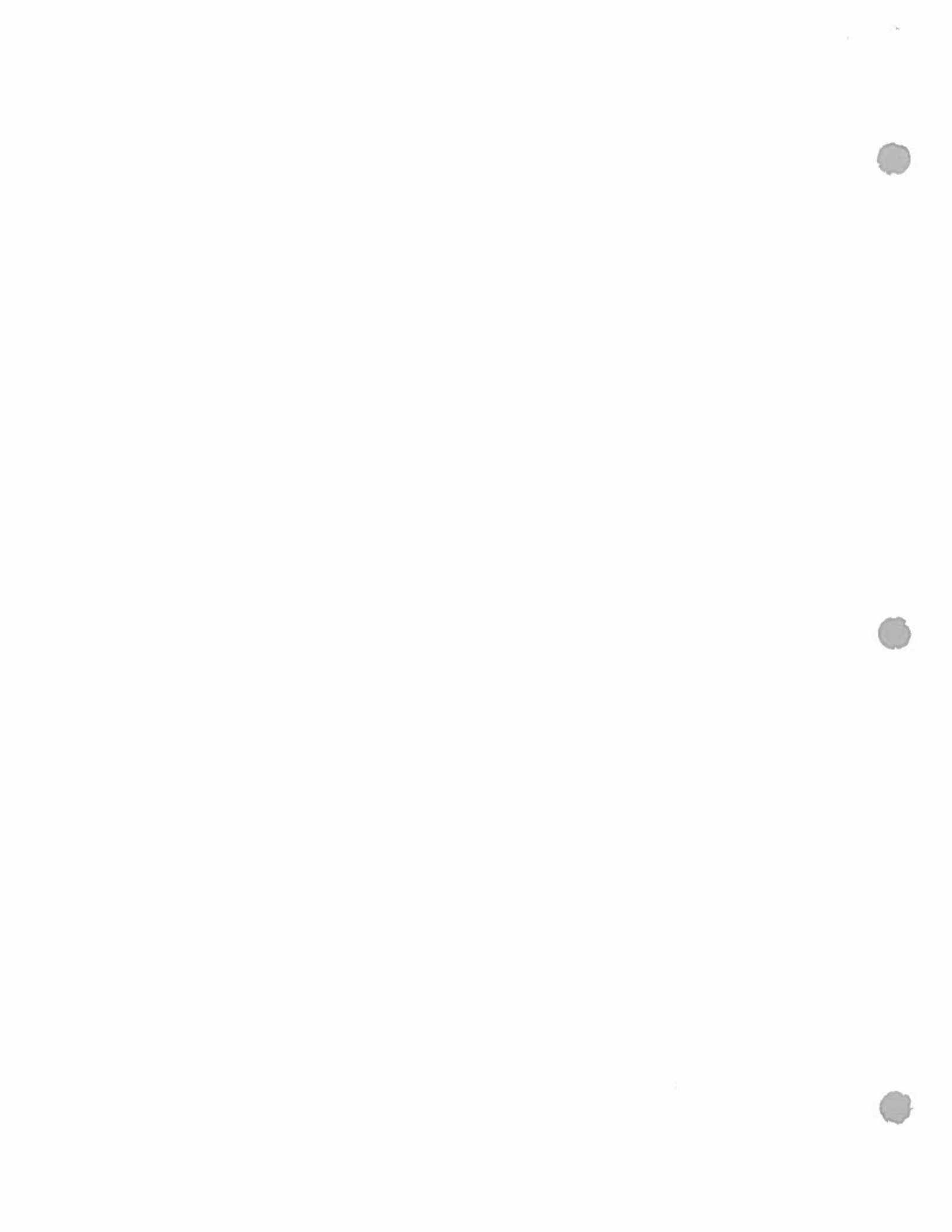
Chapter 147-12 (A) provides that any person who violates a permit condition is subject to a civil penalty of at least \$10,000.00 per day per violation. Any person who willfully or negligently violates permit conditions is subject to criminal penalties of a fine of up to \$10,000.00 per day per violation. The permittee may also be subject to sanctions under State and/or Federal law.

10. Recovery of Costs Incurred

In addition to civil and criminal liability, the permittee violating any of the provisions of this permit or Chapter 147 or causing damage to or otherwise inhibiting the POTW wastewater disposal system shall be liable to the POTW for any expense, loss, or damage caused by such violation or discharge. The POTW shall bill the permittee for the costs incurred by the POTW for any compliance monitoring, cleaning, repair, or replacement work caused by the violation or discharge.

11. Compliance with Applicable Pretreatment Standards and Requirements

Compliance with this permit does not relieve the permittee from its obligations regarding compliance with any and all applicable local, State and Federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.



Title: Vehicle Washing

1.0 PURPOSE

- 1.1 To provide guidance to assist all Bridge Maintenance employees for the proper washing of NHDOT fleet vehicles at designated Bureau facilities in an effort to maintain compliance with local, state, and federal requirements.

2.0 SCOPE

- 2.1 This procedure implements restrictions on methods and locations of vehicle and equipment washing.
- Proper vehicle and equipment washing includes washing of the exterior portion of the vehicle body and vehicle frame, tires, and wheels that do not contain excessive accumulations of contaminants (i.e., oil, grease, gasoline, road salt) that could have a negative environmental impact.

3.0 RESPONSIBILITIES

3.1 Bureau Administrators:

- 3.1.1 Provide management support, adequate resources and ensure funding for materials, products and equipment is available to perform vehicle washing in a safe and environmentally correct manner.
- 3.1.2 Review and approve the Vehicle Washing Procedure to assure it is applicable to the Bureau's operations.

3.2 Safety & Environmental Coordinator:

- 3.2.1 Develop and implement a Bureau specific vehicle washing procedure.
- 3.2.2 Register Bridge Maintenance facilities that have a water source with NH DES.
- 3.2.3 Educate and review the proper washing procedures with employees including the approved soaps list in order to ensure environmental compliance.
- 3.2.4 Maintain related employee training records.

3.3 Superintendents of Construction Crews:

- 3.3.1 Review facility site plans with the Safety & Environmental Coordinator to determine appropriate outside location for vehicle wash areas.
- 3.3.2 Provide guidance to all crewmembers pertaining to vehicle washing.
- 3.3.3 Correct deficiencies within the means of the position.
- 3.3.4 Report deficiencies outside the means of your position to the Safety & Environmental Coordinator.

3.4 Crew Members:

- 3.4.1 Comply with all parts of this procedure.
- 3.4.2 Report any deficiencies directly to the site supervisor.

3.5 Office of Stewardship and Compliance:

- 3.5.1 Communicate changes in local, state, or federal requirements to the Bureau of Bridge Maintenance.

4.0 REFERENCES

- 4.1 NHDES WD-DWGB-22-10 Wastewater Discharges from Vehicle Washing.
- 4.2 NHDES WD-DWGB-12-10 Wellhead Protection for Small Public Water Supply Systems.
- 4.3 NHDES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 4.4 NHDES Code of Administrative Rules Env-Wq 402 Groundwater Discharge Permit and Registration.

5.0 RECORDS:


- 5.1 Procedure sign-off sheets will be maintained by the Safety & Environmental Coordinator.
- 5.2 Material Safety Data Sheets on Approved Soaps.
- 5.3 NH DES Approved Soaps for Vehicle Washing, latest version.
- 5.4 NH DOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.

Title: Vehicle Washing

6.0 PROCEDURE

- 6.1 Follow NH DES Env-Wq 401 Best Management Practices for Groundwater Protection.
- 6.2 Review site specific NH DOT Registration and Notification Form for Floor Drains and Discharges to Groundwater.
- 6.3 Do not wash vehicles within any of the following setbacks:
 - 6.3.1 50 feet of surface water;
 - 6.3.2 75 feet of private water supply wells;
 - 6.3.3 75 feet of onsite water supply wells;
 - 6.3.4 50 feet of storm drains; or
 - 6.3.5 Protective radius of any public water supply well.
- 6.4 Wash less than 30 vehicles per week at any registered vehicle washing location.
- 6.5 Remove and properly dispose of, or recycle, gross accumulation of contaminants using a rag or other absorbent material (oil, grease, road salt, diesel fuel, gasoline or other materials) that could negatively impact the environment prior to washing.
- 6.6 Sweep truck beds with broom prior to washing. Collect and properly dispose of or recycle all sweepings.
- 6.7 Wash vehicle exterior, frame, rear end, fuel tanks, and undercarriage.
- 6.8 Do not wash engine compartment, transmission and areas where hydraulic fluids may be released.
- 6.9 Wash only in approved locations.
 - 6.9.1 Bridge Maintenance crews can wash vehicles in other approved wash areas throughout the Department, to include District Patrol Sheds or Mechanical Services locations.
 - 6.9.1.1 Employees will abide by other District/Bureau's work instructions or procedures for washing vehicles, to include communicating our needs ahead of time with the appropriate District/Bureau personnel.
- 6.10 Discharge to onsite infiltration including gravel and vegetated areas.
- 6.11 Wash using only NH DES List of Approved Soaps, latest version (see attachment).
- 6.12 Do not discharge to septic systems or dry wells.
- 6.13 Do not use chemicals or acids.
- 6.14 Do not discharge to wetlands or surface waters.
 - 6.14.1 Do not discharge to municipal sewer systems; i.e. catch basins.
- 6.15 Do not wash out gross accumulations of salt.
- 6.16 Do not wash or allow washing of private, personal, or hired equipment at NH DOT facilities.

REVISION AND APPROVAL HISTORY:

Approved:  Name _____ Title: Bureau Administrator	1/30/2015 Date _____	REVISION #: 3 DATE: 1/30/2015 SUPERSEDES EDITION: Original dated: 8/7/2012
---	-------------------------	--



Approved Soaps for Vehicle Washing

Product Name	Manufacturer		Availability
CAR-162	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 There is a distributor in Sandown, NH
GUNK	Solder Seal		Sanel Auto Parts
Simple Green	Sunshine Makers		Home Depot / Ace hardware Shaw's Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Simple Green d	Sunshine Makers		Home Depot / Ace hardware Shaw's Supermarket / Sam's Club BJ's Wholesale / Lowe's Home Center
Special Foamer	C.A.R. Products		Call Bob Goldenberg (Manufacturer Representative) at 1-800-537-7797 (distributor in Sandown, NH)
Nu-Tralize	ATCO International		(770) 424-7550
Total Truck Wash (HOP-770)	Power Eagle		H.O.P. Sales & Service 564 Main St (Route 121 A) Sandown, NH 1-800-422-2332

Bureau of Bridge Maintenance
Work Instruction



Title: Used Oil and Oil Filter Management

Document #:GN-EMS-WI-001

Revision #: 7

Revised Date:3-25-10

- 1.0 PURPOSE:** To ensure proper on-site management, and transportation of Used Oil, and draining, recycling/disposal of used oil filters.
- 2.0 SCOPE:** All Bridge Maintenance construction crew.
- 3.0 RESPONSIBILITY:**
- 3.1 Superintendents are responsible for ensuring that employees who are involved in the process of used oil management are trained to this work instruction. The Superintendents will ensure that drums and/or drip pans are properly labeled.
 - 3.2 The Maintenance and Construction Engineer will ensure that adequate funds are available for drums, drip pans, oil filters and other supplies needed in order to comply with this work instruction.
 - 3.3 Safety and Environmental Coordinator will conduct annual training including work instruction, proper container labeling, and used oil transport requirements, and used oil filter draining and recycling/disposal.
- 4.0 REFERENCES:**
- 4.1 Env-Hw 807 Requirements for Management of Used Oil for Recycling
 - 4.2 Env-Wq 401 Best Management Practices for Groundwater Protection
 - 4.3 RSA 147:A:3, IV; NH State Statutes
 - 4.4 40 CFR 261 and 266 Environmental Protection Agency
- 5.0 RECORDS (when forms completed):**
- 5.1 OSC Form 001 Universal Bill of Lading.
 - 5.2 B26 GN-EMS-005 Weekly Inspection Record for Regulated Substances and Used Oil for Recycle at fixed facilities.
 - 5.2 B26 GN-EMS-002 Weekly Inspection Checklist for Hazardous Waste and Regulated Substances at Small Quantity Generator facilities (Franklin and Portsmouth).
- 6.0 PROCEDURE:**
- 6.1 Storage and Inspection**
- 6.1.1 Used oil for recycling must be stored in DOT UN approved drums and/or containers.
 - 6.1.2 Drums and/or containers must be clearly labeled with the words "Used Oil for Recycle" at all times during storage.
 - 6.1.3 Drums and/or containers must be closed at all times except when used oil is being added or removed.
 - 6.1.4 Used motor oil **shall not** be mixed with any other waste identified as a hazardous waste. For other used oils, contact the Safety & Environmental Coordinator.
 - 6.1.5 All drums and/or containers shall be maintained and operated so as to prevent spills, seepage or any other discharge of used oil into storm drains, onto the land or into ground and surface waters.
 - 6.1.6 Used Oil for Recycle being stored in containers equal to or greater than 5 gallons requires a weekly inspection (use Form B26 GN-EMS-005 Weekly Inspection Record, for fixed facilities, or Form B26 GN-EMS-002 Weekly Inspection Checklist for Hazardous Waste and Regulated Substances, for Small Quantity Generator facilities).
- 6.2 Used Oil Transportation**
- 6.2.1 Self-transporting Used Oil for Recycle must not exceed 110 gallons per vehicle. If you exceed 110 gallons, a NH permitted hazardous waste transporter must be used to transport.
 - 6.2.1.1 The Department's Hazardous Waste Transporters are ENPRO services or CLEAN HARBORS. Contact the Safety & Environmental Coordinator to arrange for pickup.
 - 6.2.2 If self-transporting Used Oil for Recycle to an internal District facility, you should complete a Bill of Lading (use OSC Form 001, Universal Bill of Lading). The District facility should sign off on the Bill of Lading as the Receiving facility.

**Bureau of Bridge Maintenance
Work Instruction**

Title: Used Oil and Oil Filter Management

Document #:GN-EMS-WI-001

Revision #: 7

Revised Date:3-25-10

6.2.3 Transporters must keep copies of each Bill(s) of Lading on file for three years. Universal Bill of Lading copies should be distributed as follows:

- Generator Copy (white original) - kept at your facility (shed).
- Transporter Copy (yellow) – sent to S&E Coordinator for recordkeeping purposes.
- Receiving Facility Copy (pink) – left with the internal District facility.

6.2.4 Used Oil for Recycle shall not be self-transported to a non-DOT facility.

6.3 Draining and Recycling Used Oil Filters

6.3.1 Remove old oil filter(s) carefully.

6.3.2 The effective way to drain a filter is to puncture a hole in the dome end of the filter or through the anti-drain back valve with a suitable tool; i.e. punch. Puncturing the filter breaks the vacuum and allows the "trapped" oil to be recovered for recycling.

6.3.3 Turn the filter upside down in a used oil collection container or drip pan. Drain as much oil as possible from the filter. Drain filters for a minimum of 12 hours at approximately 60 degrees Fahrenheit.

6.3.4 Use a funnel or pour the used oil from the drip pan into a **clean container** labeled "Used Oil for Recycle".

6.3.4.1 DO NOT rinse the residual oil from the container down any drains – REUSE the pan when you change your oil or oil filter again.

6.3.5 Recycle your used oil filters by placing in a steel-recycling bin.

7.0 TRAINING:

8.0 FORMS:

8.1 OSC Form 001 Universal Bill of Lading

8.2 B26 GN-EMS-005 Weekly Inspection Record for Regulated Substances and Used Oil for Recycle at fixed facilities.

8.3 B26 GN-EMS-002 Weekly Inspection Checklist for Hazardous Waste and Regulated Substances at Small Quantity Generator facilities (Franklin and Portsmouth).

9.0 ENVIRONMENTAL, HEALTH & SAFETY:

10.0 DOCUMENT CONTROL:

10.1 Original Revision 1 document dated 9/25/08.

10.2 Revision 2 dated 10/13/08 incorporated weekly checklist for fixed facilities.

10.3 Revision 3 dated 12/19/08 incorporated reference Env-wq 401.

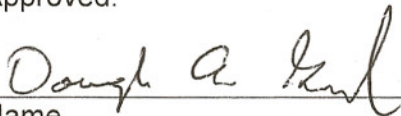
10.4 Revision 4 dated 10/8/09 deleted Procedure 9.0 Hydraulic Fluid.

10.5 Revision 5 dated 11/13/08 Section 6.1 and 6.4.

10.6 Revision 6 dated 12/26/10 Section 8.0.

10.7 Revision 7 dated 3/25/10 reformatted template, added reference for NH State Statutes and changed title to: Used Oil and Oil Filter Management.

Approved:



Name
Title

3/29/10
Date

REVISION #: 7

DATE: 3/25/2010

SUPERSEDES
EDITION: Original Rev. 1
dated 9/25/08

Appendix P

Annual Report Template (To be provided by EPA)

Appendix Q

Stormwater BMP Inspection Manual

Stormwater BMP Inspection and Maintenance Plan

Statewide Manual

PREPARED FOR



New Hampshire Department of Transportation
PO Box 483, 7 Hazen Drive
Concord, NH 03302

PREPARED BY



2 Bedford Farms Drive, Suite 200
Bedford, NH 03011

May 2019

Blank Page

Table of Contents

1	Introduction	1
1.1	Purpose and Need.....	1
1.2	Regulatory Context.....	1
2	General Description of the Stormwater BMPs and Key Features	2
2.1	Inventory of Existing BMPs.....	2
2.2	Detailed Descriptions of the Various Stormwater BMPs.....	4
3	Inspection Protocols	13
3.1	Inspection Frequency.....	13
3.2	Roles and Responsibilities.....	13
3.3	Employee Training.....	14
3.4	Inspection Preparation Checklist.....	14
3.5	Safety Considerations.....	14
3.6	Inspection Condition Assessment Rating System.....	14
4	Determining Maintenance Needs for Each Condition Assessment Rating	17
5	Maintenance Activity	20
5.1	Catch Basins and Other Pretreatment Structures.....	20
5.2	Vegetation Management.....	20
6	Reporting and Recordkeeping	21
6.1	Reporting.....	21
6.2	Recordkeeping.....	21

Appendices

Appendix A - SADES BMP Mobile Data Inspection Guide Manual.....	A1
Appendix B - Inspection & Maintenance Activity Log.....	B1
Appendix C - Inspection Checklist.....	C1

List of Tables

Table No.	Description	Page
Table 1.	Summary of the Number and Type of Stormwater BMPs within Each Maintenance District	3
Table 2.	Condition Assessment Criteria for Key Stormwater BMP Categories	16

List of Figures

Figure No.	Description	Page
Figure 1.	Summary of BMP Age in Years.....	3

1. Introduction

1.1 Purpose and Need

The NH Department of Transportation (“Department”) has constructed approximately 600 different stormwater treatment Best Management Practices (BMPs) statewide over the last few decades to treat stormwater runoff generated from its roadways and other facilities. Many of these BMPs were constructed as part of the recent I-93 Improvement Project from Salem to Manchester as well as other major roadway improvement projects throughout the state. These BMPs, like any other roadway related infrastructure, require periodic inspections and maintenance to prolong their functional integrity, longevity and treatment performance consistent with the various environmental commitments associated with each project.

This I&M Plan is consistent with the Department’s Asset Management initiatives to rely on preventative maintenance and avoid or minimize larger maintenance or corrective actions that may result from deferred action and require additional effort, resources and perhaps disturbances to the natural environment.

The primary purpose(s) for BMP inspection and maintenance include:

- Maintain effectiveness for removing targeted pollutants as originally designed and, therefore, preserve water quality of receiving waters.
- Reduce structural failure and erosion control related problems.
- Maintain stormwater volume treatment capacity for peak flow and water quality.
- Minimize establishment of invasive species.

1.2 Regulatory Context

Although this Inspection and Maintenance (I&M) Plan was initially developed to address Condition E-4 of the 401 Water Quality Certificate (2002-007) issued for the I-93 Improvement Project on May 2, 2006, the inspection and maintenance activities outlined in this I&M Plan can be universally applied to other Department stormwater BMPs located throughout the state and to address the regulatory compliance needs associated with other projects or locations that may be subject to New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Regulations or the U.S. Environmental Protection Agency’s (USEPA) MS4 Stormwater permit Program. These regulatory programs require the preparation and implementation of a Stormwater BMP Inspection and Maintenance (I&M) Plans for new and existing stormwater BMPs, respectively.

Consistent with the NHDES AoT and USEPA’s MS4 Stormwater Permit Program requirements, this I&M Plan includes the following:

- The names of the responsible party or parties who will implement the required reporting, inspection and maintenance activities.
- The frequency of inspections and maintenance.
- An inspection checklist to be used during each inspection.
- An I&M log to document each I&M activity.
- A plan showing the locations of stormwater practices.
- Actions to be taken if any invasive species begin to grow in the permanent stormwater BMPs.

2. General Description of the Stormwater BMPs and Key Features

The Department utilizes nine (9) distinct types of stormwater BMPs depending on site specific conditions/ suitability, treatment needs, access, and feasibility. The sizing and design criteria for these BMPs are outlined in detail in the *NH Stormwater Manual, Volume 2*.

The principal stormwater BMPs include:

- Extended-Detention Wet Detention Basins
- Gravel Wetland
- Dry Detention Basins
- Vegetated Swales
- Vegetated Buffers
- Infiltration Basins/Swales
- Underground Storage/Water Quality Inlets
- Porous Pavement
- Constructed Wetlands

2.1 Inventory of Existing BMPs

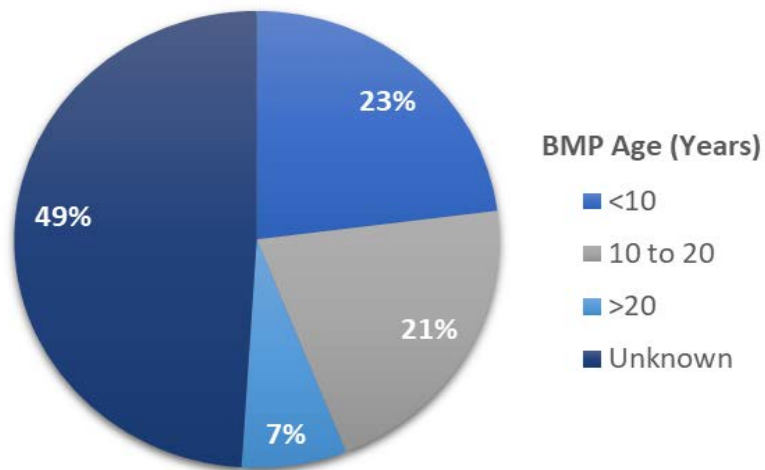
Table 1 summarizes the approximate number and various types of stormwater BMP within each District or jurisdiction that the Department has constructed and is responsible for inspecting and maintaining. Districts 5 and 6 contain nearly 80% of these BMPs. About 40% of the BMPs consist of vegetated swales, while another approximately 23% consist of wet-extended detention basins followed by dry detention basins and constructed wetlands.

Table 1. Summary of the Number and Type of Stormwater BMPs within Each Maintenance District

District	Buffer	Constructed Wetland	Dry Detention	Gravel Wetland	Infiltration	Porous Pavement	Swale	Under-ground	Wet Detention	Total
1	1	1	1	-		-	14	1	2	20
2	-	2	5	-	1	-	12	1	3	24
3	-	4	4	-	2	-	22	5	6	43
4	-	4	2	-	12	-	10	3	6	37
5	-	18	23	13	1	2	50	1	77	185
6	-	16	23	1	1	1	88	8	16	154
TPK	-	13	13	11	7	2	52	5	27	130
Total	1	58	71	25	24	5	248	24	137	593

Figure 1 below depicts the approximate age in years of the BMPs, which range from less than 10 years old to more than 20 years old. However, only slightly more than half or 51% of the BMPs have known constructed dates, while the construction or installation date for the remaining 49 percent of the BMPs are unknown. Twenty three percent of the BMPs were constructed less than 10 years ago.

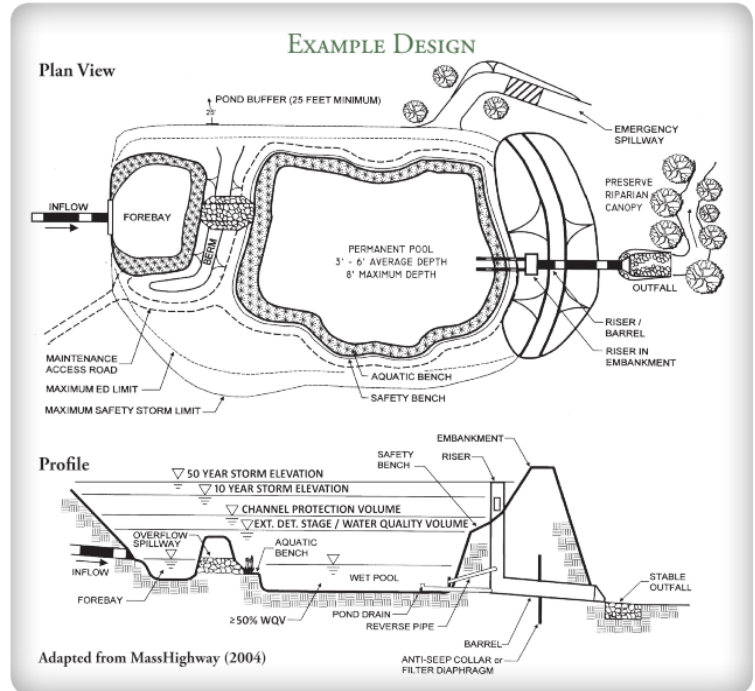
Figure 1. Summary of BMP Age in Years



2.2 Detailed Descriptions of the Various Stormwater BMPs

Wet Extended Detention Ponds

Aside from swales, Wet Extended Detention Ponds (WEDPs) are typically the most popular or preferred type of stormwater BMP and consist of rectangular shaped basins with two treatment cells in series separated by an overflow berm. These basins are designed to have a permanent pool of water maintained within the larger cell or basin. There is usually one main outlet consisting of a capped, concrete riser structure with multiple orifices at various heights. The permanent pool is maintained by small orifices located at the base of the outlet structure or in a buried perforated pipe often encased in crushed rock or stone to prevent clogging. A primary maintenance issue relates to the potential clogging of the stone encasement ahead of the orifice or pipe due to the build-up of sediment and/or organic debris. Excessive ponding indicated by an elevated water level that is higher than the height of the stone base and orifice during dry weather may be sign of clogging.



Distinguishing features and critical inspection items for long-term maintenance of wet extended detention ponds are as follows:

Distinguishing Features	› Permanent Pool of Water Maintained in Main Basin
	› One Multi-Stage Concrete Riser Pipe Outlet
Primary Inspection Items	› Sediment Accumulation in Forebay
	› Potential Erosion Around Forebay Berm or Banks
	› Potential Clogging of Low Flow Outlet/Stone Encasement
	› Sparse Vegetation Establishment on Slopes or Basin Floor
	› Invasive Species or Woody Vegetation on Embankments
	› Seepage from Outlet Structure Base
	› Water Discoloration/Staining
Maintenance Requirements	› Periodic mowing of embankments
	› Removal of woody vegetation from embankments
	› Removal of debris from outlet structures
	› Removal of accumulated sediment

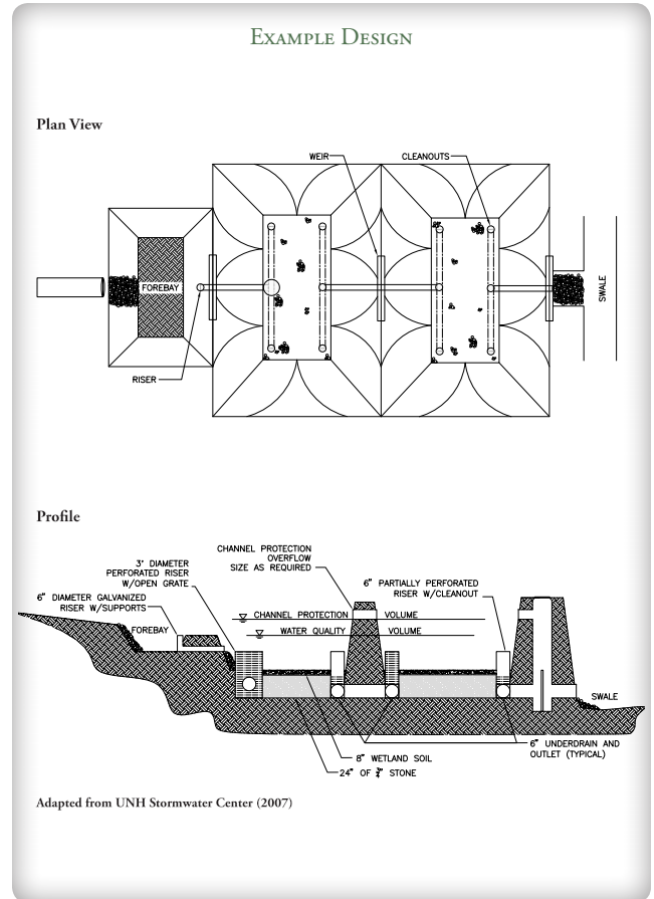
Gravel Wetlands

Gravel wetlands are distinguishable by their perforated concrete riser pipes located at the end of each treatment basin or chamber. These BMPs typically have two to three cells or basins in series, although some are designed as single chambers with a small sediment forebay.

Gravel wetlands typically have no standing water on the surface, except immediately after or during a storm event. Water quality treatment occurs as stormwater travels through the subsurface stone layers from one chamber to the next. The low flow outlet is below the ground surface and typically can only be inspected from the rim of the main outlet structure.

This BMP is typically used as a water quality treatment practice as opposed to stormwater detention for channel protection.

The following are distinguishing features and key inspection items for future maintenance of gravel wetlands.



Distinguishing Features

- › Multiple perforated concrete riser or standpipes
- › No standing water in main basin in between storm events
- › Low flow outlet is below ground surface

Primary Inspection Items

- › Excessive sediment accumulation in forebay or main chamber
- › Potential erosion around forebay berm or banks
- › Potential clogging of low flow outlet (causing standing water)
- › Sparse vegetation establishment
- › Invasive species or woody vegetation becoming established
- › Seepage from outlet structure base
- › Water discoloration/staining

Maintenance Requirements

- › Monitor and replant wetland vegetation as needed
- › Remove debris from inlet/outlet structures
- › Inspect/remove sediment accumulation in gravel bed
- › Periodic replacement/replanting depending on sediment accumulation
- › As needed repair of inlet/outlet structures

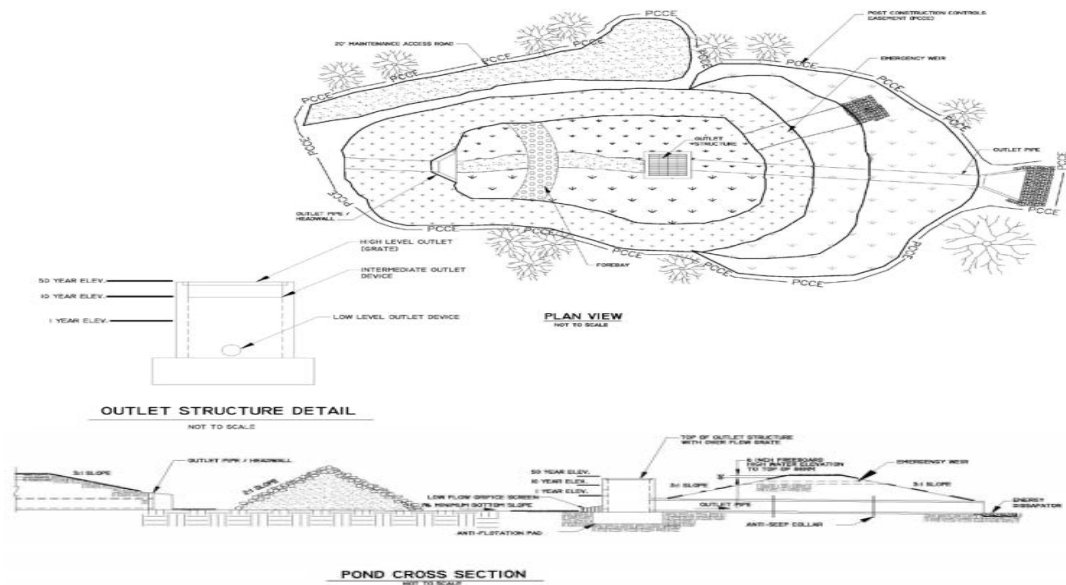
Dry Detention Basins

Dry detention basins are less frequently used in recent years given their lower rated removal efficiencies are designed as two rectangular shaped basins, typically with single inlet and outlet structures. Unlike wet detention basins, dry basins only detain runoff long enough to reduce peak flow rates instead of allowing sediment to settle over a longer period. The outlet structure attenuates runoff to provide a controlled release to the waterbody. Due to relatively short detention times, dry detention basins typically have lower pollutant removal efficiencies when compared to other BMPs.

Dry detention basins are often used in series with other water quality BMPs to increase pollutant removal efficiencies. The common maintenance issues are similar to wet detention basins and relate to sediment accumulation and clogging of outlets. Dry detention ponds are no longer included in the NHDES stormwater manual as an effective treatment BMP.

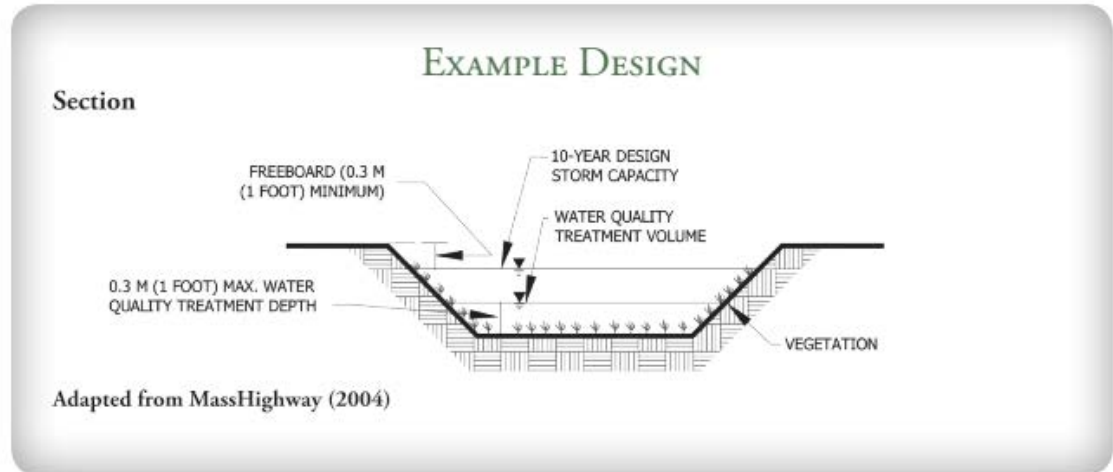
Distinguishing features and critical inspection items for long-term maintenance of dry detention basins are as follows:

Distinguishing Features	› Lack of standing water and hydric vegetation
	› One multi-stage concrete riser pipe outlet
Primary Inspection Items	› Excessive sediment accumulation in forebay or main chamber
	› Potential erosion around forebay berm or banks
	› Potential clogging of outlet (causing standing water)
	› Invasive species or woody vegetation becoming established
	› Seepage from outlet structure base
Maintenance Requirements	› Remove debris from inlet/outlet structures
	› Inspect/remove sediment and trash accumulation
	› Repair of inlet/outlet structures as needed



Vegetated Swales

Vegetated swales can be effective in trapping and retaining sediments while conveying runoff by providing a small hydraulic residence time. These swales also provide limited infiltration and vegetative uptake depending on flow conditions and underlying soils. Appearance of vegetated swales is generally trapezoidal in nature with a shallow depth, like a natural channel. Vegetated swales are typically dry with no standing water on the surface outside of storm events. To achieve maximum treatment efficiencies, runoff must flow longitudinally from the inlet to outlet structure, spanning the entire BMP.

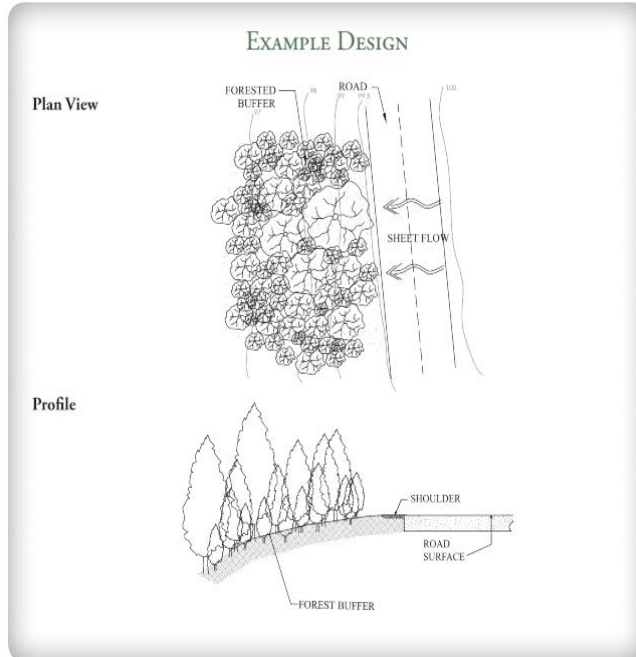


The following are distinguishing features and key inspection items for future maintenance.

Distinguishing Features	<ul style="list-style-type: none"> > Used for stormwater conveyance and stormwater treatment > Should have no standing water in trapezoidal depression** > If designed with underdrain. low flow outlet below ground surface
Primary Inspection Items	<ul style="list-style-type: none"> > Signs of erosion along banks or channel base > Presence of accumulated sediment/debris blocking or confining flow > Sparse vegetation establishment due to wet conditions or erosion > Invasive species or woody vegetation becoming established
Maintenance Requirements	<ul style="list-style-type: none"> > Annual visual inspections > Periodic mowing as needed to limit woody or invasive species > Debris/sediment removal as needed > Repair of eroded areas and invasive species

Vegetated Buffer

Vegetated buffers are only occasionally used and require that sheet flow be maintained off the roadway to a relatively flat embankment slope of 15 percent or less. Preventing channelized flow is essential in maintaining the functional integrity of a vegetated buffer.



The following conditions should be maintained for vegetated buffers:

Well established and dense vegetation coverage throughout the buffer slope, primarily as a mix of grass and herbaceous plant species.

- A relatively clean and consistent edge of pavement that allows sheet flow to transition onto the buffer without sediment or debris blockages that would result in channelized flow down slope.
- Minimize any disturbance to the top of buffer along the edge of pavement resulting from snow plow operations along the roadway shoulder.

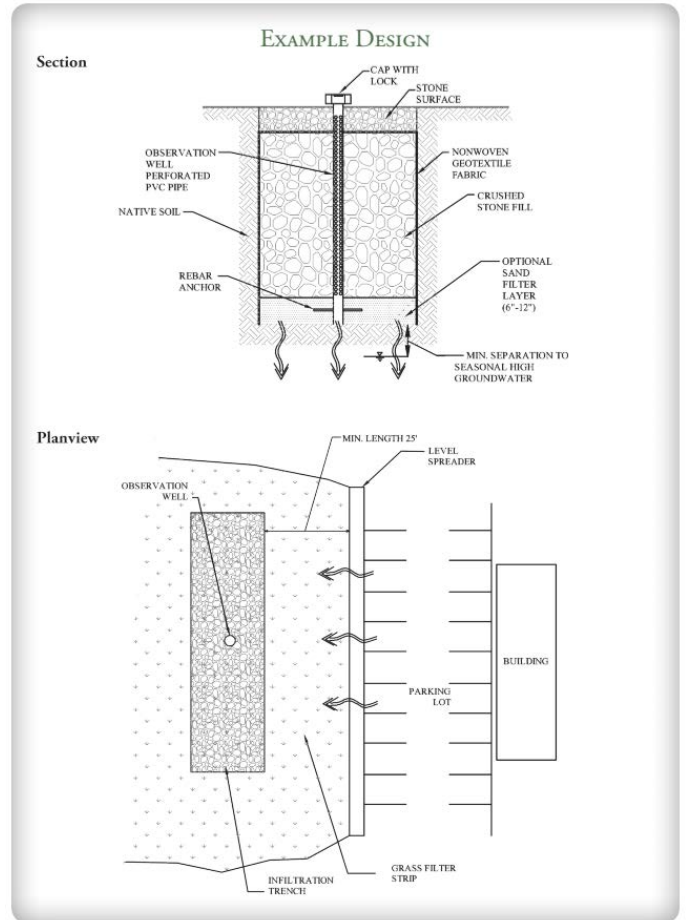
Distinguishing features and critical inspection items for long-term maintenance of vegetated buffers are as follows:

Distinguishing Features	<ul style="list-style-type: none"> › Receives sheet flow directly off the pavement edge › Vary in design size based on environmental conditions › No inlet/outlet structures
Primary Inspection Items	<ul style="list-style-type: none"> › Presence of sediment/trash accumulation › Sparse vegetation establishment › Invasive species becoming established
Maintenance Requirements	<ul style="list-style-type: none"> › Prevent channelization caused by sediment buildup › Periodic mowing as needed › Debris/sediment removal as needed › Repair of eroded areas and invasive species

Infiltration Swales/Basins

Infiltration practices are typically used where there are sandy underlying soils that allow runoff to percolate and recharge groundwater. These practices are often filled with varying gravel to provide adequate storage volumes based on void spaces. The surrounding soil types largely determine the effectiveness and sizing of these treatment practices. Infiltration trenches differ from basins in that swales have no defined inlet structure and instead collect overland flow.

The primary outflow from these practices is into the surrounding soils but may have an overflow outlet structure. Infiltration practices should not have standing water outside of storm events with their storage volumes residing primarily underground. Typical maintenance issues for infiltration BMPs include surface clogging due to debris causing insufficient infiltration and ponded water.

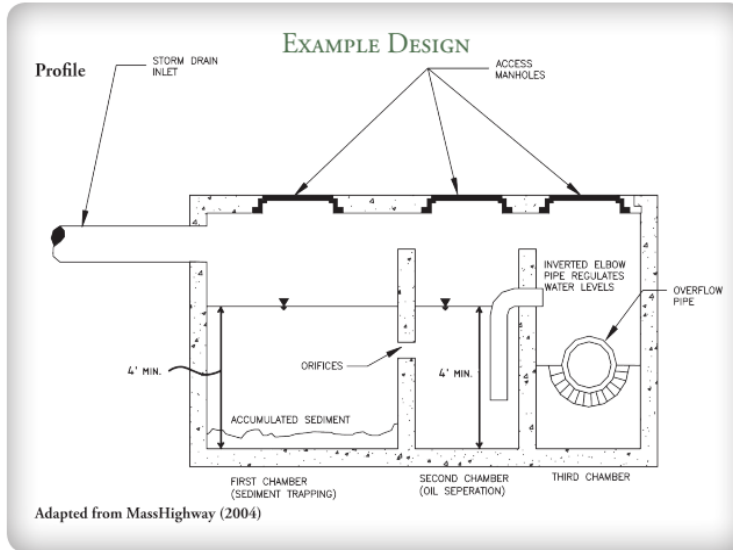


The following are distinguishing features and key inspection items for future maintenance.

Distinguishing Features	› Can consist of either an above-ground basin or underground storage
	› Should be no standing water in between storm events
	› No outlet structures, relies on infiltration into underlying soils
	› Allows for recharge of groundwater
Primary Inspection Items	› Presence of excessive sediment accumulation
	› Proper infiltration within a 72-hour period
	› Presence of litter in structure
Maintenance Requirements	› Bi-annual inspections and corresponding maintenance
	› Inspections when rainfall exceeds 2.5 inches in 24 hours
	› Periodic restoration of infiltration functions
	› As need sediment removal
	› Periodic replacement of filter materials

Underground Storage/Water Quality Inlets

These BMPs consists of underground concrete vaults and are sometimes referred to as a water quality inlets. These devices are constructed with multiple chambers designed to collect sediment and debris from stormwater runoff.



Each chamber serves a different purpose with the first chamber removing sediment, the second being used for oil/water separation, and the third for additional storage and outlet structure. Typically, underground storage is utilized in space constrained areas where larger detention structures are not viable.

A common maintenance issue relates to the accumulation of sediment in the first chamber. Frequent inspection and

sediment removal is required to maintain removal efficiencies. Sediment cleanout is typically done with vacuum truck accessed through a manhole.

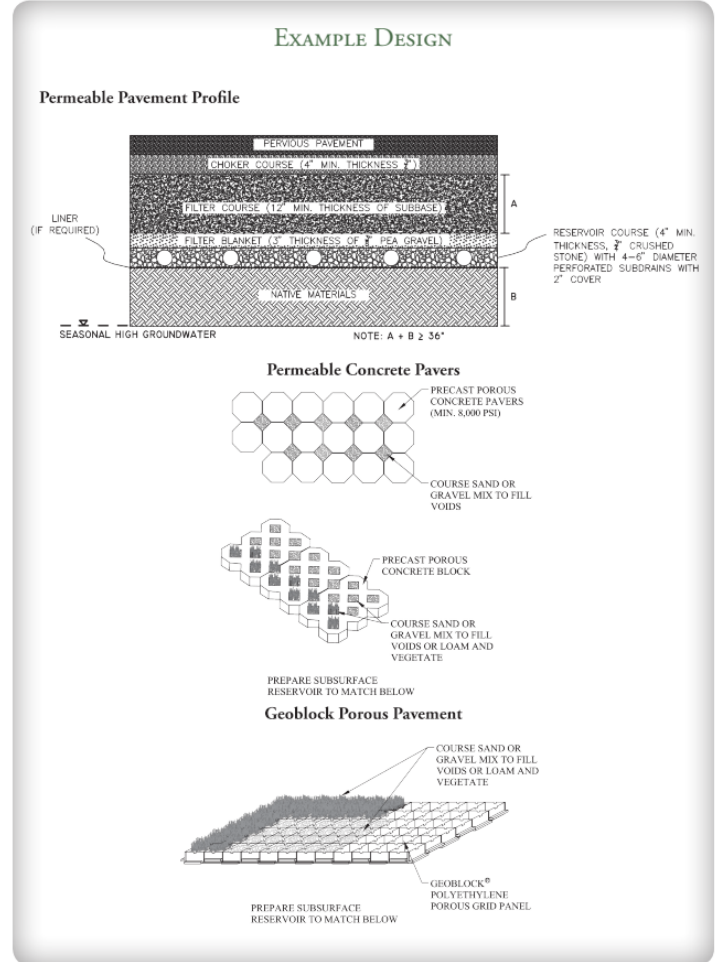
Distinguishing features and critical inspection items for long-term maintenance of underground storage/water quality inlets are as follows:

Distinguishing Features	<ul style="list-style-type: none"> › Entirely subsurface with manhole access › Multiple chambers › Singular inlet/outlet structures
Primary Inspection Items	<ul style="list-style-type: none"> › Quarterly inspection of water quality inlet for debris › Presence of sediment accumulation › Excess floating hydrocarbons › Outlet/inlet overall condition
Maintenance Requirements	<ul style="list-style-type: none"> › Removal of debris/sediment accumulation › Removal of floating hydrocarbons › Annual cleaning of chambers › Structural repairs as needed

Permeable Pavement

Permeable pavement, or porous pavement, consists of a porous asphalt/concrete surface with a base layer of coarse aggregate which allows for percolation of stormwater into underlying soils. The underlying layers are often designed to filter and store runoff the water quality volume in the pore space below. Permeable pavement does not have the same structural strength as regular pavement and, thus, is typically reserved for areas used by passenger car and pedestrian rather than travel ways used by trucks.

Depending on the underlying soils, permeable pavement can be installed with or without an underdrain. When installed without an underdrain, this BMP operates similarly to an infiltration trench with the corresponding maintenance procedures. A primary maintenance issue relates to clogging of the surface voids and/or the underlying filter material from excess sediment and debris. This issue is alleviated through vacuum sweeping and periodic replacement of filter materials.



Distinguishing features and critical inspection items for permeable pavement are as follows:

Distinguishing Features	<ul style="list-style-type: none"> › Water is detained in void spaces below surface › Pavement type and thickness vary based on load › Can be used with/without underdrain
Primary Inspection Items	<ul style="list-style-type: none"> › Pavement deterioration and spalling › Effective draining during storm events › Excess sediment and debris on surface › Unblocked underdrain if applicable
Maintenance Requirements	<ul style="list-style-type: none"> › Annual visual inspections › Clean 2 to 4 times per year using vacuum sweeper; power washing may be required › Periodic addition of joint material for pavers › Replacement of surface as needed

Constructed Wetlands

Constructed wetlands generally represent a 1st generation of stormwater BMP devices that were built more often 20 or so years ago. In the last 10-15 years, very few, if any, constructed wetlands have been built. They are typically irregular shaped with multiple cells of varying depth. There is usually one main outlet consisting of a capped, concrete riser structure with an emergency spillway for extreme storm events.

A primary maintenance issue relates to the proliferation of invasive species such as *Phragmites* sp. out competing native wetland vegetation. Invasive species tend to be more tolerant of poor water quality marsh areas and often out-compete the native species.

Distinguishing features and critical inspection items for long-term maintenance of constructed wetlands are as follows:

Distinguishing Features	<ul style="list-style-type: none"> › Generally wet for most of the year and often with standing water › These are typically confined to infield areas within major interchanges › Varying water depths to promote vegetation growth › Over time, native wetland species are often overcome by <i>Phragmites</i> and or cattails
Primary Inspection Items	<ul style="list-style-type: none"> › Sediment accumulation in main chamber › Potential erosion around forebay berm or banks › Sparse vegetation establishment › Invasive species or woody vegetation becoming established
Maintenance Requirements	<ul style="list-style-type: none"> › Monitor and replant wetland vegetation as needed › Remove debris from inlet/outlet structures › Remove excessive sediment accumulation › Periodic replacement/replanting depending on sediment accumulation › As needed repair of inlet/outlet structures › Periodic mowing of embankments › Removal of invasive species

3. Inspection Protocols

3.1 Inspection Frequency

As noted above, each stormwater BMP should be routinely inspected on an annual basis. Additional inspections may be necessary beyond routine annual inspections on a periodic or episodic basis to assess potential damage. For instance,

- following a major storm event (e.g., hurricane or other extreme rain event);
- after a major vehicle accident and/or related spill of hazardous material; or
- because of nearby construction project to assess/repair any damage and maintain proper BMP treatment functions.

It is essential that the inspection results be properly documented and retained.

Routine:	Each stormwater BMP should be inspected annually using the enclosed inspection protocols and the results shall be submitted to the NHDOT Maintenance Supervisor.
Post-Event Inspections:	Depending on the type of event triggering the need for inspections, post-event inspections may be limited to certain BMPs and not all project-wide BMPs. The inspection findings of periodic, post-event inspections should be recorded on the same enclosed inspection checklist form.

3.2 Roles and Responsibilities

This section describes the general roles and responsibilities across the various management and personnel levels involved with implementing these I&M protocols.

NHDOT Maintenance Supervisor: The Maintenance Supervisor will need to make sure that BMPs are inspected annually and that the inspection findings are reviewed and retained in a central filing location or electronic data base. If inspections identify the need for corrective actions, the Supervisor shall ensure that the corrective actions are completed or, if additional time is needed, that a plan be developed to address the needs in the future.

District Foreman: The District Foreman should be familiar with the inspection and reporting protocols, the BMP locations, the potential safety related issues related to inspections and any corrective actions that need to be addressed.

Personnel Performing Inspections: Inspection personnel should be familiar with inspection protocols and the information contained in this document.

NHDOT Water Quality Manager: The NHDOT Water Quality (WQ) Manager should review and make sure that the inspection protocols are consistent with the MS4 stormwater permit requirements. The WQ Manager should periodically review and assess program protocols to identify any opportunities to increase the effectiveness of the BMP inspections.

3.3 Employee Training

Initial Training: In addition to reviewing the material contained in this Plan, inspection personnel should attend the initial training. The initial training is anticipated to be provided prior to the Department fully implementing this I&M Plan.

Follow-up Training: The need for periodic follow-up training will depend on the initial success in rolling-out the inspection and maintenance program to assess BMP performance. Future scheduling and mode of training would be developed at the Department's discretion.

3.4 Inspection Preparation Checklist

Prior to each inspection, inspection personnel should review and bring along the following:

- A copy of this Plan
- Copies of blank inspection checklist, or tablet/GPS unit for electronic version
- Digital camera or smart phone
- Trash bags
- Shovel or rake
- Hand pruners and/or loppers
- Safety vest
- Other personnel protection gear

3.5 Safety Considerations

Please follow all Department safety and personal protection protocols when conducting BMP inspections. This section lists other general safety considerations related to BMP inspections.

- Prior to BMP inspections, identify most appropriate vehicle access locations that allows for safe access to BMP locations especially BMPs located along major Interstate roads. Note any special hazards on BMP checklist for future inspectors. Always wear appropriate protective clothing, boots, safety vests and glasses
- Be aware of potential animal burrows and uneven ground as trip and fall hazards.
- Never enter or stick your head into a confined space (e.g., below manhole rim or oversized culvert) without having proper training and equipment. Be aware of the presence of poison ivy or sumac and/or bee-hornet nests, if allergic. If suspicious containers of unknown substances or other evidence of potentially toxic or hazardous materials are discovered in the area, leave in place, take photos and report information to District Foreman. If a spill of petroleum or other potentially hazardous material is observed, contact the NHDES hazardous spill hotline.

3.6 Inspection Condition Assessment Rating System

To maintain consistency across BMP types and District personnel, BMP inspections should provide a relative condition assessment rating of **good**, **fair** or **poor** for the following six key categories that relate to BMP functions and maintenance needs:

1. Sediment accumulation
2. Trash
3. Erosion
4. Structure condition
5. Flow
6. Vegetation

Table 2 below describes general criteria and considerations to be used in assigning a relative assessment rating of **good**, **fair** or **poor** for each of the six categories. The assessment rating should be based not only on the conditions observed in the field, but in terms of the anticipated level of maintenance activity needed to rectify any problems based on inspector judgement (See BMP Inspection Guidance Manual in Appendix A).

Field inspectors should rely on common sense in assigning condition ratings, but it may be best to be conservative and lean towards a lower rating if action items are needed to prevent conditions from getting worse and to a point where larger corrective actions may be needed to restore BMPs to the original design.

BMP Condition Ratings

The following condition assessment and criteria descriptions described in **Table 2** should be used in rating the various BMP elements within the project area.

- A **good** condition rating generally means the BMP is functioning as designed and no action is required.
- A **fair** condition rating generally means there is some minor damage or degradation, but it generally can be restored as routine maintenance such as removing trash, sediment or vegetation by hand or fixing minor erosion with hand tools.
- A **poor** condition rating generally means the BMP functional capacity is compromised due to extensive erosion, excess sediment accumulation, structural damage or sparse or woody vegetation growth. The condition requires immediate attention and restoring or fixing the problem may require additional materials and/or specialized equipment. The Department expects poor condition ratings to diminish over time with a more formal inspection and maintenance program being established. However, poor condition ratings can result from extreme or unusual weather events or damage caused by vehicle accidents or unauthorized off-road vehicle use that are outside of Department control.

NOTE: Inspectors should include a note in the Comment Section of the Survey123 Field Inspection Form for any feature that is in Poor Condition, to describe the specific issues and maintenance actions needed to address and rectify the cause for poor condition assessment (See SADES BMP Inspection Guidance Manual in Appendix A).

Table 2. Condition Assessment Criteria for Key Stormwater BMP Categories

Category	Condition	Condition Assessment Criteria	Potential Maintenance Action
Sediment	<i>Good</i>	No visible sediment accumulation	None
	<i>Fair</i>	Minor sediment deposits but not enough to restrict flow, vegetation growth or infiltration;	If feasible, remove sediment by hand with shovel;
	<i>Poor</i>	Excessive sediment blocks or alters flow, restricts vegetation growth and/or impedes infiltration;	Remove excess sediment as soon as practical using appropriate methods
Trash	<i>Good</i>	No visible trash	None
	<i>Fair</i>	Minor amount of trash but not enough to affect vegetation growth, flow or other BMP functions;	If possible, remove litter by hand during inspection
	<i>Poor</i>	Excessive trash deposits are restricting flow, vegetation growth or other BMP functions;	Remove trash as soon as practical using appropriate methods
Erosion	<i>Good</i>	No visible erosion	None
	<i>Fair</i>	Initial stages of erosion are observed but not enough to affect flow, vegetation or other BMP functions;	Inspector may consider minor restoration work or plan a follow-up visit to assess if conditions worsen
	<i>Poor</i>	Erosion is severe; requires corrective actions to restore functions & prevent worsening conditions	Implement restoration/ stabilization measures consistent with DOT and NHDES Erosion Control Manual;
Structural Condition	<i>Good</i>	No apparent structural damage, erosion or invasive species growth; vegetation is well established and outlet in good condition	None
	<i>Fair</i>	Minor amount of erosion or sparse vegetation is observed or minor cosmetic structural decay or degradation of functions	Inspector may consider minor restoration work or plan a follow-up visit to assess if conditions worsen
	<i>Poor</i>	Extensive erosion, channels have formed; sparse vegetation or outlet structure is damaged; needs immediate attention and repair	Implement restoration/ stabilization measures consistent with DOT and NHDES Erosion Control Manual;
Flow	<i>Good</i>	Flow appears to be free-flowing, no blockages or channelization	None
	<i>Fair</i>	Minor flow alterations or blockages but no obvious eroded channels	Inspector may consider minor restoration work or plan a follow-up visit to assess if conditions worsen
	<i>Poor</i>	Flow into or out of the BMP is restricted due to sediment or debris accumulation; Excessive flow is causing obvious channelization	Immediate attention needed
Vegetation	<i>Good</i>	Vegetation well established and covers more than 85% of area; no woody vegetation or nuisance invasive species	None
	<i>Fair</i>	Limited or poor vegetation growth in a few small areas but no visible erosion; no woody species; minor amount of invasive species	Inspector may consider minor restoration work or if invasive species can be removed by hand
	<i>Poor</i>	Vegetation coverage is generally sparse or invasive species have become prevalent; requires corrective actions with loaming and reseeded	Implement restoration/ stabilization measures consistent with DOT and NHDES Erosion Control Manual;

4. Determining Maintenance Needs for Each Condition Assessment Rating

This section provides general guidance for determining the relative condition of the six key categories of stormwater BMPs. This guidance is intended to be general (not highly specific or quantitative) to allow inspectors to use their best judgement and their own perspective based on their historical observations, knowledge of how stormwater BMPs function, and what appears to be in good working order.

Because site conditions and BMP features will vary depending on BMP age, type, surrounding land use and drainage inputs, a *one-size fits all* approach to defining criteria for condition assessment ratings would not be appropriate. The relative guidance and judgement for each inspector will likely evolve and be refined over time.

In general, conditions that represent **good** versus **poor** conditions will be more obvious to determine in the field. Poor conditions will require immediate or follow-up maintenance and/or corrective actions.

The in-between conditions, or what might be considered **fair** conditions, will require more judgement on the part of the inspector as to whether any maintenance activity is required.

If no maintenance activity is required, BMPs considered to have **fair** conditions should perhaps be monitored more frequently to assess any further degradation before the next annual inspection.

As noted above, conditions of the following six key categories will be assessed and documented for each BMP:

- | | |
|-------------|-------------------------|
| 1. Sediment | 4. Structural Condition |
| 2. Trash | 5. Flow |
| 3. Erosion | 6. Vegetation |

Sediment

Excessive sediment deposits can alter or block flow along the flow path, especially at the inlet or outlet. Sediment may restrict flow and cause channelization and erosion along slopes. Similarly, excessive sediment can restrict vegetative growth or limit infiltration into underlying soils. If not periodically cleaned out, excess sediment can also be delivered to nearby water bodies. The following describes the anticipated levels of maintenance activity associated with the different sediment accumulation condition assessment ratings.

Condition	Sediment - Maintenance Activity
Good	No Maintenance Required
Fair	Sediment deposits are limited to few locations & volume to allow removal by hand (shovel / broom)
Poor	Additional equipment may be necessary to remove sediment & restore any damaged area

Trash

Accumulated trash is an issue not only for aesthetics but can block and clog inlets and outlets, which negatively affects the functional performance of BMPs. The trash and debris picked up during typical daily road patrols is usually sufficient to keep litter under control except perhaps during winter months or if there are unusual sources nearby from recreational activity or that generated by trash haulers. It is essential that stormwater treatment BMPs be inspected and maintained relatively free of trash and debris, especially after the winter season. The following describes the anticipated levels of maintenance activity for the different trash accumulation condition assessment ratings:

Condition	Trash - Maintenance Activity
Good	No Maintenance Required
Fair	Minimal trash can be removed by hand via normal inspection/patrol
Poor	Additional equipment may be necessary to remove trash and debris and restore any damaged area

Erosion

Erosion on embankment slopes and swales is perhaps the most common problem related to stormwater BMPs and conveyance structures. Early attention and restoration of observed erosion problems can prevent more catastrophic future damages and failures. Erosion is typically caused by excessive flow rates and/or poor vegetative cover or poor soil conditions. Erosion can be a major concern following major storm events. The level of maintenance required to address erosion problems will depend on the suspected cause or extent of the erosion damage and may have require an engineering assessment for larger problem areas. The following describe the anticipated levels of maintenance activity for the different erosion condition assessment ratings:

Condition	Erosion - Maintenance Activity
Good	No Maintenance Required
Fair	Minor erosion can generally be rectified by hand via seeding, mulch, and other stabilization measures such as erosion control blankets
Poor	Additional equipment and material may be necessary to more extensive damaged area

Structural Condition

Structural condition is perhaps one of the most important inspection items for stormwater treatment BMPs. Good structural integrity generally means that there is no major structural damage or deterioration to the outlet or other structural components, that the BMP is functioning as designed, and there is no major erosion or sparse vegetation, excessive invasive species growth, or excessive standing water. The following describes the anticipated levels of maintenance activity for the different structural integrity condition assessment ratings:

Condition	Structural Condition - Maintenance Activity
Good	No Maintenance Required
Fair	Minor erosion or surficial damage can be rectified by hand
Poor	Additional equipment or materials may be needed to restore erosion or structural damage

Flow

Maintaining unobstructed and non-erosive flow is key to maintaining the proper functioning and structural integrity of most stormwater BMPs. Vegetated buffers and swales are more vulnerable to erosive flows as these BMPs often do not have a settling or pretreatment basin to dampen flow rates or collect sediment. Limited vegetative cover or excessively wet soils can make them even vulnerable to erosion. Compacted wheel ruts from mowing equipment or off-road vehicle use can initiate the development of channelized flow or eroded sediment. Wet extended detention BMPs, rely on low-flow outlets to function properly. The low flow orifices, typically at the base of the outlet structure, must be free-flowing and not blocked by sediment to allow drawdown between storms. The following describes potential maintenance activities for the different condition assessment ratings related to flow:

Condition	Flow - Maintenance Activity
Good	No Maintenance Required
Fair	Remove minor amount of sediment/debris by hand shovel
Poor	Additional equipment may be necessary to more extensive erosion or structural damage

Vegetation

Vegetated BMPs should have well-established vegetative cover consisting of grass and other herbaceous vegetation to keep soil in-tact and prevent erosion. If bare spots or sparse vegetation is observed, reseeding and temporary mulch may be necessary. Mowing should be done only as needed to prevent woody growth and maintain a general clear zone in accordance with Department policies. Woody growth is not encouraged especially on slope embankments because even minor changes in the terrain due to root growth can lead to channelization of flow. During mowing operations, caution should be taken to prevent the formation of wheel ruts due to wet soils or the ground being unstable.

Inspectors also need to evaluate invasive species growth and remove any non-native plants that were part of the original seed mix or vegetation plantings. The following describes the anticipated maintenance for different condition assessment ratings for vegetation growth:

Condition	Vegetation - Maintenance Activity
Good	No Maintenance Required
Fair	Minimal Maintenance – Minor amount of vegetation removal or seeding/mulching to be done by hand
Poor	Additional equipment may be necessary to restore extensive erosion, rutting, re-establish vegetation or remove undesirable vegetation

5. Maintenance Activity

5.1 Catch Basins and Other Pretreatment Structures

Occasionally, catch basins or some other underground vault or pretreatment device are used to collect, pretreat and direct roadway runoff to the main stormwater BMP. These pretreatment devices and/ or catch basin should also be inspected and cleaned, if necessary, to ensure they are functioning properly. Cleaning also prevents accumulated sediment from being washed into the BMP. Catch basins are also routinely cleaned as part of the overall stormwater and roadway maintenance program conducted under the Department's Limited Reuse Sediment Policy (DOPS-WI-001) and as part of the Department's MS4 Stormwater Management Plan.

5.2 Vegetation Management

Seeding

Department personnel should refer to the Department's Erosion Control Manual and/or the NHDES Stormwater Manual (Volume 3) to obtain guidance for seeding and mulching or other temporary stabilization measures to establish grass and/or herbaceous plants and restore eroded slopes or poorly vegetated areas in stormwater treatment BMPs. District personnel should consult with BOE personnel in selecting appropriate seed mixes and/or plant material with consideration for hydric conditions, flow velocities, water depths and duration of inundation as well as whether area will be mowed in the future. For dry areas,

Mowing

Mowing in and around stormwater BMPs is typically limited to the slope embankments, while vegetation within main portion of the BMP is generally allowed to grow naturally itself. Vegetated swales are stormwater BMPs that are most likely to be mowed on an occasional basis. Mowing is primarily done to prevent or limit the establishment of woody vegetation. The appropriate mowing frequency for stormwater BMPs is perhaps best determined by the District or Patrol Area Foreman. The methods and equipment used for mowing should be consistent with Department policies and work instructions and be appropriate for site conditions to pose the least amount of risk for soil disturbances.

Invasive Species Control

The establishment and spread of invasive species can pose a major threat to stormwater BMP functioning and hinder the maintenance of such BMPs. The Department has developed a detailed guidance manual and several facts sheets to help in the identification and control of invasive species (see link below). Inspectors involved with roadside and stormwater BMP maintenance should become familiar with these manuals/fact sheets

<https://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/invasivespecies.htm>

6. Reporting and Recordkeeping

6.1 Reporting

The Water Quality Certificate issued for the project specifies that all inspection and maintenance activities be documented. Inspection observations can be documented using the Inspection Checklist either in the electronic online form or hardcopy paper form. Inspectors should also take photos of key observations. As mentioned earlier, inspection of the vegetated buffer and related stormwater infrastructure should be inspected at least once per year, but additional inspections may be warranted to check for damage after unusual weather events or because of off-road vehicle use.

Inspection results and the associated checklist should be shared with the Patrol Foreman, District Foreman and District Engineer, and the Water Quality Manager at the Department headquarters in Concord.

Any maintenance activity or any change or improvements to the stormwater BMP should be documented in the I&M Activity log and supplemented with photographs of any work activity.

6.2 Recordkeeping

Documentation of all inspection results and maintenance activities should be kept in District and Headquarter files for a period of 10 years or more or in accordance with Department recordkeeping policies, whichever is longer.

Page left blank intentionally.

Appendices

Appendix A:

SADES BMP Inspection Data Collection Guide

SADES

Statewide Asset Data Exchange System

Data Collection Specifications Guide



Stormwater Best Management Practice Inspections

Sediment
Trash
Erosion
Structure
Flow
Vegetation

Partnership with:

NH Department of Transportation (NHDOT)
UNH Technology Transfer Center (UNH T²)

General User Information

It is recommended that data be collected using the ESRI Survey 123 for ArcGIS Application for the Apple iPad.

Additional recommended equipment for conducting the assessment includes:

- Personal Protective Equipment (PPE)
- Yardstick/Tape Measure

If you have questions or concerns about this iPad application or the SADES BMP Inspection program, please contact the UNH Technology Transfer Center.

Contact Information:

Chris Dowd

SADES Manager

chris@nhsades.com

Office: (603) 862-5489

Cell: (603) 397-7745

Pre-Populated Parameters

Stormwater BMP Type

Wet Detention

Gravel Wetland

Dry Detention

Swale

Buffer

Infiltration

Underground

Porous Pavement

Constructed Wetland

Other*

BMP ID#

####

Date Installed

MM/DD/YYYY

Design Plan(s)

Attached JPEG/TIFF/PDF

Maintenance District

District 1

District 2

District 3

District 4

District 5

District 6

Contract

#####

Pre-Inspection Input Parameters

Inspector ID
User Input Text

Date
MM/DD/YYYY

Inspection Type
Routine Annual
Post Storm-Related
Other (User Input Text)

Current Weather

Today's Weather
User Input Text

Previous Weather (3 days)
User Input Text

Sediment Condition

Good

Fair

Poor









No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

	Good	Fair	Poor
Condition	Good	Fair	Poor
Description	No visible sediment accumulation	Some accumulating sediment in a few areas but not enough to effect flow; can be removed by hand shovel	Excessive amount that will affect flow and needs immediate attention. *Insert description in Comment section
Example Image(s)			
			
			
Maintenance Activity	No Maintenance Required	Minimal Maintenance – Typically Sediment can be removed by Hand (shovel / broom)	Additional equipment may be necessary to remove sediment & restore any damaged area

Trash Condition

Good

Fair

Poor










No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

Condition	Good	Fair	Poor
Description	No visible trash	Minimum amount of trash in a few locations: can be removed by hand by regular road patrols	Excessive amount that needs immediate attention to clean up.
Example Image(s)	  	  	  
Maintenance Activity	No Maintenance Required	Minimal Maintenance – Trash can be removed by hand via normal inspection/patrol	Additional equipment may be necessary to remove trash and debris and restore any damaged area

Erosion Condition

Good

Fair

Poor










No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

Condition	Good	Fair	Poor
Description	No visible erosion	Some evidence of initial stages of erosion but not enough to affect function.	Erosion is severe enough to warrant corrective actions to prevent worsening conditions
Example Image(s)	  	  	  
Maintenance Activity	No Maintenance Required	Minimal Maintenance – Minor erosion that can generally be rectified by hand adding soil, temp. mulch, seeding and other stabilization measures	Additional equipment and material may be necessary to more extensive damaged area. Insert description in Comment section

Structural Condition

Good

Fair

Poor









No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

Condition	Good	Fair	Poor
Description	No degradation, erosion or invasive species; Vegetation is well established and outlet in good structural condition	Minor structural decay or deterioration but no loss of function, or some erosion or sparse vegetation is observed	Extensive structural damage, or erosion, channelization that needs immediate repair
Example Image(s)			
			
			
Maintenance Activity	No Maintenance Required	Minor amount of erosion or surficial damage that can be rectified without additional equipment	Additional equipment or materials will be necessary to restore erosion or structural damage

Flow Condition

Good

Fair

Poor

No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

Condition	Good	Fair	Poor
Description	Flow appears to be free-flowing, no blockages or channelization	Very minor flow alterations or blockages but no obvious eroded channels	Flow is being impeded due to sediment/debris accumulation or clogged outlet; obvious channelization- immediate attention needed.
Example Image(s)			
Example Image(s)			
Example Image(s)			
Maintenance Activity	No Maintenance Required	Minimal Maintenance – Minor amount of clogging that can be rectified by hand	Additional equipment may be necessary to more extensive erosion or structural damage

Vegetation Condition

Good

Fair

Poor










No Rating

Record the condition of the above BMP parameter. See below for examples and definitions for each condition state.

Inspector Comments

User Input Text

*Comments must be recorded for any features receiving a condition rating of "Poor"

Condition	Good	Fair	Poor
Description	Vegetation is well established: no woody vegetation or nuisance invasive species.	Poorly established in only few areas: Invasive species only in isolated areas.	Vegetation is sparse and/or invasive species have become prevalent
Example Image(s)	  	  	  
Maintenance Activity	No Maintenance Required	Minimal Maintenance – Minor amount of vegetation removal or seeding/mulching to be done by hand	Equipment may be needed to restore erosion, rutting, re-establish vegetation or remove undesirable vegetation

Inspection Condition Notes:

- Inspectors must fill out the information of the first page concerning current weather and date of inspection.
- Condition rating is required for all features.
- For features receiving a “Poor”, condition rating, please provide a comment in the Comment Section of the Inspection Form to describe the specific item/condition requiring attention or maintenance activity.
- “No Rating” shall be used for BMP types where conditions may not apply (e.g. vegetation for underground storage).
- New BMPs will be added to the system via desktop review prior to inspections
- Refer to the Department Statewide Stormwater BMP Manual to obtain additional information on the various BMP types, their design features and potential Maintenance Activities.

Appendix B:

Inspection & Maintenance Activity Log

Appendix C:

Inspection Checklist

NHDOT Stormwater BMP Inspection Checklist (Hardcopy)

<p>Stormwater BMP Type:</p> <p><input type="checkbox"/> Wet Extended Detention Pond <input type="checkbox"/> Gravel Wetland</p> <p><input type="checkbox"/> Vegetated Buffer <input type="checkbox"/> Vegetated Swale</p> <p><input type="checkbox"/> Other; _____</p> <p>BMP ID #: _____</p> <p>Location: _____</p> <p>Year Installed (if known): _____</p> <p>Are Design Plans Available for Review: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure</p>	<p>Date: _____</p> <p>Inspector(s): _____</p> <p>Inspection Type:</p> <p><input type="checkbox"/> Routine Annual <input type="checkbox"/> Post Storm-Related</p> <p><input type="checkbox"/> Other _____</p>
Current Weather	Recent Major Storm Data (if applicable)
<p>Today's Weather: _____</p> <p>Previous Weather (3 days): _____</p>	<p>Date: _____ Duration: _____ hrs</p> <p>Precipitation Total: _____</p>
Inspection Observations	Comments/ Required Action
Sediment Condition	-----
No visible sediment accumulation	Good
Minor amount of sediment but not enough to effect flow	Fair
Excessive amount of sediment that will affect flow - needs attention	Poor
Trash Condition	-----
No visible trash	Good
Minimum amount of trash- can be removed by hand	Fair
Excessive amount of trash - need immediate attention	Poor
Structure Condition	-----
No evidence of structural damage, deterioration, major erosion	Good
Minor structural damage-cosmetic decay - no loss of function	Fair
Extensive damage and/or erosion - needs immediate attention	Poor
Erosion	-----
No Visible Erosion	Good
Evidence of initial stages of erosion but no loss of function	Fair
Evidence of severe erosion, rutting or scour- needs attention	Poor
Vegetation Condition	-----
Vegetation well established with over 85% of slope vegetated	Good
Poor vegetation cover or some Invasive Species Observed or Suspected (photo taken) List Suspected Species Type: _____	Fair
Vegetation is Sparse or Excessive Invasive Species Coverage (> 50%)	Poor
Flow Condition	-----
Inflow and outlet are free flowing, no clogging or blockages	Good
Very Minor flow Blockage or alterations - can be cleared by hand	Fair
Excessive flow obstruction and/or channel scour needs attention	Poor

Photos Taken: Slope Sediment Trash Vegetation Other _____

Other Comments/Recommendations: _____

Page left blank intentionally.