Stormwater Management Program (SWMP)

TOWN OF ROWLEY

139 Main Street MA 01969

EPA NPDES Permit Number MAR041218

Certification

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

☐ Attached to this document (document name listed below)

☐ Publicly available at the website below

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

Printed Name

Signature _____ Date

Click Here for Revisions

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

VIA EMAIL

June 26, 2019

Deborah Eagan
Town Administrator

And;

Deborah Eagan
Town Administrator
Rowley Town Hall
139 Main Street
Rowley, MA. 01969
debbie@townofrowley.org

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041218, Town of Rowley

Dear Deborah Eagan:

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

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

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

Information about the permit and available resources can be found on our website: https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Should you have any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

Sincerely,

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

and;

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

Background

Stormwater Regulation

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

Permit Program Background

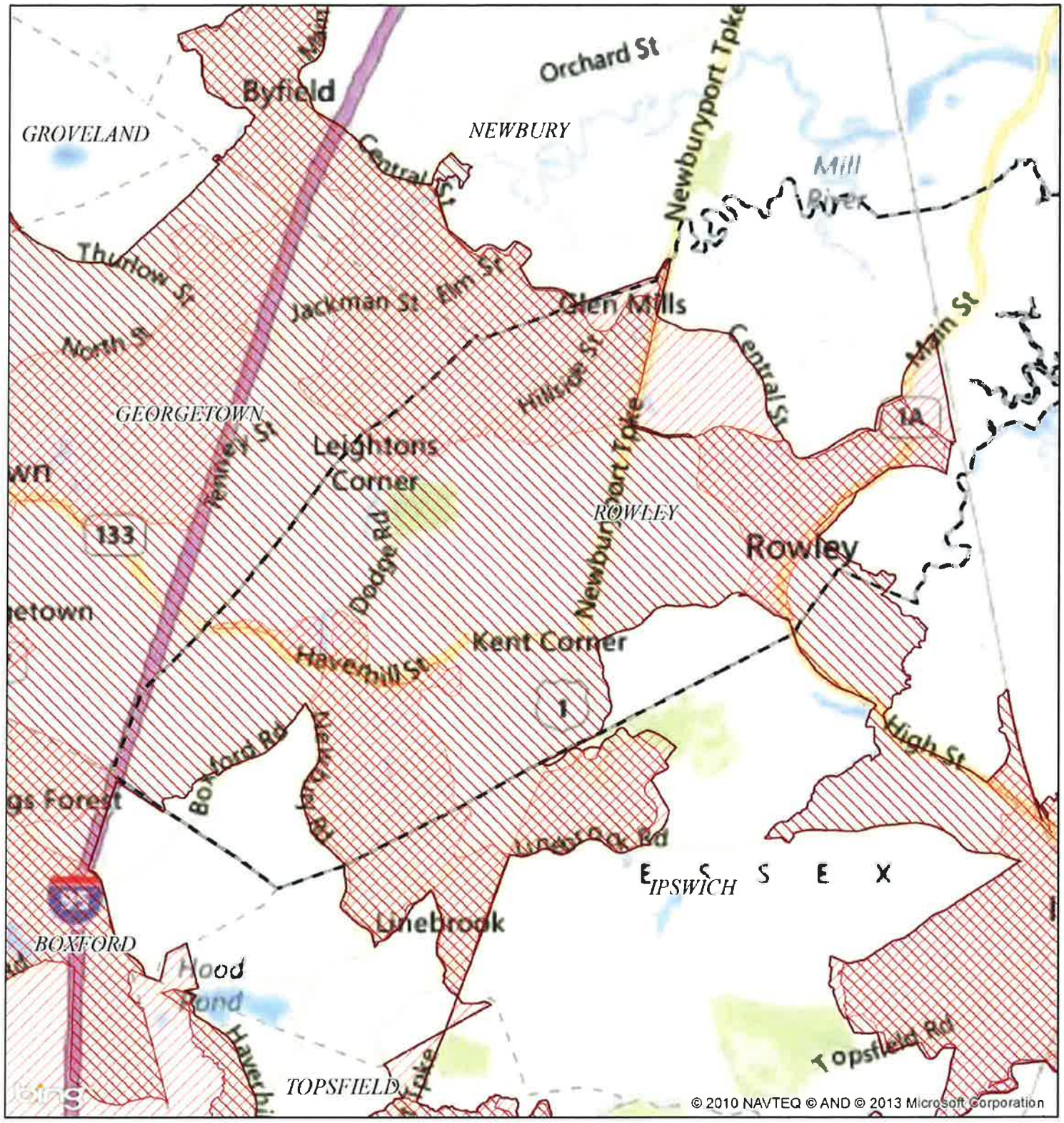
On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) consistent with the Phase II rule. The 2003 small MS4 permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal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

Stormwater Management Program (SWMP)

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

Town Specific MS4 Background (optional)

Rowley complied with the requirements of the 2003 MS4 General Permit meeting all of the measurable goals established by the permit including:
MCM 1 - Public Education and Outreach - Participates in Greenscapes Program
MCM 2 - Public Involvement and Participation - formation of Stormwater Committee (meets minimum annually)
MCM 3 - Illicit Discharge and Detection Elimination - IDDE effective February 1, 2008
MCM 4 - Construction Site Runoff Control & MCM 5 Post-Construction Stormwater Management
- Construction/Erosion and Sediment Control Authority Effective November 28, 2007 and Regulations 2008
MCM 6 - Pollution Prevention and Good Housekeeping - Street sweeping and catch basin maintenance program, DPW training



NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas
Rowley MA

Regulated Area:

UA Based on 2000 Census	UA Based on 2010 Census

0 1 2 3 4 Kilometers

0 1 2 3 Miles

Town Population: **5856**

Regulated Population: **4781**

(Populations estimated from 2010 Census)

EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2013 Microsoft Corporation
and its data suppliers

US EPA Region 1 GIS Center Map #8824, 8/9/2013

Small MS4 Authorization

The NOI was submitted on 09/27/2018

The NOI can be found at the following (document name or web address):
https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/rowley.pdf

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Authorization to Discharge was granted on Jun 26, 2019

The Authorization Letter can be found (document name or web address):
https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/rowley-auth.pdf

Stormwater Management Program Team

SWMP Team Coordinator

Name Deborah Eagan Title Town Administrator

Department

Phone Number (978) 948-2705 Email debbie@townofrowley.org

Responsibilities

SWMP Team

Name Brent Baeslack Title ConservationAgent

Department Conservation

Phone Number (978) 948-2330 Email conservation@townofrowley.org

Responsibilities

Name Patrick Snow Title Highway Surveyor

Department Highway Department

Phone Number (978) 948-2441 Email highway@townofrowley.org

Responsibilities

Name Frank Marchegian Title Coordinator of Health Services

Department Board of Health

Phone Number Email health@townofrowley.org

Responsibilities

Add SWMP Member

Receiving Waters

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

OR

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

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Mill River (MA91-09; MA91-08)	14	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fecal Coliform, Excess Algal Growth, Non-Native Aquatic Plants, Macro-Invertabrate Bio-assessments
Rowley River (MA91-05)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fecal Coliform
Plum Island Sound (MA91-12)		☐	☐	☐	☐	☐	☐	☐	☐	☐	Fecal Coliform
Central Street Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	Not Assessed
Ox Pasture Brook	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	Not Assessed
Egypt River (MA91-14)		☐	☐	☐	☐	☐	☐	☐	☐	☐	Fecal Coliform
Wilson Pond		☐	☐	☐	☐	☐	☐	☐	☐	☐	Not Assessed
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
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		☐	☐	☐	☐	☐	☐	☐	☐	☐	

Click here to lengthen table

Eligibility: Endangered Species and Historic Properties

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

Attachments:

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

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

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

  U.S. Fish and Wildlife Service Screening Determination Letter & Historic Properties Effect Determination Town of Rowley

- ☒ Publicly available at the website listed below

  https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/rowley.pdf

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Under what criterion did permittee determine eligibility for ESA?

☐ Criterion A ☒ Criterion B ☐ Criterion C

Under what criterion did permittee determine eligibility for Historic Properties?

☒ Criterion A ☐ Criterion B ☐ Criterion C

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

Below add any additional measures taken to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO (if applicable):

BOARD OF SELECTMEN
139 Main Street • PO Box 275
Rowley, MA 01969
Phone (978) 948-2372
Fax (978) 948-8202
selectmen@townofrowley.org

Town of Rowley

Massachusetts 01969

TOWN ADMINISTRATOR
139 Main Street • PO Box 275
Rowley, MA 01969
Phone (978) 948-2705
Fax (978) 948-8202
debbie@townofrowley.org

VIA: U.S. Certified Mail Only: #7014 3490 0000 9129 0948

September 5, 2018

Mr. Thomas R. Chapman
Supervisor, New England Field Office
U.S. Department of the Interior
Fish & Wildlife Service
70 Commercial St, Suite 300
Concord, NH 03301-5807

Re: Documentation of Town of Rowley, MA Determination of "No Affect" on Endangered Species or Critical Habitat of Rowley's MS4 Stormwater Management Program

Dear Mr. Chapman:

The Town of Rowley, MA is planning an updated Stormwater Management Program for compliance with the Municipal Separate Storm Sewer System (MS4) Permit issued by EPA and MassDEP effective July 2018 for urbanized communities in the Commonwealth of Massachusetts.

As part of the planning review of five-year activities, the Town of Rowley has reviewed resource lists provided by the U.S. Fish and Wildlife Service and has determined that the Town's Stormwater program meets Criteria B for coverage by the MS4 Permit.

1) The Town's MS4 area contains the Northern Long-Eared Bat and Red Knot, Endangered Species listed in the USFW IPaC Resource List Information for Planning and Consultation.

2) The Town of Rowley in its program assessment has determined the stormwater facilities managed under the permit are existing facilities authorized by the previous permit and that activities proposed under the Town's MS4 management & maintenance program are not likely to adversely impact endangered species or critical

habitat. We expect that any action(s) undertaken by the Town under the MS4 permit will decrease anticipated pollution levels in the Northern Long-Eared Bat and Red Knot habitats.

3) The Town agrees to measures conditioned through this consultation with USFWS and further agrees that during the MS4 permit term, if the Town plans to install a structural BMP not identified in the Program Notice of Intent, the Town will reinitiate formal or informal consultations with USFWS as necessary.

Should you have any questions, please contact me at 978-948-2705 or debbie@townofrowley.org.

Sincerely,
Deborah Eagan
Deborah Eagan
Town Administrator

C: Rowley Conservation Agent Brent Baeslack

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

September 24, 2018

To whom it may concern:

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

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

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

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

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

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

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

Sincerely yours,

Thomas R Chapman
Supervisor
New England Field Office

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

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Phone (978) 948-2705
Fax (978) 948-8202
debbie@townofrowley.org

September 28, 2018

To: File

From: Deborah Eagan, Town Administrator

Re: Historic Properties Effect Determination of Town of Rowley's MS4 Stormwater Management Program

The Town of Rowley is planning an updated Stormwater Management program for compliance with the Municipal Separate Storm Sewer System (MS4) Permit issued by EPA and MassDEP effective July 2018 for urbanized communities in the Commonwealth.

As part of the planning review of five-year activities, the Town of Rowley through its Conservation Department and Highway Department has determined that stormwater facilities managed under the permit are existing facilities authorized by the previous permit and that activities proposed under the Town's MS4 management & maintenance program are not anticipated to involve subsurface land disturbance.

Based on the above Department's review, I certify on behalf of the Town of Rowley the eligibility of the Town's MS4 Program Permit to use Criterion A in our Notice of Intent for MS4 permit coverage, whereby municipal stormwater discharges do not have the potential to cause effects on historic properties.

Deborah Eagan

NHESP No. Long-eared Bat Locations

June 21, 2019

Statewide_NLEB_Symbology

Hibernaculum

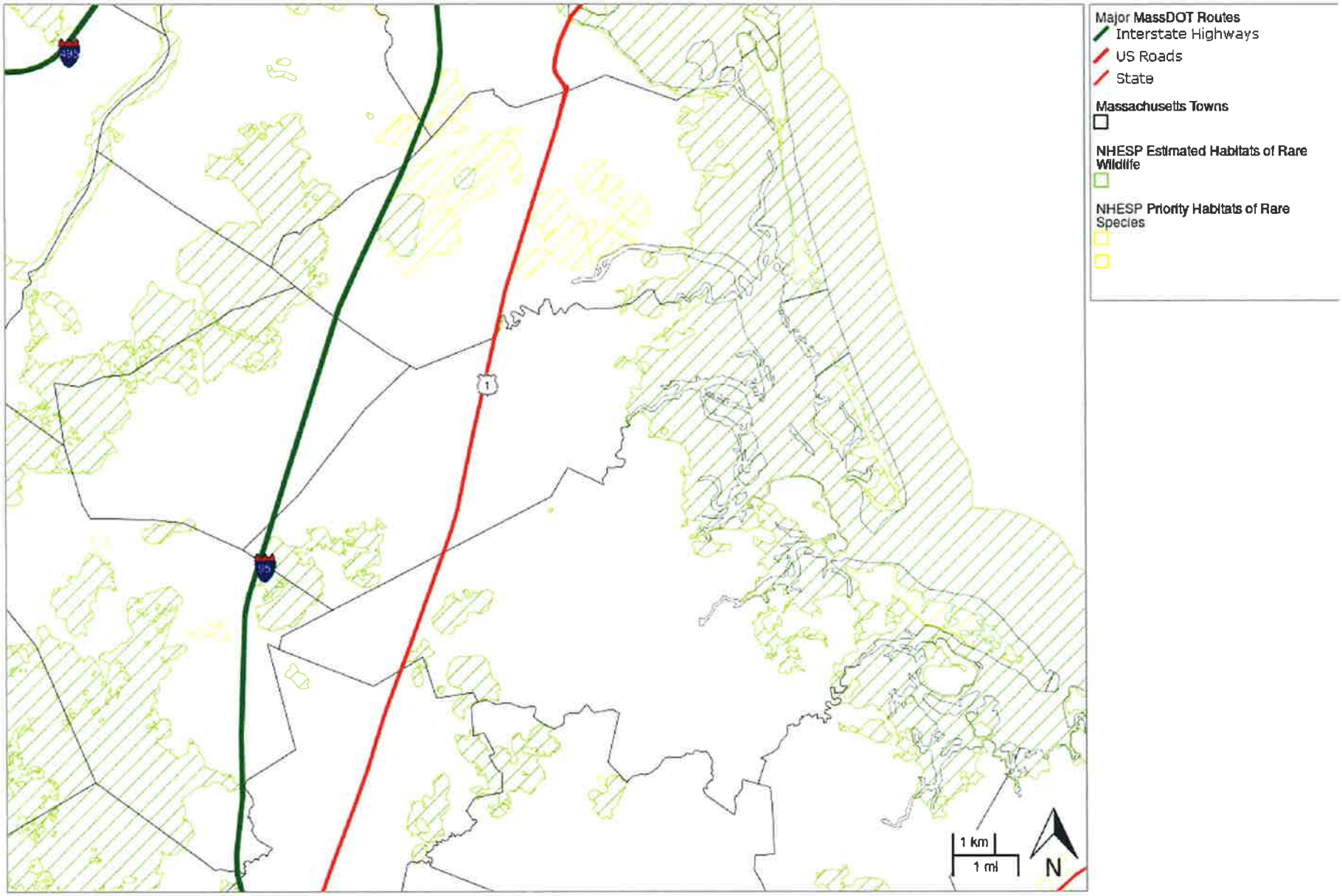
MA Northern Long-eared Bat Winter Hibernacula (with ¼ mile buffer)

1:288,895

0 1.75 3.5 7 mi

0 2.75 5.5 11 km

Rowley, NHESP Map



Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

Search Criteria: Town(s): Rowley;

Inv. No.	Property Name	Street	Town	Year
ROW.A	Rowley Center Historic District		Rowley	
ROW.B	Glen Mills Historic District		Rowley	
ROW.C	Rowley Common - Training Place		Rowley	
ROW.D	Town Brook - Tan House Brook Area		Rowley	
ROW.E	Rogers, Ezekiel Plantation		Rowley	
ROW.F	Kent Corner		Rowley	
ROW.G	Central Street Green		Rowley	
ROW.H	Platts - Bradstreet House		Rowley	
ROW.I	First Period Buildings of Eastern Massachusetts		Rowley	
ROW.J	Dodge Farms Agricultural - Industrial Area		Rowley	
ROW.K	Foster's Shoe Factory Complex		Rowley	
ROW.L	Railroad Avenue Worker's Housing Area		Rowley	
ROW.M	School Street Area		Rowley	
ROW.N	Diners of Massachusetts		Rowley	
ROW.O	Bradstreet Farm		Rowley	
ROW.72	Perley, Jacob House	22 Bennett Hill Rd	Rowley	c 1856
ROW.73	Perley, Jacob Barn	22 Bennett Hill Rd	Rowley	c 1856
ROW.74	Perley, David House	181 Boxford Rd	Rowley	c 1830
ROW.7	Dole House	22 Bradford St	Rowley	c 1830
ROW.8	Creasey, Mark C. - Perley, Capt. Allen House	30 Bradford St	Rowley	c 1800
ROW.66	Creasey, Mark C. - Perley, Capt. Allen Barn	30 Bradford St	Rowley	
ROW.9	Richards, Moses House	34 Bradford St	Rowley	c 1740
ROW.76	Mehaffey, Capt. Albert House	41 Bradford St	Rowley	1918
ROW.10	Jewett, Joseph House	46 Bradford St	Rowley	1785
ROW.11	Kilbourne, Isaac House	53 Bradford St	Rowley	c 1709
ROW.75	Knowles, Donald House	75 Bradford St	Rowley	1935
ROW.17	Center Elementary School House	Central St	Rowley	1904

Inv. No.	Property Name	Street	Town	Year
ROW.906	First, Second and Third Meetinghouses Marker	Central St	Rowley	1939
ROW.908	Rowley Boundary Markers	Central St	Rowley	1639
ROW.910	Phips, Gov. Spencer Bennett Birthplace Marker	Central St	Rowley	1964
ROW.82	Burke, Frank L. Shoe Heel Factory Worker Housing	4 Central St	Rowley	1894
ROW.108		4 Central St	Rowley	r 1850
ROW.81	Burke, Frank L. Shoe Heel Factory Worker Housing	6 Central St	Rowley	1894
ROW.18	Rowley Town Hall and School House	29 Central St	Rowley	1847
ROW.16	Jewett, S. P. House	34 Central St	Rowley	c 1750
ROW.83	Damon, Bernard - Daniels, Alice House	44 Central St	Rowley	1873
ROW.88	Carpenter, Willard - Peabody, Vernon House	48 Central St	Rowley	1973
ROW.78	Richardson, Frank S. House	58 Central St	Rowley	1907
ROW.184	Richardson, Frank S. Garage	58 Central St	Rowley	1907
ROW.85	Titcomb, Oscar - Gilday, George House	65 Central St	Rowley	1900
ROW.84	Bishop, Arthur House	68 Central St	Rowley	1881
ROW.49	Prime, Capt. Daniel N. House	108 Central St	Rowley	1838
ROW.86	Prime, Daniel - Perley, James House	116 Central St	Rowley	1856
ROW.89	Keyes, Eben - Cook, James H. House	120 Central St	Rowley	c 1872
ROW.48	Scott, Benjamin Jr. House	187 Central St	Rowley	1676
ROW.87	Curtis, Charles House	208 Central St	Rowley	1915
ROW.91	Fenno, Lawrence Estate - Chauffer's House	261 Central St	Rowley	c 1930
ROW.90	Fenno, Lawrence Estate - Gardener's Cottage	271 Central St	Rowley	c 1930
ROW.79	Whitson, John H. House	419 Central St	Rowley	c 1808
ROW.900	Boston - Ipswich Mile Marker	419 Central St	Rowley	c 1708
ROW.194		17 Daniels Rd	Rowley	r 1880
ROW.193		24 Daniels Rd	Rowley	r 1880
ROW.192		43 Daniels Rd	Rowley	r 1865
ROW.191	Daniels House	62 Daniels Rd	Rowley	r 1850
ROW.92	Daniels, George E. Wagon Factory	75 Daniels Rd	Rowley	1896
ROW.93	Daniels, George W. - Kinnear, Robert B. House	78 Daniels Rd	Rowley	c 1856
ROW.110	Daniels, George W. Barn	78 Daniels Rd	Rowley	c 1856
ROW.96	Dodge, Phineas House and Farm	77 Dodge Rd	Rowley	c 1825
ROW.189	Dodge, Phineas Barn	77 Dodge Rd	Rowley	c 1880
ROW.190	Dodge, Phineas Barn	77 Dodge Rd	Rowley	c 1880
ROW.94	Searle, Dea. Joseph - Moody, Luther House	320 Dodge Rd	Rowley	1772
ROW.136	Fenno, Lawrence Estate - Ice House	139 Fenno Dr	Rowley	c 1920
ROW.137	Todd House	152 Fenno Dr	Rowley	c 1725

Inv. No.	Property Name	Street	Town	Year
ROW.38	Pearson - Dummer, Joseph N. House	Glen St	Rowley	1780
ROW.39	Pearson, Capt. John House	Glen St	Rowley	1714
ROW.56	Glen Mills Grist Mill - Jewel Mill	Glen St	Rowley	c 1920
ROW.904	Glen Mills Stone Bridge	Glen St	Rowley	c 1810
ROW.905	Mill River Dam	Glen St	Rowley	c 1642
ROW.98	Nelson, David O. House	47 Glen St	Rowley	1885
ROW.99	Hale, James O. House	68 Glen St	Rowley	c 1888
ROW.97	Hale, Daniel Jr. House and Farm	83 Glen St	Rowley	1859
ROW.185	Hale, Daniel Jr. Barn	83 Glen St	Rowley	c 1859
ROW.100	Rowley Center Post Office	5 Hammond St	Rowley	1889
ROW.101	Pickard, Joshua House	22 Hammond St	Rowley	1798
ROW.103	Collum, Edward - Hale, Josiah B. House	25 Hammond St	Rowley	1900
ROW.143	Collum, Edward - Hale, Josiah B. Barn	25 Hammond St	Rowley	1900
ROW.102	Harris, John Jr. - Jewett, Dea. Joshua House	46 Hammond St	Rowley	c 1765
ROW.142	Jewett, Dea. Joshua Barn	46 Hammond St	Rowley	r 1850
ROW.913	Ewell Entrance Pillars	Haverhill St	Rowley	1922
ROW.77	Smith, Jacob Jewett House - Eagle House Restaurant	89 Haverhill St	Rowley	c 1882
ROW.80	Smith, Jacob Jewett Barn - Eagle House Restaurant	89 Haverhill St	Rowley	c 1882
ROW.37	Chaplin - Clarke House	109 Haverhill St	Rowley	1671
ROW.57	Mooney, Mary E. House	281 Haverhill St	Rowley	c 1858
ROW.104	Chaplin, Luther House	290 Haverhill St	Rowley	r 1840
ROW.105	Wallis, William T. House	303 Haverhill St	Rowley	c 1830
ROW.58	Millwood School House	312 Haverhill St	Rowley	1869
ROW.196		564 Haverhill St	Rowley	r 1850
ROW.195		585 Haverhill St	Rowley	r 1850
ROW.59	Dickinson, Joseph House	851 Haverhill St	Rowley	1732
ROW.60	Phillips - Saunders House	854 Haverhill St	Rowley	c 1855
ROW.61	Prescott, S. P. - Dodge House	856 Haverhill St	Rowley	1843
ROW.62	Merrill, Byron House	858 Haverhill St	Rowley	c 1899
ROW.63	Dickinson, Jonathan House	865 Haverhill St	Rowley	1723
ROW.64	Dickinson, Jonathan Barn	865 Haverhill St	Rowley	c 1723
ROW.912	Dickinson Well	865 Haverhill St	Rowley	c 1723
ROW.65	Dodge, Benjamin House	929 Haverhill St	Rowley	r 1850
ROW.106	Burke, Frank L. House	14 Independent St	Rowley	1891
ROW.144	Burke, Frank L. Garage	14 Independent St	Rowley	
ROW.109	Burke, Frank L. Shoe Heel Factory Worker Housing	3 Jellison Rd	Rowley	1887

Inv. No.	Property Name	Street	Town	Year
ROW.107	Burke, Frank L. Shoe Heel Factory Worker Housing	9 Jellison Rd	Rowley	1887
ROW.112	Stockbridge, Seth - Sornborger, Jewell D. House	12 Kittery Ave	Rowley	1879
ROW.111	Fenno, Lawrence Estate - Farm Superintendent House	115 Kittery Ave	Rowley	c 1914
ROW.113	Searle, Elijah P. House	45 Long Hill Rd	Rowley	r 1840
ROW.114	Tenney, Nathaniel - Dummer, Nathaniel House	66 Long Hill Rd	Rowley	1747
ROW.145	Tenney Barn	66 Long Hill Rd	Rowley	r 1850
ROW.22	Reindeer Tavern - Gage House	Main St	Rowley	1760
ROW.24	Todd, J. Newman House	Main St	Rowley	c 1830
ROW.25	Rowley First Baptist Church	Main St	Rowley	1830
ROW.27	Rowley Town Hall	Main St	Rowley	1902
ROW.29	Lambert, Nathan - Hobson House	Main St	Rowley	r 1725
ROW.35	Hale, Joseph House	Main St	Rowley	c 1827
ROW.36	Jewett, Abraham House	Main St	Rowley	1660
ROW.41	Platts - Bradstreet House	Main St	Rowley	1677
ROW.52	Cogswell - Pike, Rev. John House	Main St	Rowley	r 1835
ROW.54	Gage, Thomas House	Main St	Rowley	1790
ROW.67	Platts - Bradstreet Shoemaker's Shop	Main St	Rowley	
ROW.68	Platts - Bradstreet Ladder House	Main St	Rowley	
ROW.69	Platts - Bradstreet Barn	Main St	Rowley	
ROW.800	Rowley Burial Ground	Main St	Rowley	1639
ROW.903	Training Place, The - Rowley Common	Main St	Rowley	
ROW.915	Rowley Civil War Monument	Main St	Rowley	1919
ROW.34	Pickard - Hale House	35 Main St	Rowley	c 1800
ROW.122	Mobil Gas Station	35 Main St	Rowley	c 1955
ROW.128	Gray, Charles House	44 Main St	Rowley	1902
ROW.33	Platts, Jonathan House	52 Main St	Rowley	1680
ROW.32	Smith, Benjamin H. House	74 Main St	Rowley	1826
ROW.116	Marshall, John A. House	84 Main St	Rowley	c 1867
ROW.124	Millett, Austin House	88 Main St	Rowley	1846
ROW.130	Marshall, John A. House	89 Main St	Rowley	1894
ROW.125	Perley, Mark C. - Ralph, Albert House	90 Main St	Rowley	1850
ROW.121	Mooney, Charles House	95 Main St	Rowley	1899
ROW.31	Mighill, Nathaniel - Perley, Nathaniel House	100 Main St	Rowley	1730
ROW.117	Millet, Edward A. House	101 Main St	Rowley	1901
ROW.30	Hobson, Moses - Perley, Capt. Ebenezer P. House	103 Main St	Rowley	1725
ROW.120	Foster, William S. House	107 Main St	Rowley	1897

Inv. No.	Property Name	Street	Town	Year
ROW.147	Foster, William S. Barn	107 Main St	Rowley	1897
ROW.129	Ellsworth, Milton - Haley, Cornelius F. House	119 Main St	Rowley	1895
ROW.181	Ellsworth, Milton Barn	119 Main St	Rowley	1895
ROW.28	Smith, James - Billings House	136 Main St	Rowley	c 1790
ROW.26	Lambert, Thomas House	142 Main St	Rowley	c 1699
ROW.134	Carleton, Gertrude House	146-148 Main St	Rowley	1917
ROW.23	Bailey, John - Proctor, Dr. Charles House	156 Main St	Rowley	1763
ROW.21	Northend, Ezekiel House	169 Main St	Rowley	1721
ROW.20	First Congregational Church of Rowley	175 Main St	Rowley	1842
ROW.19	Tullar, Rev. David House	179 Main St	Rowley	c 1803
ROW.123	Payson, David - Todd, Frank P. House	180 Main St	Rowley	c 1811
ROW.148	Todd, Frank P. Barn	180 Main St	Rowley	r 1850
ROW.133	Pedrick, Dr. Stephen House	209 Main St	Rowley	1860
ROW.182	Cressey, Bradstreet Barn	209 Main St	Rowley	1860
ROW.132	Bartlett, Dr. Benjamin House	210 Main St	Rowley	1877
ROW.51	Wicom, Daniel - Todd House	213 Main St	Rowley	r 1750
ROW.45	Harris, Lt. John House	224 Main St	Rowley	1805
ROW.71	Harris, Lt. John Barn	224 Main St	Rowley	c 1805
ROW.127	Adams, Wilfred P. House	235 Main St	Rowley	1902
ROW.131	Adams, Lewis House	237 Main St	Rowley	c 1872
ROW.50	Saunders House	238 Main St	Rowley	1750
ROW.55	Todd - Ellsworth - Hale House	239 Main St	Rowley	c 1750
ROW.118	Bradstreet, Thomas and Moses House	239 Main St	Rowley	1837
ROW.146	Bradstreet English Barn	239 Main St	Rowley	r 1800
ROW.907	Bradstreet, Humphrey King Grant Farm Entrance Gate	239 Main St	Rowley	1635
ROW.53	Armitage Tavern - Saunders, Edward House	316 Main St	Rowley	c 1724
ROW.135	Todd, N. M. - Babcock, Harry House	317 Main St	Rowley	r 1840
ROW.119	Pickard, Moses - Heald, Grover C. House	364 Main St	Rowley	1895
ROW.126	Burke, Frank L. Shoe Heel Factory Worker Housing	368 Main St	Rowley	1887
ROW.138	Fenno, Lawrence House - Ox Pasture Hill Farm	50 Mansion Dr	Rowley	1909
ROW.902	Pulpit Rock	Meetinghouse Rd	Rowley	c 1770
ROW.186		15 Mill Rd	Rowley	c 1960
ROW.95	Dodge, Phineas House and Farm	16 Mill Rd	Rowley	c 1772
ROW.187	Dodge Sawmill #1	16 Mill Rd	Rowley	c 1890
ROW.188	Dodge Sawmill #2	16 Mill Rd	Rowley	c 1920
ROW.901		16 Mill Rd	Rowley	c 1950

Inv. No.	Property Name	Street	Town	Year
ROW.165	Perley - Tenney, John House and Farm	179 Newbury Rd	Rowley	c 1816
ROW.166	Tenney, John Barn	179 Newbury Rd	Rowley	r 1850
ROW.40	Glen Mills Cereal Company Boarding House	Newburyport Tpk	Rowley	c 1790
ROW.139	Agawam Diner	166 Newburyport Tpk	Rowley	1954
ROW.140	Gumdrop House Candy Store	588 Newburyport Tpk	Rowley	1950
ROW.916	Old Newburyport Turnpike Bridge over Mill River	Old Newburyport Tpk	Rowley	
ROW.141	Marshall, J. Robert House	11 Perley Ave	Rowley	c 1914
ROW.44	Lancaster, Samuel House	11 Pleasant St	Rowley	c 1787
ROW.43	Todd, Nelson House	23 Pleasant St	Rowley	r 1775
ROW.70	Todd, Nelson Barn	23 Pleasant St	Rowley	1988
ROW.46	Langley - Hale - Cressey House	39 Pleasant St	Rowley	1732
ROW.47	Prime, Joshua House	48 Pleasant St	Rowley	1753
ROW.169	Rose Cottage - Jewett, Mark House	77 Railroad Ave	Rowley	c 1850
ROW.170	Bishop, Benjamin - Johnson, William House	79 Railroad Ave	Rowley	c 1845
ROW.167	Keyes, Henry House	80 Railroad Ave	Rowley	c 1869
ROW.171	Stearnes, Joshua B. - Burke, Frank L. House	81 Railroad Ave	Rowley	c 1892
ROW.168	Hayes, Lydia House	84 Railroad Ave	Rowley	c 1864
ROW.911	Rowley River Bridge	Rowley River	Rowley	c 1888
ROW.909	First Fulling Mill Marker	Rt 1	Rowley	1930
ROW.914	Bean's Crossing - Route 1A Bridge over B & M RR	Rt 1A	Rowley	1907
ROW.174	Bailey, Edward - Wise, F. T. House	9 School St	Rowley	c 1881
ROW.175	Bailey, George G. - Short, Jacob House	11 School St	Rowley	c 1881
ROW.176	Bailey, George G. - Smith, Henry House	13 School St	Rowley	c 1881
ROW.179	Saunders, Maurice - Belleveaux, Charles House	14 School St	Rowley	c 1881
ROW.177	Lucas, Charles S. House	15 School St	Rowley	c 1881
ROW.172	Riley, William J. - Peabody, Lucy House	18 School St	Rowley	c 1881
ROW.180	Bailey, George - Kneeland, Harold House	19 School St	Rowley	c 1881
ROW.173	Pickard, Anna M. - Bailey, George G. House	22 School St	Rowley	c 1881
ROW.5	Hale, Dr. William House	Summer St	Rowley	c 1780
ROW.1	Boynton, Eben Stable and Cabinet Shop	13 Summer St	Rowley	c 1830
ROW.2	Cressey House	15 Summer St	Rowley	r 1750
ROW.3	Hobson, Nathan House	21 Summer St	Rowley	c 1800
ROW.4	Hobson, Nathan - Herbert, Dr. Richard House	29 Summer St	Rowley	1815
ROW.6	Foster, Lt. Daniel - Dole Farmhouse	43 Summer St	Rowley	1805
ROW.149	Foster, William C. Shoe Factory	51 Summer St	Rowley	c 1830
ROW.150	Dewar, Rupert House	52 Summer St	Rowley	c 1920
ROW.151	Foster, William C. House	61 Summer St	Rowley	c 1830

Inv. No.	Property Name	Street	Town	Year
ROW.152	Shirley, Annette House	7 Warehouse Ln	Rowley	c 1937
ROW.160	Rogers, Ezekiel School - Rowley Public Library	17 Wethersfield St	Rowley	1930
ROW.164	Hobson, Humphrey House - Fairview Hotel	27 Wethersfield St	Rowley	1787
ROW.15	Hobson, Humphrey House	31 Wethersfield St	Rowley	c 1742
ROW.158	Daniels, George A. House	50 Wethersfield St	Rowley	1929
ROW.14	Mighill House	51 Wethersfield St	Rowley	1827
ROW.13	Bailey House	71 Wethersfield St	Rowley	1794
ROW.157	Bailey, Willard - Adams, Edwin House	74 Wethersfield St	Rowley	1895
ROW.156	Bailey, Frederick House	77 Wethersfield St	Rowley	1857
ROW.183	Bailey, Willard Garage	77 Wethersfield St	Rowley	r 1915
ROW.12	Stickney, Josiah - Jewett, S. D. House	81 Wethersfield St	Rowley	c 1800
ROW.154	Bailey, Henry - Adams, Lewis House	127 Wethersfield St	Rowley	1827
ROW.159	Bailey Barn	127 Wethersfield St	Rowley	r 1850
ROW.155	White, John - Saunders, Amos N. House	137 Wethersfield St	Rowley	1750
ROW.162	Duty, Moses House	243 Wethersfield St	Rowley	1765
ROW.161	Palmer - Todd, Lt. James House	283 Wethersfield St	Rowley	r 1800
ROW.153	Dole, Joseph - Dodge House	305 Wethersfield St	Rowley	1750
ROW.115	Gage - Dole, Stephen House	517 Wethersfield St	Rowley	1750
ROW.163	Ewell, Samuel House	705 Wethersfield St	Rowley	1750

MCM 1
Public Education and Outreach
Permit Part 2.3.2

Objective: The permittee shall implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that the pollutants in stormwater are reduced.

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

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

BMP: Education and Outreach to Residents

BMP Number (Optional) **MCM1-1**

Document Name and/or Web Address: Greenscapes North Shore Coalition MCM1: Public Education and Outreach - NOI Form (attached)

Description:
Using print materials (brochures, pamphlets, info sheets) provide education and outreach on stormwater management topics important to Rowley including pet waste management, proper lawn maintenance, septic system maintenance and information about illicit discharges and dumping. Materials may be included with tax/utility bills, distributed with dog licenses or septic system permits. Extra materials will be made available at town hall offices.

Targeted Audience: Residents

Responsible Department/Parties: Highway, Conservation, Greenscapes Program

Measurable Goal(s):
Number of print materials distributed

Message Date(s): Two distributions spaced at least one year apart over 5 year period

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BMP: Education and Outreach to Businesses/Institutions and Commercial Facilities

BMP Number (Optional) **MCM1-2**

Document Name and/or Web Address: Greenscapes North Shore Coalition MCM1: Public Education and Outreach - NOI Form (attached)

Description:
Using print materials (brochures, pamphlets, info sheets) provide education and outreach on stormwater management topics important to Rowley including best practices for parking lot maintenance, landscape maintenance, waste management and deicing/snow management. Materials may be included with tax/utility bills.

Targeted Audience: Businesses/Institutions and Commercial Facilities

Responsible Department/Parties: Highway, Conservation, Greenscapes Program

Measurable Goal(s):
Number of print materials distributed

Message Date(s): Two distributions spaced at least one year apart over a five year period

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BMP:Education and Outreach to Developers

BMP Number (Optional) **MCM1-3**

Document Name and/or Web Address: Greenscapes North Shore Coalition MCM1: Public Education and Outreach - NOI Form (attached), EPA Website

Description:

Using print materials (brochures, pamphlets, info sheets) provide education and outreach on stormwater management topics important to Rowley including proper erosion and sedimentation control, construction site management, permit requirements and use of Low Impact Development techniques. Materials can be distributed at pre-construction site visits and with building permits. Workshops may also be held to present this material.

Targeted Audience: Developer

Responsible Department/Parties: Permitting Departments, Highway, Greenscapes

Measurable Goal(s):

Number of materials distributed, number of workshop participants

Message Date(s): Two distributions spaced at least one year apart over a five year period

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BMP:Online Materials

BMP Number (Optional) **MCM1-4**

Document Name and/or Web Address: www.greenscapes.org, www.merrimackvalleystormwater.org, Rowley Stormwater Page

Description:

Community can access stormwater resource information on town, Greenscapes and MVPC website

Targeted Audience: Residents, Businesses, Developers (construction)

Responsible Department/Parties: Conservation, Highway, Greenscapes, MVPC

Measurable Goal(s):

Number of views measured as unique page visits

Message Date(s): Ongoing

BMP:Public Service Announcements

BMP Number (Optional) **MCM1-5**

Document Name and/or Web Address: Public Service Announcements

Description:
PSAs on educational topics to include those listed in 2.3.2.d i and ii of the permit

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: Highway, Conservation, Rowley Community Media

Measurable Goal(s):
PSAs are ongoing, messages change quarterly

Message Date(s): Ongoing

BMP: School Program

BMP Number (Optional) **MCM1-6**

Document Name and/or Web Address: School Program

Description:
Incorporate stormwater pollution prevention education into school curricula. Greenscapes to conduct one day workshop annually to elementary school pupil audience @ Pine Grove School

Targeted Audience: Residents

Responsible Department/Parties: Greenscapes, Schools

Measurable Goal(s):
Number of students, teachers and volunteers involved

Message Date(s): Annual

BMP: LID Workshop

BMP Number (Optional) **MCM1-7**

Document Name and/or Web Address: Greenscapes Workshop (see NOI Form)

Description:
Conduct annual workshop with Greenscapes to address educational topics to include those listed in 2.3.2.d i

and ii of the permit (Low Impact Development)

Targeted Audience: Residents, Businesses, Developers (construction)

Responsible Department/Parties: Conservation, Greenscapes

Measurable Goal(s):
Number of workshop attendees

Message Date(s): Annual workshop

BMP: Outreach to Industrial Facilities

BMP Number (Optional) **MCM1-8**

Document Name and/or Web Address: Greenscapes North Shore Coalition MCM1: Public Education and Outreach - NOI Form (attached), MA DEP Anti-Icing Materials Best Management Practices

Description:
Using print materials (brochures, pamphlets, info sheets) provide education and outreach on stormwater management topics important to Rowley including best practices for parking lot maintenance, landscape maintenance, waste management, fleet maintenance, hazardous materials storage and deicing/snow management. Materials may be included with tax/utility bills or direct mailed.

Targeted Audience: Industrial facilities

Responsible Department/Parties: Conservation, Highway, Greenscapes

Measurable Goal(s):
Number of materials distributed

Message Date(s): Two distributions spaced at least one year apart over a five year period

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BMP:

BMP Number (Optional)

Document Name and/or Web Address:

Description:

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

BMP:

BMP Number (Optional) _____

Document Name and/or Web Address:

Description:

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

Add BMP

GREENSCAPES NORTH SHORE COALITION

MCM 1: Public Education and Outreach - NOI FORM

* All literature and media will be available online at www.greenscapes.org and can be shared with member communities at any time.

** Community can decide how to address Greenscapes' involvement. They may choose to list GS as an external contractor, or can list whomever in their town GS communicated with for each BMP, respectively.

BMP Media/ Category	BMP Description*	Targeted Audience	Responsible Parties/ Depts**	Measurable Goal	Implementation Year
Brochure/ Pamphlets	Brochure will consist of a 'how-to-guide' for residents on how rain gardens work and how to install them at their home.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**2018 (Fall)**
Brochure/ Pamphlets	An updated version of comprehensive literature, discussing the importance of "greenscaping", small-scale stormwater management practices, sewer/septic system maintenance and other ways to avoid illicit discharge.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**2019 (Spring)**
Workshop/ Info Sheet	Workshop and associated literature will cover LID options for reducing runoff and promoting on-site infiltration. Pricing, maintenance and ordinances will also be discussed.	**Developers (Construction)**	Greenscapes North Shore Coalition and *municipal entity*	- Number of attendees - Increase in LID use	**2019 (Winter)**
Displays/ Posters/ Kiosks	Informational poster will be placed in area with heavy dog/walker traffic. Poster will describe proper pet waste management and disposal.	**Residents**	Greenscapes North Shore Coalition	- Pilot surveys may be conducted before and after message posting	**2019 (Spring)**
Brochure/ Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**2018**
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebooks etc. Ex. Autumnal facebook post describing proper disposal of leaf collection, and springtime post about proper lawn/fertilizer maintenance.	**Residents**	Greenscapes North Shore Coalition and *municipal entity*	- Number of views/ likes/ comments - Resident testimonials before and after posting	**2018**
School Curriculae/ Programs	*Elementary School Name* will host Greenscapes "Keeping Water Clean" Program.	**Residents**	Greenscapes North Shore Coalition	- Number of students/ teachers/ volunteers in attendance - Subset of students evaluated before and after program	**2018**
Brochure/ Pamphlets	Brochure will include general info on LIDs that can assist in stormwater management and pollution prevention. Content will be targeted to "environmental contacts" at industrial facilities, or property managers where applicable.	**Industrial Facilities**	Greenscapes North Shore Coalition	- Number distributed - Phone call followup	**FY2020**
Workshop	Stormwater presentation will discuss specific BMPs for parking lots; how to reduce impervious surfaces, and maintain the space more sustainably.	**Businesses/ Institutions and Commercial Facilities**	Greenscapes North Shore Coalition and *municipal entity*	- Number of attendees - Number of presentations re-distributed to commercial representatives.	**FY2020**
Displays/ Posters/ Kiosks	An updated version of informational display, discussing the importance of "greenscaping", small-scale stormwater management practices, sewer/septic system maintenance and other ways to avoid illicit discharge.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2020**
Brochure/ Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2020**
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebooks etc. Ex. Autumnal facebook post describing proper disposal of leaf collection, and springtime post about proper lawn/fertilizer maintenance.	**Residents**	Greenscapes North Shore Coalition and *municipal entity*	- Number of views/ likes/ comments - Resident testimonials before and after posting	**FY2020**
School Curriculae/ Programs	*Elementary School Name* will host Greenscapes "Keeping Water Clean" Presentation.	**Residents**	Greenscapes North Shore Coalition	- Number of students/ teachers/ volunteers in attendance - Subset of students evaluated before and after program	**FY2020**

Workshop	Workshop and literature will go into greater detail, following the workshop regarding low impact development held in year one. City ordinances and associated incentives will be outlined.	**Developers (Construction)**	Greenscapes North Shore Coalition and *municipal entity*	- Number of attendees	**FY2021**
Web Page	Story Map will outline and describe different examples of existing low-impact-developments in the North Shore Community.	**Residents**	Greenscapes North Shore Coalition	- Number of map views - Resident testimonials on LID awareness	**FY2021**
Brochure/ Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2021**
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebooks etc. Ex. Autumnal facebook post describing proper disposal of leaf collection, and springtime post about proper lawn/fertilizer maintenance.	**Residents**	Greenscapes North Shore Coalition and *municipal entity*	- Number of views/ likes/ comments - Resident testimonials before and after posting	**FY2021**
School Curriculae/ Programs	*Elementary School Name* will host Greenscapes "Keeping Water Clean" Program.	**Residents**	Greenscapes North Shore Coalition	- Number of students/ teachers/ volunteers in attendance - Subset of students evaluated before and after program	**FY2021**
Meeting/ Presentation	Presentation will discuss proper "greenscaping" practices on a business/commercial level. Content will be targeted ro property managers and will include sand/salt storage and landscape management.	**Businesses/ Institutions and Commercial Facilities**	Greenscapes North Shore Coalition and *municipal entity*	- Number of attendees	**FY2022**
Meeting/ Presentation	Presentation will discuss proper "greenscaping" practices on an industrial level. Content will be targeted ro property managers and will include sand/salt storage and landscape management.	**Industrial Facilities**	Greenscapes North Shore Coalition and *municipal entity*	- Number of attendees	**FY2022**
Brochure/ Pamphlets	"What not to Flush" rack card will raise resident awareness of the damages of flushing things like wipes and grease in their toilets/sinks.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2022**
Brochure/ Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2022**
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebooks etc. Ex. Autumnal facebook post describing proper disposal of leaf collection, and springtime post about proper lawn/fertilizer maintenance.	**Residents**	Greenscapes North Shore Coalition and *municipal entity*	- Number of views/ likes/ comments - Resident testimonials before and after posting	**FY2022**
School Curriculae/ Programs	*Elementary School Name* will host Greenscapes "Keeping Water Clean" Program.	**Residents**	Greenscapes North Shore Coalition	- Number of students/ teachers/ volunteers in attendance - Subset of students evaluated before and after program	**FY2022**
Meeting/ Presentation	Greenscapes NS will conduct a "Greenscapes 101" presentation for residents at site of community's choosing. Presentation will discuss the importance of clean and plentiful water.	**Residents**	Greenscapes North Shore Coalition	- Number of attendees - Resident testimonials	**FY2023**
Special Events/ Festivals/ Fairs	Greenscapes representatives will attend a trade show expo, with the intent of sharing "Greenscaping" practices and the importance of LIDs with Landscapers and Developers.	**Developers (Construction)**	Greenscapes North Shore Coalition	- Number of materials distributed - Number of contacts made - Developer testimonials	**FY2023**
Brochure/ Pamphlets	Pet Waste literature is available in two forms (one page info sheet or rack card) and can be redistributed as necessary.	**Residents**	Greenscapes North Shore Coalition	- Number distributed - Resident testimonials	**FY2023**
Social Media Post	Greenscapes will provide content for a social media "blast" on town Facebooks etc. Ex. Autumnal facebook post describing proper disposal of leaf collection, and springtime post about proper lawn/fertilizer maintenance.	**Residents**	Greenscapes North Shore Coalition and *municipal entity*	- Number of views/ likes/ comments - Resident testimonials before and after posting	**FY2023**
School Curriculae/ Programs	*Elementary School Name* will host Greenscapes "Keeping Water Clean" Program.	**Residents**	Greenscapes North Shore Coalition	- Number of students/ teachers/ volunteers in attendance - Subset of students evaluated before and after program	**FY2023**

MCM 2
Public Involvement and Participation
Permit Part 2.3.3

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

BMP: Public Review of Stormwater Management Program

BMP Number (Optional) **MCM2-1**

Location of Plan and/or Web Address: Rowley Stormwater Website (include link)

Responsible Department/Parties: Conservation, Highway

Measurable Goal(s):

Stormwater Management Plan is publicly available.

BMP: Public Participation in Stormwater Management Program Development

BMP Number (Optional) **MCM2-2**

Description:

Public meeting noticed to allow for community comment on SWMP. Boards and committees also invited to participate.

Responsible Department/Parties: Conservation, Highway, MVPC

Measurable Goal(s):

Annual public input provided. Initial Review July 9, 2019

BMP: Hazardous waste/oil/metals collection daysn

BMP Number (Optional) **MCM2-3**

Document Name and/or Web Address: Town of Rowley Notices at http://www.town.rowley.ma.us/common/index.php?com=rowl&div=LL&nav=AA&page=L02

Description:

Collection events held spring and fall each year

Responsible Department/Parties: Board of Health

Measurable Goal(s):

Number of people attending
Amount of material collected

BMP: Earth Day Clean-up and Trail Work Days

BMP Number (Optional) **MCM2-4**

Document Name and/or Web Address: Town of Rowley Notices at http://www.town.rowley.ma.us/common/index.php?com=rowl&div=LL&nav=AA&page=L02

Description:
Annual town-wide clean-up day and other location focused events

Responsible Department/Parties: Conservation, Open Space, Highway

Measurable Goal(s):
Number of people attending, amount of debris (# of trash bags) collected

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BMP: Other Public Participation Opportunities

BMP Number (Optional) **MCM2-5**

Document Name and/or Web Address:

Description:
Storm Drain Stenciling/markers and other community service projects as volunteers are available

Responsible Department/Parties: Conservation, Highway

Measurable Goal(s):
Number of Catch basins stenciled, trails cleaned/maintained, other

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BMP: Bylaw Review and Update

BMP Number (Optional) **MCM2-6**

Document Name and/or Web Address:

Description:
Allow public and departments opportunity to provide feedback on effectiveness of existing bylaw and potential update for compliance with new MS4 permit

Responsible Department/Parties: Conservation Commission, Planning Board, Board of Selectmen, Town M

Measurable Goal(s):

Number of participants/comments received

Add BMP

MCM 3
Illicit Discharge Detection and Elimination (IDDE) Program
Permit Part 2.3.4

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

Examples and Templates:
IDDE Program Template and SOPs

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

BMP: IDDE Legal Authority

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

Ordinances Link or Reference: Regulation Prohibiting Illicit Connections and Discharges to the Municipal Separate Storm Sewer System

Department Responsible for Enforcement: Board of Health

BMP: Sanitary Sewer Overflow (SSO) Inventory

BMP Number (Optional) _____ **Completed** (by year 1) ☐

Document Name and/or Web Address:

Description:
Rowley does not have a sewer system

Responsible Department/Parties:

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

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

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

BMP: Map of Storm Sewer System

BMP Number (Optional) _____ **Phase I Completed** (by year 2) ☐ **Phase II Completed** (by year 10) ☐

Document Location and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

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

BMP: IDDE Program

BMP Number (Optional) _____ **Written Document Completed** (by year 1) ☐

Document Name and/or Web Address: Separate document

Description:

Responsible Department/Parties:

Measurable Goal(s):

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

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

BMP: Employee Training

BMP Number (Optional) _____

Description:

Responsible Department/Parties:

Measurable Goal(s):

Training occurs on (DATE(S)) annually.
June 26, 2019

BMP:[BMP name here]

BMP Number (Optional) _____ **Completed** ☐

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

Add BMP

Town of Rowley
Massachusetts 01969
39 Central Street
P. O. Box 783
Board of Health **E-Mail** health@townofrowley.org **(978) 948 2231**
FAX (978) 948 7196

REGULATION PROHIBITING ILLICIT CONNECTIONS AND DISCHARGES TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

1. PURPOSE

The purpose of this regulation is to prohibit illicit connections and non-stormwater discharges to the Town of Rowley's Municipal Separate Storm Sewer System (MS4). Non-stormwater discharges to the MS4 contain contaminants and supply additional flows which are major causes of

a. impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands, and groundwater;
b. contamination of drinking water supplies;
c. alteration or destruction of aquatic and wildlife habitat; and
d. flooding.

Regulation of illicit connections and discharges to the MS4 is necessary for the protection of the Town of Rowley's water bodies and groundwater, and to safeguard the public health, safety, welfare, and the environment.

The objectives of this regulation are:

a. to prevent pollutants from entering the MS4;
b. to prohibit illicit connections and unauthorized discharges to the MS4;
c. to remove all such illicit connections and discharges;
d. to comply with state and federal statutes and regulations relating to stormwater discharges;
e. to establish the legal authority to ensure compliance with the provisions of this regulation through proper inspection, monitoring, and enforcement; and
f. to prevent contamination of drinking water supplies.

2. AUTHORITY

This regulation is adopted pursuant to Sections 31 and 127 of Chapter 111 of the Massachusetts General Laws as amended, and the regulations of the Federal Clean Water Act found at 40 CFR 122.34. The Rowley Board of Health shall administer, implement, and enforce this regulation. Any powers granted to or duties imposed upon the Board may be delegated by the Board to its

employees or agents. The Board of Health may promulgate rules and regulations to effectuate the purposes of this regulation. Failure by the Board of Health to promulgate such rules and regulations shall not have the effect of suspending or invalidating this regulation.

3. DEFINITIONS

For the purposes of this regulation, the following definitions and provisions shall apply:

a. **Authorized Enforcement Agency** — The Board of Health, its employees or agents designated to enforce this regulation.
b. **Best Management Practice (BMP)** — An activity, procedure, restraint, or structural improvement that helps reduce the quantity or improve the quality of stormwater runoff
c. **Clean Water Act** — The Federal Water Pollution Control Act (33 U.S.C. section 1251 *et seq.)* and as hereafter amended.
d. **Discharge of Pollutants** — The addition from any source of any pollutant or combination of pollutants into the MS4 or into waters of the United States or Commonwealth of Massachusetts from any source.
e. **Groundwater** — Water beneath the surface of the ground.
f. **Illicit Connection** — A surface or subsurface drain or conveyance which allows an illicit discharge into the MS4, including without limitation: sewage, process wastewater or wash water, and any connections from indoor drains, sinks, or toilets regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this regulation.
g. **Illicit Discharge** — Direct or indirect discharge to the MS4 that is not composed entirely of stormwater, except as specifically exempted in Section 7 of this regulation. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or resulting from fire-fighting activities or municipal ice and snow control operations.
h. **Impervious Surface** — Any material or structure on or above the ground that prevents water from infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.
i. **Municipal Separate Storm Sewer System (MS4)** — The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned and/or operated by the Town of Rowley.
j. **National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit** — A permit issued by the U.S. Environmental Protection Agency or jointly with the State of Massachusetts that authorizes the discharge of pollutants to waters of the United States or Commonwealth.
k. **Non-Stormwater Discharge** — A discharge to the MS4 not comprised entirely of stormwater.
l. **Person** — An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.
m. **Pollutant** — Any element or property of sewage, residential, agricultural, industrial, or commercial waste, runoff; leachate, heated effluent, or other matter whether originating at a point or non-point source, that is or may be introduced into any storm drainage system or waters of the United States and/or Commonwealth. Pollutants shall include without limitation:

1) paints, varnishes, solvents;
2) oil, grease, antifreeze, other automotive fluids and/or products;
3) non-hazardous liquid and solid wastes;
4) refuse, garbage, litter, rubbish, yard wastes, or other discarded or abandoned objects, ordnances, accumulations, or floatables;
5) pesticides, herbicides, and fertilizers;
6) hazardous materials and wastes;
7) sewage;
8) dissolved and particulate metals;
9) metal objects or materials;
10) animal wastes;
11) rock, sand, salt, soils; and
12) construction wastes and/or residues.

n. **Process Wastewater** — Water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any material, intermediate product, finished product, or waste product.

o. **Recharge** — The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil.

p. **Stormwater** — Runoff from precipitation or snowmelt.

q. **Toxic or Hazardous Material or Waste** — Any material, which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare or to the environment. Toxic or hazardous materials include without limitation:

1) any synthetic organic chemical;
2) petroleum products;
3) heavy metals;
4) radioactive or infectious waste;
5) acid and alkali substances;
6) any substance defined as Toxic or Hazardous under M.G.L. Ch. 21C and Ch. 21E, and the regulations at 310 CMR 30000 and 310 CMR 40.000; and
7) Any substance listed as hazardous under 40 CFR 261.

r. **Watercourse** — A natural or man-made channel through which water flows or a stream of water, including a river, brook or underground stream.

s. **Waters of the Commonwealth** — All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater.

t. **Wastewater** — Any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning, or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

4. APPLICABILITY

This regulation shall apply to flows entering the municipally owned and/or operated storm drainage

system (MS4).

5. PROHIBITED ACTIVITIES

The following activities are prohibited:

Illicit Connections — No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system (MS4), regardless of whether the connection was permissible under applicable law, regulation, or custom at the time of connection.

Illicit Discharges — No person shall dump, discharge, cause, or allow to be discharged any pollutant or non-stormwater discharge into the municipal storm drainage system (MS4), into a watercourse, or into waters of the United States and/or Commonwealth.

Obstruction of the MS4 — No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drainage system (M54) without prior written approval from the Board of Health.

6. EXEMPTIONS

Discharges or flows resulting from fire-fighting activities and Highway Department ice and snow control operations are exempt. In addition, the following non-stormwater discharges or flows are exempt provided that the source is not a significant contributor of pollution to the municipal storm drainage system (MS4):

a. waterline flushing;
b. flow from potable water sources;
c. springs;
d. natural flow from riparian habitats and wetlands;
e. diverted stream flow;
f. rising groundwater;
g. uncontaminated groundwater infiltration as defined in 40 CFR 35.2005(20), or uncontaminated pumped groundwater;
h. water from exterior foundation drains, footing drains (not including active groundwater dewatering systems, such as dewatering excavations for foundations or pipelines), crawl space pumps, or air conditioning condensation;
i. discharge from landscape irrigation or lawn watering;
j. water from individual residential car washing;
k. discharge from dechlorinated swimming pool water (less than one part per million chlorine) provided the water is allowed to stand for one week prior to draining and the pool is drained in such a way as to not cause a nuisance;
l. discharge of water from street sweepers;
m. dye testing, provided verbal notification is given to the Board of Health prior to the time of the test;
n. non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the U.S. Environmental Protection Agency, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and

o. discharge for which advanced written approval is received from the Board of Health as necessary to protect public health, safety, welfare, and the environment.

7. EMERGENCY SUSPENSION OF MUNICIPAL STORM DRAINAGE SYSTEM (MS4) ACCESS

a. The Board of Health may suspend access to the municipal storm drainage system (MS4) to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened illegal discharge that presents or may present imminent risk of harm to the public health, safety, welfare, or the environment. In the event any person fails to comply with an emergency suspension order, the Board of Health may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

b. Any person discharging to the municipal storm drainage system (MS4) in violation of this regulation may have his/her access to the storm drainage system terminated if such termination would abate or reduce an illicit discharge. The Board of Health shall notify a violator of the proposed termination of storm drainage system access. The violator may petition the Board of Health for reconsideration and a hearing. A person commits an offense if he/she reinstates access to the storm drainage system without prior written approval from the Board of Health.

8. NOTIFICATION OF SPILLS

Notwithstanding any other requirements of local, state, or federal law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials at that facility or operation which is resulting or may result in illegal discharge of pollutants, that person shall take all necessary steps to ensure containment and cleanup of the release, In the event of a release of oil or hazardous materials, the person shall immediately notify the Rowley Fire and Police Departments, the Highway Department, and the Board of Health. In the event of a release of non-hazardous material, said person shall notify the Board of Health no later than the next business day. Written confirmation of all telephone, facsimile, or in-person notifications shall be provided to the Board of Health within three (3) business days thereafter. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for period of at least three (3) years.

9. ENFORCEMENT

a. Board of Health

The Board of Health or its authorized agent shall enforce this regulation and any rules and regulations promulgated thereunder, as well as the terms and conditions of all permits, notices, and orders, and may pursue all civil and criminal remedies for violations of the regulation.

b. Civil Relief

If anyone violates the provisions of this regulation or any rule, regulation, permit, notice, or order issued thereunder, the Board of Health may seek injunctive relief in a court of competent jurisdiction to restrain the person from activities which would create further violations or compelling the person to abate or remediate the violation.

c. Orders

The Board of Health may issue a written order to enforce the provisions of this regulation and any rules and regulations thereunder, which may include: (1) elimination of illicit connections or discharges to the municipal storm drainage system; (2) termination of access to the storm drainage system; (3) performance of monitoring, analyses, and reporting; (4) cessation of unlawful discharges, practices, or operations; and (5) remediation of contamination in connection therewith. If the Board of Health determines that abatement or remediation of contamination is required, the order shall set forth a deadline for completion of the abatement or remediation. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town of Rowley may, at its option, undertake such work, and expenses thereof shall be charged to the violator or property owner.

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

d. Criminal and Civil Penalties

Any person who violates any provision of this bylaw, regulation, or the terms or conditions in any permit or order prescribed or issued thereunder, shall be subject to a fine not to exceed $300 for each day such violation occurs or continues, or to a civil penalty, which may be assessed in an action brought on behalf of the Town in any court of competent jurisdiction.

e. Non-Criminal Disposition

As an alternative to criminal prosecution or civil action, the Town of Rowley may elect to utilize the non-criminal disposition procedure set forth in M.G.L. Chapter 40, Section 21D. The Board of Health shall be the enforcing entity. The penalty for the 1st violation shall be up to $100. The penalty for the 2nd violation shall be up to $200. The penalty for the 3rd and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

f. Entry to Perform Duties under this Bylaw

To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Board of Health, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this regulation and may make or cause to be made such examinations, surveys, or sampling as the Board of Health deems reasonably necessary.

g. Appeals

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

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

10. SEVERABILITY

The provisions of this regulation are hereby declared to be severable. If any provision, paragraph, sentence, or clause of this regulation shall be held invalid for any reason, all other provisions shall continue in full force and effect.

11. TRANSITIONAL PROVISIONS

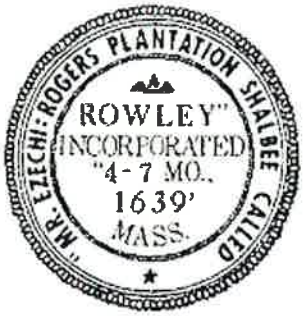
Residential property owners shall comply with this regulation on a schedule set forth in the Board of Health compliance order, but such property owners shall in no case have more than six (6) months from the effective date of the regulation to comply with its provisions, unless good cause is shown for the failure to comply with the regulation during that period.

Per vote of the Rowley Board of Health on January 7, 2008
These regulations shall take effect on February 1, 2008

Illicit Discharge Detection and Elimination (IDDE) Plan

June 30, 2019

Town of Rowley, Massachusetts



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Illicit Discharge Detection and Elimination Plan

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1 Introduction

1.1 MS4 Program

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

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

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

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

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

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

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a resident or contractor illegally tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters.
Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally

connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

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

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

1.3 Allowable Non-Stormwater Discharges

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

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

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

1.4 Receiving Waters and Impairments

Table 1-1 lists the "impaired waters" within the boundaries of Rowley's regulated area based on the Final 2014 Massachusetts Integrated List of Waters produced by MassDEP every two years. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.

Table 1-1. Impaired Waters

Rowley, Massachusetts

Water Body Name	Segment ID	Category	Impairment(s)	Associated Approved TMDL
Mill River	MA91-09; MA91-08	5	Fecal Coliform, Excess Algae Growth, Aquatic Plants, Aquatic Macroinvertebrate Bioassessment	na
Rowley River	MA91-05	5	Fecal Coliform	na
Plum Island Sound	MA91-12	5	Fecal Coliform	na
Egypt River	MA91-14	5	Fecal Coliform	na

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

1.5 IDDE Program Goals, Framework, and Timeline

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

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

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

Figure 1-1. IDDE Investigation Procedure Framework

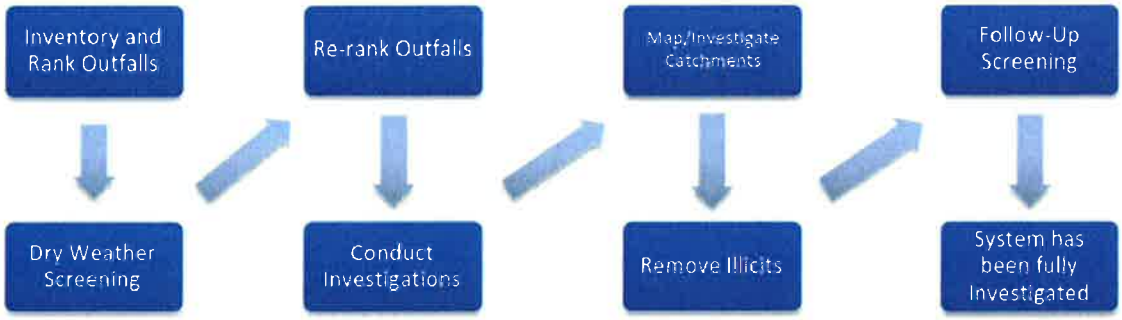


Table 1-2. IDDE Program Implementation Timeline

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

1.6 Work Completed to Date

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

Rowley has completed the following IDDE program activities consistent with the 2003 MS4 Permit requirements:

- Developed a map of outfalls and receiving waters
- Adopted an IDDE bylaw or regulatory mechanism
- Understanding of how to locate illicit discharges (i.e., visual screening of outfalls for dry weather discharges, dye or smoke testing)

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

- Additional storm system mapping, including the locations of catch basins, manholes and pipe connectivity

2 Authority and Statement of IDDE Responsibilities

2.1 Legal Authority

Rowley has adopted regulations prohibiting illicit connections in 2008. A copy of the regulation is provided in **Appendix A**. The Regulation provides Rowley with adequate legal authority to:

- Prevent pollutants from entering the MS4
- Prohibit illicit connections and unauthorized discharges to the MS4
- Investigate suspected illicit discharges
- Comply with state and federal statutes and regulations relating to stormwater discharges
- Establish the legal authority to ensure compliance with proper inspection, monitoring and enforcement
- Prevent contamination of drinking water supplies

Rowley will review its current regulation and related land use regulations and policies for consistency with the 2016 MS4 Permit.

2.2 Statement of Responsibilities

Rowley's departments responsible for implementing the IDDE program pursuant to the provisions of this plan of the include:

- Highway Department
- Building Inspector
- Licensed Plumbing Inspector
- Health Department
- Conservation Agent
- Conservation Commission
- Planning Board Chairperson
- Board of Selectmen
- Town Administrator

3 Stormwater System Mapping

Rowley, with assistance from the Merrimack Valley Planning Commission (MVPC), originally developed mapping of its stormwater system to meet the mapping requirements of the 2003 MS4 Permit. A copy of the existing storm system map is provided in **Appendix B**. The 2016 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit. The revised mapping is intended to facilitate the identification of key infrastructure, factors influencing proper system operation, and the potential for illicit discharges.

The 2016 MS4 Permit requires the storm system map to be updated in two phases as outlined below. The Highway Department, with assistance from MVPC, is responsible for updating the stormwater system mapping pursuant to the 2016 MS4 Permit. Rowley will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in **Appendix B**.

3.1 Phase I Mapping

Phase I mapping must be completed within two (2) years of the effective date of the permit (June 30, 2020) and include the following information:

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

Rowley has completed the following updates to its stormwater mapping to meet the Phase I requirements:

- Outfalls and receiving waters
- Initial catchment delineations

3.2 Phase II Mapping

Phase II mapping must be completed within ten (10) years of the effective date of the permit (June 30, 2028) and include the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins

- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.
- Municipal Sanitary Sewer system (if available)
- Municipal combined sewer system (if applicable).

Rowley has completed the following updates to its stormwater mapping to meet the Phase II requirements:

- Outfall spatial location
- Pipes

3.3 Additional Recommended Mapping Elements

Although not a requirement of the 2016 MS4 Permit, Rowley will make efforts to include the following recommended elements in its storm system mapping:

- Storm sewer material, size (pipe diameter), age
- Privately owned stormwater treatment structures
- Area where the permittee's MS4 has received or could receive flow from septic system discharges
- Seasonal high water table elevations impacting sanitary alignments
- Topography
- Orthophotography
- Alignments, dates and representation of work completed of past illicit discharge investigations
- Locations of suspected confirmed and corrected illicit discharges with dates and flow estimates.

4 Sanitary Sewer Overflows (SSOs)

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

Rowley discharges sanitary sewer waste to on-site disposal systems (septic systems) for all properties within the Town and regulated area. Therefore, Rowley has had no SSOs within the five (5) years prior to the effective date of the 2016 MS4 Permit, as noted in **Table 4-1**.

If this condition changes, Rowley will monitor, report and eliminate an SSO should one occur. Upon becoming aware of an SSO to the MS4, Rowley will provide oral notice to EPA within 24 hours and written notice to EPA and MassDEP within five (5) days of becoming aware of the SSO occurrence.

The inventory in **Table 4-1** will be updated by the Town when or if sanitary sewers are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

Table 4-1. SSO Inventory

Rowley, Massachusetts
Revision Date: June 30, 2019

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

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

5 Assessment and Priority Ranking of Outfalls

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

5.1 Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall[1] or interconnection.[2] The catchments for each of the MS4 outfalls will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As described in **Section 3**, initial catchment delineations will be completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations

5.2 Outfall and Interconnection Inventory and Initial Ranking

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

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

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

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

    - Olfactory or visual evidence of sewage,

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

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

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

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

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

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

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

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

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

- **Previous screening results** – previous screening/sampling results indicate likely sewer input (see criteria above for Problem Outfalls).

- **Past discharge complaints and reports.**

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

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

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

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

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

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

Table 5-1 provides a Rowley's initial outfall inventory and priority ranking matrix.

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Drinking Water Supply (Zone II)	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall)	Yes = 3	Frequent = 3	Poor = 3	High = 3	High = 3	Yes = 3	Yes = 3	Yes = 3	TBD		
		No = 0	No = 0	Occasional = 2	Fair = 2	Medium = 2	Medium = 2	No = 0	No = 0	No = 0			
				None = 0	Good = 0	Low = 1	Low = 1						
50	Parker River	0	0	0	3	1	1	0	3	0		8	High
51	Parker River	0	0	0	3	1	1	0	3	0		8	High
55	Mill River	0	0	0	3	1	1	0	3	0		8	High
58	Mill River	0	0	0	3	1	1	0	3	0		8	High
82	Mill River	0	3	0	3	1	1	0	0	0		8	High
106	Mill River	0	3	0	3	1	1	0	0	0		8	High
2512	Mill River	0	3	0	3	1	1	0	0	0		8	High
52	Mill River	0	0	0	3	1	1	0	0	0		5	High
53	Mill River	0	0	0	3	1	1	0	0	0		5	High
54	Mill River	0	0	0	3	1	1	0	0	0		5	High
56	Mill River	0	0	0	3	1	1	0	0	0		5	High
57	Mill River	0	0	0	3	1	1	0	0	0		5	High
59	Mill River	0	0	0	3	1	1	0	0	0		5	High
63	Mill River	0	0	0	3	1	1	0	0	0		5	High
64	Mill River	0	0	0	3	1	1	0	0	0		5	High
65	Mill River	0	0	0	3	1	1	0	0	0		5	High
66	Mill River	0	0	0	3	1	1	0	0	0		5	High
67	Mill River	0	0	0	3	1	1	0	0	0		5	High
68	Mill River	0	0	0	3	1	1	0	0	0		5	High
71	Mill River	0	0	0	3	1	1	0	0	0		5	High
83	Mill River	0	0	0	3	1	1	0	0	0		5	High
90	Hood Pond	0	3	0	0	1	1	0	0	0		5	Low
92	Mill River	0	0	0	3	1	1	0	0	0		5	High
93	Mill River	0	0	0	3	1	1	0	0	0		5	High
94	Mill River	0	0	0	3	1	1	0	0	0		5	High
104	Mill River	0	0	0	3	1	1	0	0	0		5	High
105	Mill River	0	0	0	0	1	1	0	3	0		5	Low
107	Mill River	0	0	0	3	1	1	0	0	0		5	High
2911	Mill River	0	0	0	3	1	1	0	0	0		5	High
2912	Mill River	0	0	0	3	1	1	0	0	0		5	High
45	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
47	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
60	Mill River	0	0	0	0	1	1	0	0	0		2	Low
61	Mill River	0	0	0	0	1	1	0	0	0		2	Low
62	Mill River	0	0	0	0	1	1	0	0	0		2	Low

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Drinking Water Supply (Zone II)	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall Inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
69	Mill River	0	0	0	0	1	1	0	0	0		2	Low
70	Mill River	0	0	0	0	1	1	0	0	0		2	Low
72	Mill River	0	0	0	0	1	1	0	0	0		2	Low
73	Mill River	0	0	0	0	1	1	0	0	0		2	Low
74	Mill River	0	0	0	0	1	1	0	0	0		2	Low
77	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
78	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
79	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
91	Muddy Brook	0	0	0	0	1	1	0	0	0		2	Low
95	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
96	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
97	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
98	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
99	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
100	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
101	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
102	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
111	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
511	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
512	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
911	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
1311	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
1711	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
2111	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low

Scoring Criteria:

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

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

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

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

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

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

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Drinking Water Supply (Zone II)	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall)	Yes = 3	Frequent = 3	Poor = 3	High = 3	High = 3	Yes = 3	Yes = 3	Yes = 3	TBD		
		No = 0	No = 0	Occasional = 2	Fair = 2	Medium = 2	Medium = 2	No = 0	No = 0	No = 0			
				None = 0	Good = 0	Low = 1	Low = 1						

[5] Age of development and infrastructure:

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

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

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

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

6 Dry Weather Outfall Screening and Sampling

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

6.1 Weather Conditions

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring. For purposes of determining dry weather conditions, program staff will use precipitation data from the Clark School Station (https://www.wunderground.com/weather/us/ma/rowley/01969). If this weather station is not available or not reporting current weather data, then the Beverly Municipal Airport Station (https://forecast.weather.gov/MapClick.php?lat=42.71601000000004&lon=-70.87871999999998#.XROviChYaUk) will be used as a back-up.

6.2 Dry Weather Screening/Sampling Procedure

6.2.1 General Procedure

The Town of Rowley intends to complete dry weather screening and sampling using the general procedure for inspection and sampling protocol outlined below. The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking
2. Acquire the necessary staff, mapping, and field equipment (see **Table 6-1** for list of potential field equipment)
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall
    b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device) (see form in **Appendix C**)
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in the following sections.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.

6. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

Previous outfall screening/sampling conducted under the 2013 MS4 Permit may be used to satisfy the dry weather outfall/screening requirements of the 2016 MS4 Permit only if the previous screening and sampling was substantially equivalent to that required by the 2016 MS4 Permit, including the list of analytes outlined in Section 2.3.4.7.b.iii.4 of the 2016 permit.

Dry weather standard operating procedures can be found is provided in **Appendix C**.

6.2.2 Field Equipment

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

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

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

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

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required permit parameters[3] listed in **Table 6-2**. The general procedure for collection of outfall samples is as follows:

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

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

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

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

Table 6-2. Sampling Parameters and Analysis Methods

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

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

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.[4] Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 6-3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

[4] 40 CFR § 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5

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

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

SM = Standard Methods

6.3 Interpreting Outfall Sampling Results

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

Table 6-4. Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria[5]: *E.coli* *Enterococcus*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 235 colonies per 100 ml *Enterococcus:* the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 33 colonies per 100 ml and no single sample taken during the bathing season shall exceed 61 colonies per 100 ml

6.4 Follow-up Ranking of Outfalls and Interconnections

Rowley will update and re-prioritize the initial outfall and interconnection rankings based on information gathered during dry weather screening. 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 (July 1, 2021).

Outfalls/interconnections where relevant information was found indicating sewer input to the MS4 or sampling results indicating sewer input are highly likely to contain illicit discharges from sanitary sources. Such outfalls/interconnections will be ranked at the top of the High Priority Outfalls category for investigation. Other outfalls and interconnections may be re-ranked based on any new information from the dry weather screening.

7 Catchment Investigations

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

[5] Massachusetts Water Quality Standards: http://www.mass.gov/eea/docs/dep/service/regulations/314cmr04.pdf

7.1 System Vulnerability Factors

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

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

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

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

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

Table 7-1. Outfall Catchment System Vulnerability Factor (SVF) Inventory

Rowley, Massachusetts
Revision Date:

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

Presence/Absence Evaluation Criteria:

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

7.2 Dry Weather Manhole Inspections

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

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

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

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

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

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

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

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

For most catchments, manhole inspections will proceed from the outfall moving up into the system. However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system, but may be more efficient if the sources of illicit discharges are believed to be located in the

upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes will proceed as follows:

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

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

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

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

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

7.3 Wet Weather Outfall Sampling

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

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

Wet weather outfall sampling will proceed as follows:

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

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

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

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

A wet weather standard operating procedure can be found is provided in **Appendix C**.

7.4 Source Isolation and Confirmation

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

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

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

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, the Highway Department will notify property owners in the affected area. Smoke testing notification will include either telephone calls, door hangers, or email notifications for single family homes, businesses and building lobbies for multi-family dwellings.

7.4.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours, and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

7.4.2 Smoke Testing

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

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

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

7.4.3 Dye Testing

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

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

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

7.4.4 CCTV/Video Inspection

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

7.4.5 Optical Brightener Monitoring

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

7.4.6 IDDE Canines

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

7.4.7 On-site Septic System Investigation

Three types of on-site investigations can be performed at individual properties to determine if the septic system is failing, including homeowner surveys, surface condition analysis and a detailed system inspection. The first two investigations are rapid and relatively simple assessments typically conducted in targeted watershed areas. A detailed system inspection are more thorough and investigate the function of the system by a certified professional.

7.4.7.1 Homeowner Survey

The homeowner survey consists of a brief interview with the property owner to determine the potential for current or future failure of the septic system. Some questions that may be asked during a survey include:

- How many people live in the house?
- What is the septic tank capacity?
- Do drains in the house empty slowly or not at all?
- When was the last time the system was inspected or maintained?
- Does sewage back up into the house through drain lines?
- Are there any wet, smelly spots in the yard?
- Is the septic tank effluent piped so it drains to a road ditch, a storm sewer, a stream, or is it connected to a farm drain tile?

7.4.7.2 Septic System Surface Condition Assessment

A surface condition assessment is when field crews look for obvious indicators that point to current or potential production of illicit discharges by the septic system. Some key surface conditions to look for include:

- Found odors in the yard
- Wet, spongy ground; lush plant growth; or burnt grass near the drain field
- Algal bloom or excessive weed growth in adjacent ditches, ponds and streams
- Shrubs or trees with root damage within 10 feet of the system
- Cars, boats or heavy equipment located over the drain field that could crush lateral pipes
- Storm water flowing over the drain field
- Cave-ins and exposed system components
- Visible liquid on the surface of the drain field
- Obvious system bypass (e.g., straight pipe discharge)

7.4.7.3 Detailed Septic System Investigation

The detailed system inspection is a much more thorough inspection of the performance and function of the septic system and must be completed by a certified professional. The inspector certifies the structural integrity of all components of the system and checks the depth of solids in the septic tank to determine if the system needs to be pumped out. The inspector also sketches the system, and estimates distance to groundwater, surface water, and drinking water sources.

Although not always incorporated into the inspection, dye testing can sometimes point to leaks from broken pipes, or direct discharges through straight pipes that might be missed during routine inspection. Dye can be introduced into plumbing fixtures in the home and flushed with enough running water. The inspector then watches the septic field, nearby ditches, watercourses and manholes for any signs of the dye. The dye may take several hours to appear, so crews may want to place charcoal packets in adjacent waters to capture dye until they can return later to retrieve them.

Infrared imagery is a special type of photography with gray or color scales that represent differences in temperature and emissivity of objects in the image and can be used to locate sewage discharges. Several different infrared imagery techniques can be used to identify illicit discharges including aerial infrared thermography and color infrared aerial photography.

Infrared thermography is increasingly being used to detect illicit discharges and failing septic systems. The technique uses the temperature difference of sewage as a marker to locate these illicit discharges. The equipment needed to conduct aerial infrared thermography includes an aircraft (plane or helicopter); a high-resolution, large format, infrared camera with appropriate mount; a GPS unit; and digital recording equipment. If a plane is used, a higher resolution camera is required since it must operate at higher altitudes. Pilots should be experienced since flights take place at night, slowly, and at a low altitude. The camera may be handheld, but a mounted camera will provide significantly clearer results for a larger area. The GPS can be combined with a mobile mapping program and a video encoder-decoder that encodes and displays the coordinates, date, and time. The infrared data are analyzed after the flight by trained analysts to locate suspected discharges, and field crews then inspect the ground-truthed sites to confirm the presence of a failing septic system.

Late fall, winter, and early spring are typically the best times of year to conduct these investigations in most regions of the country. This allows for a bigger difference between receiving water and discharge

temperatures, and interference from vegetation is minimized. In addition, flights should take place at night to minimize reflected and direct daylight solar radiation that may adversely affect the imagery.

Color infrared aerial photography looks for changes in plant growth, differences in soil moisture content, and the presence of standing water on the ground to primarily identify failing septic systems. Similar to thermography, it is recommended that flights take place at night, during leaf off conditions, or when the water table is at a seasonal high which is when most failures typically occur.

7.5 Illicit Discharge Removal

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

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

7.5.1 Confirmatory Outfall Screening

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

7.6 Ongoing Screening

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

8 Training

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

9 Progress Reporting

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

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

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

Appendix A

Legal Authority (IDDE Bylaw or Ordinance)

Town of Rowley
Massachusetts 01969
39 Central Street
P. O. Box 783

Board of Health **E-Mail** health@townofrowley.org **(978) 948 2231**
FAX (978) 948 7196

REGULATION PROHIBITING ILLICIT CONNECTIONS AND DISCHARGES TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

1. PURPOSE

The purpose of this regulation is to prohibit illicit connections and non-stormwater discharges to the Town of Rowley's Municipal Separate Storm Sewer System (MS4). Non-stormwater discharges to the MS4 contain contaminants and supply additional flows which are major causes of

a. impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands, and groundwater;
b. contamination of drinking water supplies;
c. alteration or destruction of aquatic and wildlife habitat; and
d. flooding.

Regulation of illicit connections and discharges to the MS4 is necessary for the protection of the Town of Rowley's water bodies and groundwater, and to safeguard the public health, safety, welfare, and the environment.

The objectives of this regulation are:

a. to prevent pollutants from entering the MS4;
b. to prohibit illicit connections and unauthorized discharges to the MS4;
c. to remove all such illicit connections and discharges;
d. to comply with state and federal statutes and regulations relating to stormwater discharges;
e. to establish the legal authority to ensure compliance with the provisions of this regulation through proper inspection, monitoring, and enforcement; and
f. to prevent contamination of drinking water supplies.

2. AUTHORITY

This regulation is adopted pursuant to Sections 31 and 127 of Chapter 111 of the Massachusetts General Laws as amended, and the regulations of the Federal Clean Water Act found at 40 CFR 122.34. The Rowley Board of Health shall administer, implement, and enforce this regulation. Any powers granted to or duties imposed upon the Board may be delegated by the Board to its

employees or agents. The Board of Health may promulgate rules and regulations to effectuate the purposes of this regulation. Failure by the Board of Health to promulgate such rules and regulations shall not have the effect of suspending or invalidating this regulation.

3. DEFINITIONS

For the purposes of this regulation, the following definitions and provisions shall apply:

a. **Authorized Enforcement Agency** — The Board of Health, its employees or agents designated to enforce this regulation.
b. **Best Management Practice (BMP)** — An activity, procedure, restraint, or structural improvement that helps reduce the quantity or improve the quality of stormwater runoff
c. **Clean Water Act** — The Federal Water Pollution Control Act (33 U.S.C. section 1251 *et seq.)* and as hereafter amended.
d. **Discharge of Pollutants** — The addition from any source of any pollutant or combination of pollutants into the MS4 or into waters of the United States or Commonwealth of Massachusetts from any source.
e. **Groundwater** — Water beneath the surface of the ground.
f. **Illicit Connection** — A surface or subsurface drain or conveyance which allows an illicit discharge into the MS4, including without limitation: sewage, process wastewater or wash water, and any connections from indoor drains, sinks, or toilets regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this regulation.
g. **Illicit Discharge** — Direct or indirect discharge to the MS4 that is not composed entirely of stormwater, except as specifically exempted in Section 7 of this regulation. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or resulting from fire-fighting activities or municipal ice and snow control operations.
h. **Impervious Surface** — Any material or structure on or above the ground that prevents water from infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.
i. **Municipal Separate Storm Sewer System (MS4)** — The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned and/or operated by the Town of Rowley.
j. **National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit** — A permit issued by the U.S. Environmental Protection Agency or jointly with the State of Massachusetts that authorizes the discharge of pollutants to waters of the United States or Commonwealth.
k. **Non-Stormwater Discharge** — A discharge to the MS4 not comprised entirely of stormwater.
l. **Person** — An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.
m. **Pollutant** — Any element or property of sewage, residential, agricultural, industrial, or commercial waste, runoff; leachate, heated effluent, or other matter whether originating at a point or non-point source, that is or may be introduced into any storm drainage system or waters of the United States and/or Commonwealth. Pollutants shall include without limitation:

1) paints, varnishes, solvents;
2) oil, grease, antifreeze, other automotive fluids and/or products;
3) non-hazardous liquid and solid wastes;
4) refuse, garbage, litter, rubbish, yard wastes, or other discarded or abandoned objects, ordnances, accumulations, or floatables;
5) pesticides, herbicides, and fertilizers;
6) hazardous materials and wastes;
7) sewage;
8) dissolved and particulate metals;
9) metal objects or materials;
10) animal wastes;
11) rock, sand, salt, soils; and
12) construction wastes and/or residues.

n. **Process Wastewater** — Water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any material, intermediate product, finished product, or waste product.

o. **Recharge** — The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil.

p. **Stormwater** — Runoff from precipitation or snowmelt.

q. **Toxic or Hazardous Material or Waste** — Any material, which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare or to the environment. Toxic or hazardous materials include without limitation:

1) any synthetic organic chemical;
2) petroleum products;
3) heavy metals;
4) radioactive or infectious waste;
5) acid and alkali substances;
6) any substance defined as Toxic or Hazardous under M.G.L. Ch. 21C and Ch. 21E, and the regulations at 310 CMR 30000 and 310 CMR 40.000; and
7) Any substance listed as hazardous under 40 CFR 261.

r. **Watercourse** — A natural or man-made channel through which water flows or a stream of water, including a river, brook or underground stream.

s. **Waters of the Commonwealth** — All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater.

t. **Wastewater** — Any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning, or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

4. APPLICABILITY

This regulation shall apply to flows entering the municipally owned and/or operated storm drainage

system (MS4).

5. PROHIBITED ACTIVITIES

The following activities are prohibited:

Illicit Connections — No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system (MS4), regardless of whether the connection was permissible under applicable law, regulation, or custom at the time of connection.

Illicit Discharges — No person shall dump, discharge, cause, or allow to be discharged any pollutant or non-stormwater discharge into the municipal storm drainage system (MS4), into a watercourse, or into waters of the United States and/or Commonwealth.

Obstruction of the MS4 — No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drainage system (M54) without prior written approval from the Board of Health.

6. EXEMPTIONS

Discharges or flows resulting from fire-fighting activities and Highway Department ice and snow control operations are exempt. In addition, the following non-stormwater discharges or flows are exempt provided that the source is not a significant contributor of pollution to the municipal storm drainage system (MS4):

a. waterline flushing;
b. flow from potable water sources;
c. springs;
d. natural flow from riparian habitats and wetlands;
e. diverted stream flow;
f. rising groundwater;
g. uncontaminated groundwater infiltration as defined in 40 CFR 35.2005(20), or uncontaminated pumped groundwater;
h. water from exterior foundation drains, footing drains (not including active groundwater dewatering systems, such as dewatering excavations for foundations or pipelines), crawl space pumps, or air conditioning condensation;
i. discharge from landscape irrigation or lawn watering;
j. water from individual residential car washing;
k. discharge from dechlorinated swimming pool water (less than one part per million chlorine) provided the water is allowed to stand for one week prior to draining and the pool is drained in such a way as to not cause a nuisance;
l. discharge of water from street sweepers;
m. dye testing, provided verbal notification is given to the Board of Health prior to the time of the test;
n. non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the U.S. Environmental Protection Agency, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and

o. discharge for which advanced written approval is received from the Board of Health as necessary to protect public health, safety, welfare, and the environment.

7. EMERGENCY SUSPENSION OF MUNICIPAL STORM DRAINAGE SYSTEM (MS4) ACCESS

a. The Board of Health may suspend access to the municipal storm drainage system (MS4) to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened illegal discharge that presents or may present imminent risk of harm to the public health, safety, welfare, or the environment. In the event any person fails to comply with an emergency suspension order, the Board of Health may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

b. Any person discharging to the municipal storm drainage system (MS4) in violation of this regulation may have his/her access to the storm drainage system terminated if such termination would abate or reduce an illicit discharge. The Board of Health shall notify a violator of the proposed termination of storm drainage system access. The violator may petition the Board of Health for reconsideration and a hearing. A person commits an offense if he/she reinstates access to the storm drainage system without prior written approval from the Board of Health.

8. NOTIFICATION OF SPILLS

Notwithstanding any other requirements of local, state, or federal law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials at that facility or operation which is resulting or may result in illegal discharge of pollutants, that person shall take all necessary steps to ensure containment and cleanup of the release, In the event of a release of oil or hazardous materials, the person shall immediately notify the Rowley Fire and Police Departments, the Highway Department, and the Board of Health. In the event of a release of non-hazardous material, said person shall notify the Board of Health no later than the next business day. Written confirmation of all telephone, facsimile, or in-person notifications shall be provided to the Board of Health within three (3) business days thereafter. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for period of at least three (3) years.

9. ENFORCEMENT

a. Board of Health

The Board of Health or its authorized agent shall enforce this regulation and any rules and regulations promulgated thereunder, as well as the terms and conditions of all permits, notices, and orders, and may pursue all civil and criminal remedies for violations of the regulation.

b. Civil Relief

If anyone violates the provisions of this regulation or any rule, regulation, permit, notice, or order issued thereunder, the Board of Health may seek injunctive relief in a court of competent jurisdiction to restrain the person from activities which would create further violations or compelling the person to abate or remediate the violation.

c. Orders

The Board of Health may issue a written order to enforce the provisions of this regulation and any rules and regulations thereunder, which may include: (1) elimination of illicit connections or discharges to the municipal storm drainage system; (2) termination of access to the storm drainage system; (3) performance of monitoring, analyses, and reporting; (4) cessation of unlawful discharges, practices, or operations; and (5) remediation of contamination in connection therewith. If the Board of Health determines that abatement or remediation of contamination is required, the order shall set forth a deadline for completion of the abatement or remediation. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town of Rowley may, at its option, undertake such work, and expenses thereof shall be charged to the violator or property owner.

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

d. Criminal and Civil Penalties

Any person who violates any provision of this bylaw, regulation, or the terms or conditions in any permit or order prescribed or issued thereunder, shall be subject to a fine not to exceed $300 for each day such violation occurs or continues, or to a civil penalty, which may be assessed in an action brought on behalf of the Town in any court of competent jurisdiction.

e. Non-Criminal Disposition

As an alternative to criminal prosecution or civil action, the Town of Rowley may elect to utilize the non-criminal disposition procedure set forth in M.G.L. Chapter 40, Section 21D. The Board of Health shall be the enforcing entity. The penalty for the 1st violation shall be up to $100. The penalty for the 2nd violation shall be up to $200. The penalty for the 3rd and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

f. Entry to Perform Duties under this Bylaw

To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Board of Health, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this regulation and may make or cause to be made such examinations, surveys, or sampling as the Board of Health deems reasonably necessary.

g. Appeals

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

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

10. SEVERABILITY

The provisions of this regulation are hereby declared to be severable. If any provision, paragraph, sentence, or clause of this regulation shall be held invalid for any reason, all other provisions shall continue in full force and effect.

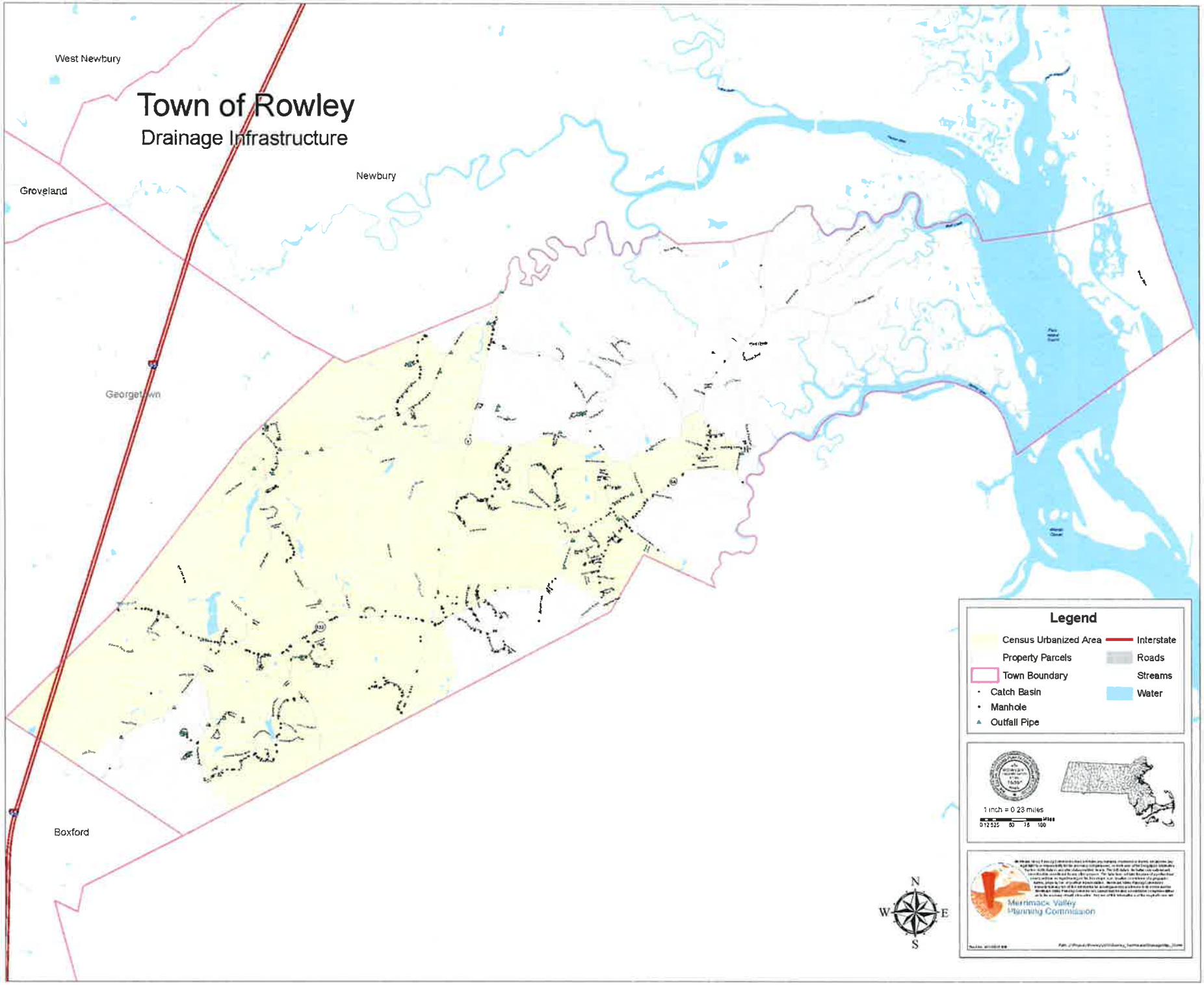
11. TRANSITIONAL PROVISIONS

Residential property owners shall comply with this regulation on a schedule set forth in the Board of Health compliance order, but such property owners shall in no case have more than six (6) months from the effective date of the regulation to comply with its provisions, unless good cause is shown for the failure to comply with the regulation during that period.

Per vote of the Rowley Board of Health on January 7, 2008
These regulations shall take effect on February 1, 2008

Appendix B

Storm System Mapping


West Newbury
Town of Rowley
Drainage Infrastructure
Groveland
Newbury
Georgetown
Boxford
Legend
Census Urbanized Area
Property Parcels
Town Boundary
Catch Basin
Manhole
Outfall Pipe
Interstate
Roads
Streams
Water
1 inch = 0.23 miles
N
W
E
S
Merrimack Valley
Planning Commission

Appendix C

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

Appendix D

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

DRY WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Under current and pending regulations, it is important to inspect and document water quality from these outfalls under both dry weather and wet weather conditions. SOP "Wet Weather Outfall Inspection", covers the objectives of that type of inspection. This SOP discusses the dry weather inspection objectives, and how they differ from wet weather inspection objectives.

During a dry weather period, it is anticipated that minimal flow from stormwater outfalls will be observed. Therefore, dry weather inspections aim to characterize any/all flow observed during a dry weather period and identify potential source(s) of an illicit discharge through qualitative testing; further described in SOP "Water Quality Screening in the Field".

Objectives of Dry Weather Inspections

A dry weather period is a time interval during which less than 0.1 inch of rain is observed across a minimum of 72 hours. Unlike wet weather sampling, dry weather inspections are not intended to capture a "first flush" of stormwater discharge, rather they are intended to identify any/all discharges from a stormwater outfall during a period without recorded rainfall. The objective of inspections during a dry weather period is to characterize observed discharges and facilitate detection of illicit discharges.

Visual Condition Assessment

The attached Dry Weather Outfall Inspection Survey is a tool to assist in documenting observations related to the both quantitative and qualitative characteristics of any/all flows conveyed by the structure during a dry period.

For any visual observation discharge from a stormwater outfall, an investigation into the pollution source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: Indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a number of small patches of sheen. The cause may be presence of iron, decomposition of organic material or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Additional guidelines for illicit discharge investigations are included in SOP 10, "Locating Illicit Discharges". If dry weather flow is present at the outfall, and the flow does not appear to be an obvious illicit discharge (e.g. flow is clear, odorless, etc.) attempt to identify the source of flow (e.g. intermittent stream, wetlands drainage, etc.) and document the discharge for future comparison.

Although many of the observations are indicators of illicit discharge it should be noted that several of these indicators may also occur naturally. Orange staining may be the result of naturally occurring iron, and thus unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and fire fighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Optical enhancers, fluorescent dyes added to laundry detergent, are typically detected through the use of clean, white cotton pads placed within the discharge for several days, dried then viewed under a UV light. If the cotton pad displays fluorescent patches, optical enhancers are present. Optical enhancers are occasionally visible as a bluish-purple haze on the water surface; however the testing method should be used to confirm the presence of optical enhancers.

The Dry Weather Outfall Inspection Survey includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter

by marking "Yes". If "Yes" is marked, provide additional details in the comments section. If the indictor in question is not present, mark "No".

Within the comments section, provide additional information with regard to recorded precipitation totals, or more detailed descriptions of observations made during the inspection and corrective actions taken.

Measuring Water Quality

Based on the results of the Visual Condition Assessment, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits and instrumentation, or by discrete analytical samples processed by a laboratory.

Information on selecting and using field test kits and instrumentation is included in SOP 13, "Water Quality Screening in the Field." The Inspection Survey also provides values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated in the field.

If the results of screening using field test kits indicate that the outfall's water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations, but shall follow test procedures outlined in 40 CFR 136. A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for dry weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.

9. Slowly lower the bottle into the water to avoid bottom disturbance and stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.
12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the time and location.
14. Document on the Wet Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be sent or delivered to a MassDEP-approved laboratory for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent contaminate degradation between sampling and analysis, and should be completed in accordance with 40 CFR 136.3.

Maximum acceptable holding times are also specified for each analytical method in 40 CFR 136.3. Holding time is defined as the period of time between sample collection and extraction for analysis of the sample at the laboratory. Holding time is important because prompt laboratory analysis allows the laboratory to review the data and if analytical problems are found, re-analyze the affected samples within the holding times.

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be completed by the field sampling personnel for each sample submitted to the lab for analysis. The document must be signed by both the person releasing the sample and the person receiving the sample every time the sample changes hands. The sampling personnel shall keep one copy of the form and send the remaining copies to the laboratory with the samples. Custody seals, which are dated, signed and affixed to the sample container, may be used if the samples are shipped in a cooler via courier or commercial overnight shipping.

Attachments

1. Dry Weather Outfall Inspection Survey

Related Standard Operating Procedures

1. Wet Weather Outfall Inspection
2. Locating Illicit Discharges
3. Water Quality Screening in the Field

WET WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Under current and pending regulations, it is important to inspect and document water quality from these outfalls under both dry weather and wet weather conditions. SOP "Dry Weather Outfall Inspection", covers the objectives of that type of inspection. This SOP discusses wet weather inspection objectives and how they differ from dry weather inspection objectives. The primary difference is that wet weather inspection aims to describe and evaluate the first flush of stormwater discharged from an outfall during a storm, representing the maximum pollutant load managed by receiving water.

Definition of Wet Weather

A storm is considered a representative wet weather event if greater than 0.1 inch of rain falls and occurs at least 72 hours after the previously measurable (greater than 0.1 inch of rainfall) storm event. In some watersheds, based on the amount of impervious surface present, increased discharge from an outfall may not result from 0.1 inch of rain. An understanding of how outfalls respond to different events will develop as the inspection process proceeds over several months, allowing the inspectors to refine an approach for inspections.

Ideally, the evaluation and any samples collected should occur within the first 30 minutes of discharge to reflect the first flush or maximum pollutant load.

Typical practice is to prepare for a wet weather inspection event when weather forecasts show a 40% chance of rain or greater. If the inspector intends to collect analytical samples, coordination with the laboratory for bottleware and for sample drop-off needs to occur in advance.

Visual Condition Assessment

The attached Wet Weather Outfall Inspection Survey should be used to document observations related to the quality of stormwater conveyed by the structure. Observations such as the following can indicate sources of pollution within the storm drain system:

- Oil sheen
- Discoloration
- Trash and debris

For any visual observation of pollution in a stormwater outfall discharge, an investigation into the pollution source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.

3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: Indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator or disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Additional guidelines for illicit discharge investigations are included in SOP 10, "Locating Illicit Discharges".

Although many of the observations are indicators of illicit discharge it should be noted that several of these indicators may also occur naturally. Orange staining may be the result of naturally occurring iron, and thus unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and fire fighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a number of small patches of sheen. The cause may be presence of iron, decomposition of organic material or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Optical enhancers, fluorescent dyes added to laundry detergent, are typically detected through the use of clean, white cotton pads placed within the discharge for several days, dried then viewed under a UV light. If the cotton pad displays fluorescent patches, optical enhancers are present. Optical enhancers are occasionally visible as a bluish-purple haze on the water surface; however the testing method should be used to confirm the presence of optical enhancers.

The Wet Weather Outfall Inspection Survey includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter by marking "Yes". If "Yes" is marked, provide additional details in the comments section. If the indictor in question is not present mark "No".

Within the comments section, provide additional information with regard to recorded precipitation totals, or more detailed descriptions of observations made during the inspection and corrective actions taken.

Measuring Water Quality

Based on the results of the Visual Condition Assessment, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits or by discrete analytical samples processed by a laboratory.

Information on how to use field test kits is included in SOP 13, "Water Quality Screening with Field Test Kits", and the Wet Weather Outfall Inspection Survey includes fields to document the results of such screening. The Inspection Survey also provides values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated with field test kits.

If the results of screening using field test kits indicate that the outfall's water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations but shall follow test procedures outlined in 40 CFR 136. A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for wet weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.

8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Slowly lower the bottle into the water to avoid bottom disturbance and stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.
12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the time and location.
14. Document on the Wet Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be sent or delivered to a MassDEP-approved laboratory for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent contaminant degradation between sampling and analysis and should be completed in accordance with 40 CFR 136.3.

Maximum acceptable holding times are also specified for each analytical method in 40 CFR 136.3. Holding time is defined as the period of time between sample collection and extraction for analysis of the sample at the laboratory. Holding time is important because prompt laboratory analysis allows the laboratory to review the data and if analytical problems are found, re-analyze the affected samples within the holding times.

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be completed by the field sampling personnel for each sample submitted to the lab for analysis. The document must be signed by both the person releasing the sample and the person receiving the sample every time the sample changes hands. The sampling personnel shall keep one copy of the form and send the remaining copies to the laboratory with the samples. Custody seals, which are dated, signed and affixed to the sample container, may be used if the samples are shipped in a cooler via courier or commercial overnight shipping.

Attachments

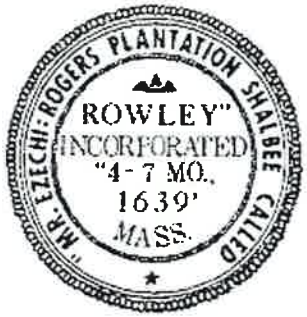
1. Wet Weather Outfall Inspection Survey

Related Standard Operating Procedures

1. Dry Weather Outfall Inspection
2. Locating Illicit Discharges
3. Water Quality Screening in the Field

Appendix E

IDDE Employee Training Record



Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Rowley, Massachusetts

Date of Training: _____

Duration of Training: _____

Name	Title	Signature

Appendix F

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

LOCATING ILLICIT DISCHARGES

Introduction

An "illicit discharge" is any discharge to an engineered storm drain system that is not composed entirely of stormwater unless the discharge is defined as an allowable non-stormwater discharge under the 2003 Massachusetts MS4 Permit. Illicit discharges may enter the engineered storm drain system through direct or indirect connections, such as: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to receiving streams.

Illicit discharges can be located by several methods, including routine dry weather outfall inspections and catch basin inspections, which are described in detail in SOP "Dry Weather Outfall Inspection" and SOP "Catch Basin Inspection and Cleaning", respectively, as well as from citizen reports.

This SOP assumes that the municipality has legal authority (i.e., a bylaw or ordinance) in place, per the requirements of the 2003 Massachusetts MS4 Permit, to prohibit the connection of non-stormwater discharges into the storm drain system. The authority or department for addressing illicit discharge reports would be clearly identified in the municipality's legal authority. In Massachusetts, this is typically a combination of the Board of Health, Highway Department, and the local sanitary sewer department or commission. In some communities, the Conservation Commission may also play a role. This SOP refers to "appropriate authority" generically to reflect differences in how municipalities have identified these roles.

Identifying Illicit Discharges

The following are often indicators of an illicit discharge from stormwater outfall:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: Indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicator of the cross-connection of a sewer service.
7. Orange staining: indicator of high mineral concentrations.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial sheen is not a pollutant but should be noted.

Citizen Call in Reports

Reports by residents and other users of a water body can be effective tools in identifying the presence of illicit discharges. Many communities have set up phone hotlines for this purpose, or have provided guidance to local police departments and dispatch centers to manage data reported in this manner. Municipal employees and the general public should receive education to help identify the signs of illicit discharges and should be informed how to report such incidents.

When a call is received about a suspected illicit discharge, the attached IDDE Incident Tracking Sheet shall be used to document appropriate information. Subsequent steps for taking action to trace, document, and eliminate the illicit discharge are described in the following sections.

Potential illicit discharges reported by citizens should be reviewed on an annual basis to locate patterns of illicit discharges, identify high-priority catchments, and evaluate the call-in inspection program.

Tracing Illicit Discharges

Whenever an illicit discharge is suspected, regardless of how it was identified, the attached IDDE Incident Tracking Sheet should be utilized. The Incident Tracking Sheet shall be provided to the appropriate authority (i.e., Board of Health, Department of Public Works, etc.), which shall promptly investigate the reported incident.

If the presence of an illicit discharge is confirmed by the authority, but its source is unidentified, additional procedures to determine the source of the illicit discharge should be completed.

1. Review and consider information collected when illicit discharge was initially identified, for example, the time of day and the weather conditions for the previous 72 hours. Also consider and review past reports or investigations of similar illicit discharges in the area.
2. Obtain storm drain mapping for the area of the reported illicit discharge. If possible, use a tracking system that can be linked to your system map, such as GIS.
3. Document current conditions at the location of the observed illicit discharge point, including odors, water appearance, estimated flow, presence of floatables, and other pertinent information. Photograph relevant evidence.
4. If there continues to be evidence of the illicit discharge, collect water quality data using the methods described in SOP "Water Quality Screening in the Field". This may include using field test kits or instrumentation, or collecting analytical samples for full laboratory analysis.
5. Move upstream from the point of observation to identify the source of the discharge, using the system mapping to determine infrastructure, tributary pipes, and drainage areas that contribute. At each point, survey the general area and surrounding properties to identify potential sources of the illicit discharge. Document observations at each point on the IDDE Incident Tracking Sheet as well as with photographs.
6. Continue this process until the illicit discharge is no longer observed, which will define the boundaries of the likely source. For example if the illicit discharge is present in catch basin 137 but not the next upstream catch basin, 138, the source of the illicit discharge is between these two structures.

If the source of the illicit discharge could not be determined by this survey, consider using dye testing, smoke testing, or closed-circuit television inspection (CCTV) to locate the illicit discharge.

Dye Testing

Dye testing is used to confirm a suspected illicit connection to a storm drain system. Prior to testing, permission to access the site should be obtained. Dye is discharged into the suspected fixture, and nearby storm drain structures and sanitary sewer manholes observed for presence of the dye. Each fixture, such as sinks, toilets, and sump pumps, should be tested separately. A third-party contractor may be required to perform this testing activity.

Smoke Testing

Smoke testing is a useful method of locating the source of illicit discharges when there is no obvious potential source. Smoke testing is an appropriate tracing technique for short sections of pipe and for pipes with small diameters. Smoke added to the storm drain system will emerge in connected locations. A third-party contractor may be required to perform this testing activity.

Closed Circuit Television Inspection (CCTV)

Televised video inspection can be used to locate illicit connections and infiltration from sanitary sewers. In CCTV, cameras are used to record the interior of the storm drain pipes. They can be manually pushed with a stiff cable or guided remotely on treads or wheels. A third-party contractor may be required to perform this testing activity.

If the source is located, follow steps for removing the illicit discharge. Document repairs, new sanitary sewer connections, and other corrective actions required to accomplish this objective. If the source still cannot be located, add the pipe segment to a future inspection program.

This process is demonstrated visually on the last page of this SOP.

Removing Illicit Discharges

Proper removal of an illicit discharge will ensure it does not recur. Refer to Table SOP 10-1, attached for, for examples of the notification process.

In any scenario, conduct a follow up inspection to confirm that the illicit discharge has been removed. Suspend access to the storm drain system if an "imminent and substantial danger" exists or if there is a threat of serious physical harm to humans or the environment.

Attachments

1. Illicit Discharge Incident Tracking Sheet

Related Standard Operating Procedures

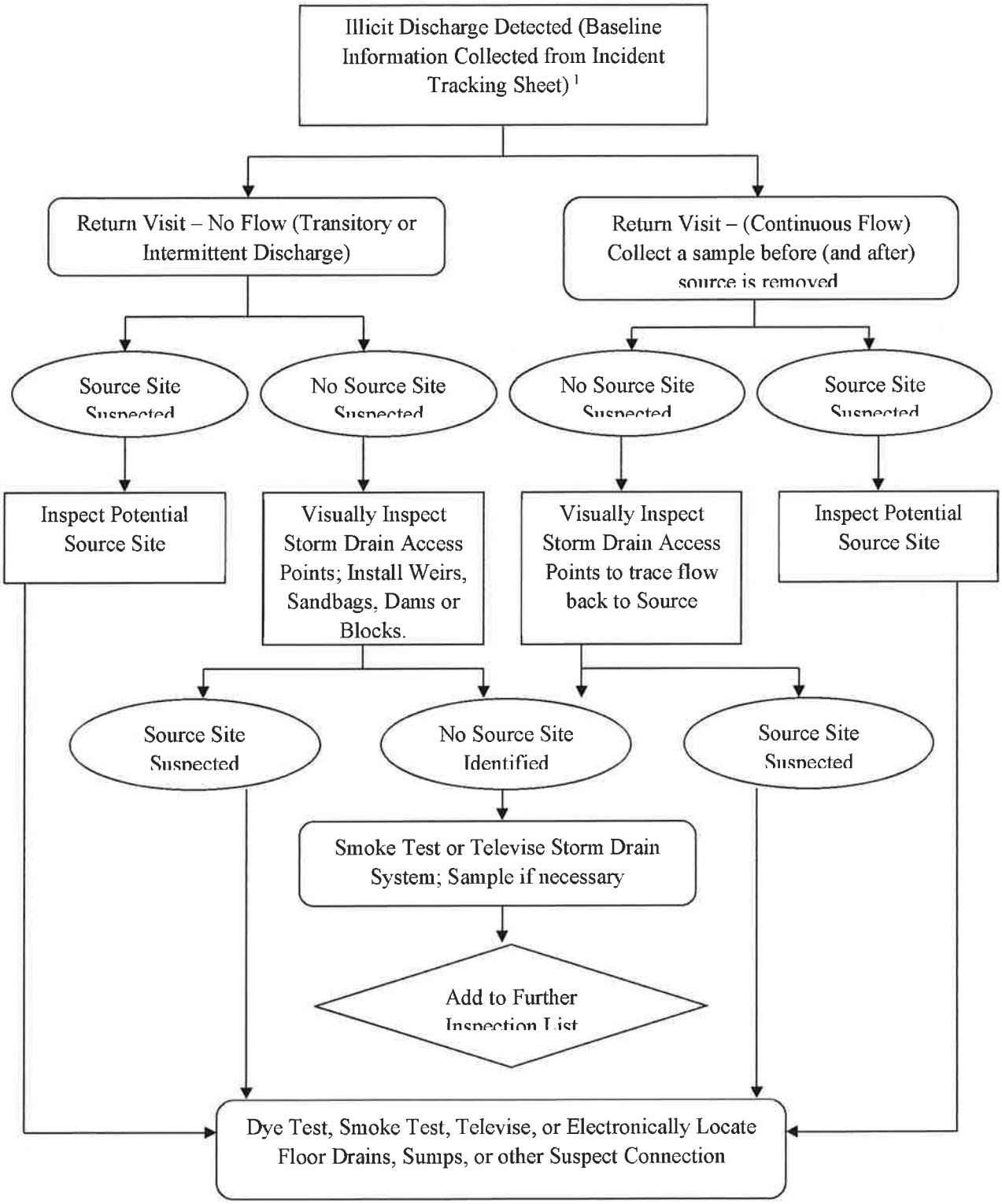
1. SOP Dry Weather Outfall Inspection

2. SOP Wet Weather Outfall Inspection
3. SOP Catch Basin Inspection
4. SOP Using Field Test Kits For Outfall Screening
5. SOP Private Drainage Connections

Table SOP 10-1

Notification and Removal Procedures for Illicit Discharges into the Municipal Separate Storm Sewer System

Financially Responsible	Source Identified	Enforcement Authority	Procedure to Follow
Private Property Owner	One-time illicit discharge (e.g. spill, dumping, etc.)	Ordinance enforcement authority (e.g. Code Enforcement Officer)	• Contact Owner • Issue Notice of Violation • Issue fine
Private Property Owner	Intermittent or continuous illicit discharge from legal connection	Ordinance enforcement authority (e.g. Code Enforcement Officer)	• Contact Owner • Issue Notice of Violation • Determine schedule for removal • Confirm removal
Private Property Owner	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g. infiltration or failed septic)	Plumbing Inspector or ordinance enforcement authority	• Notify plumbing inspector
Municipal	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g. failed sewer line)	Ordinance enforcement authority (e.g. Code Enforcement Officer)	• Issue work order • Schedule removal • Remove connection • Confirm removal
Exempt 3rd Party	Any	USEPA	• Notify exempt third party and USEPA of illicit discharge


Illicit Discharge Detected (Baseline Information Collected from Incident Tracking Sheet) [1]
Return Visit – No Flow (Transitory or Intermittent Discharge)
Return Visit – (Continuous Flow) Collect a sample before (and after) source is removed
Source Site Suspected
No Source Site Suspected
No Source Site Suspected
Source Site Suspected
Inspect Potential Source Site
Visually Inspect Storm Drain Access Points; Install Weirs, Sandbags, Dams or Blocks.
Visually Inspect Storm Drain Access Points to trace flow back to Source
Inspect Potential Source Site
Source Site Suspected
No Source Site Identified
Source Site Suspected
Smoke Test or Televise Storm Drain System; Sample if necessary
Add to Further Inspection List
Dye Test, Smoke Test, Televise, or Electronically Locate Floor Drains, Sumps, or other Suspect Connection

[1] – *Guidelines and Standard Operating Procedures: Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire,* New Hampshire Estuary Project, 2006, p. 25, Figure 2-1.

PRIVATE DRAINAGE CONNECTIONS

Introduction

The 2003 Massachusetts MS4 Permit described a number of non-stormwater discharges to the engineered storm drain system that are considered "allowable", as long as an individual community has not prohibited the discharge. Allowable non-stormwater discharges to the storm drain system can include the following, per Page 8 of the 2003 Massachusetts MS4 Permit (not inclusive):

- Diverted stream flows;
- Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(20));
- Uncontaminated pumped groundwater;
- Foundation drains;
- Water from crawl space pumps;
- Footing drains; and
- Flows from riparian habitats and wetlands.

The municipalities regulated under the 2003 Massachusetts MS4 Permit have approved connection of the above sources to engineered storm drain systems in a variety of ways, ranging from full acceptance to full prohibition of discharges from these sources.

This Standard Operating Procedure intends to provide guidance to the municipalities on how to evaluate non-stormwater discharges to the engineered storm drain system from private connections such as foundation drains (also referred to as perimeter drains), footing drains (similar to foundation drains), non-pumped groundwater infiltration, and other private non-stormwater discharges. Discharges from sump pumps or other pumped groundwater sources are being addressed by a separate Sump Pump Discharge Policy, and are not covered by this Standard Operating Procedure.

Applicability of Private Drainage Connections

Connections of private drainage to the municipal storm drain system generate two primary concerns. The first concern is the potential for pollution from the connection, such as if subsurface contamination or septic system waste is conveyed via drainage from a foundation drain to the stormwater outfall. The second concern is that system capacity can be reduced because of pipe space occupied by flow from private sources. This results in a decreased capacity for the system to convey stormwater during wet weather events, increasing pipe surcharging and the potential for localized street flooding.

For both of these reasons, this SOP is not intended to encourage connections of private drainage to the engineered storm drain system. Instead, this SOP is to be used as guidance for connecting private drainage in scenarios where property damage may result, where discharge of water to the ground surface would result in a public hazard or nuisance, and where there is no other reasonable alternative for discharge of stormwater from the private property.

The connection of private drainage cannot be used for the discharge of non-stormwater from the site.

Requirements for Connection of Private Drainage

A community may consider connection of private drainage to the engineered storm drain system if all of the following conditions are met.

1. The owner of the private drainage (hereafter referred to as the applicant) accepts responsibility for securing all other permits or approvals for the completion of the work, including any right-of-way process required by the municipality.
2. The applicant agrees to submit plans for review by the municipality, showing the location of all proposed work.
3. The applicant agrees to pay for all costs associated with the completion of the work, including but not limited to the costs of land survey, legal reviews, testing, permitting, construction, engineering design, and traffic control.
4. The applicant agrees to compensate the municipality for the time of its Town Engineer, Code Enforcement Officer, water department (or quasi-municipal water district), consulting engineer, and/or other official, as required, for their review of the proposed connection plans.
5. The applicant agrees to perform flow metering to determine the volume of discharge that would enter the municipal system from the property.
6. The applicant agrees to have dye and/or smoke testing performed to confirm that no prohibited fixtures would be connected to the municipal system from the property (i.e., to document that the connection would not represent an illicit discharge).
7. The applicant agrees to use the same materials specified by the municipality for construction of the system, and provide a materials list to the municipality for review and approval in advance of construction. If any pump is to be utilized to convey the drainage, cut sheets on the selected pump shall be provided to the municipality for review and approval in advance of construction.
8. The applicant's contractor agrees to secure all road opening permits, drainlayer permits, and other construction permits as required by the municipality.
9. The applicant's discharge is in close proximity to the municipal system, for example, within 300 linear feet, and the connection to the municipal system can be completed without impacting other private property or municipal infrastructure and without significant impact to aboveground assets. Aboveground assets may include trees, fences, stone walls, utility poles, gardens, signs, or other semi-permanent features.
10. The applicant agrees to execute a covenant for the property to reflect the drainage connection, and record this covenant with the Registry of Deeds for the property.
11. The applicant agrees to install a backflow preventer, cleanout, and a shutoff device in such places that all fittings are accessible to the municipality.
12. The applicant agrees to install an oil/water separator, if required by the municipality, and provide documentation of maintenance of this device.
13. The applicant agrees to complete confirmation analytical testing of the discharge, with pollutants and laboratory specified by the municipality. This testing may occur during the initial evaluation phase, and may be required annually or on some other frequency to demonstrate ongoing compliance.

14. The applicant agrees to provide record drawings to the municipality documenting the location of the discharge, with ties to permanent structures.
15. The applicant agrees to pay any annual review or inspection fees associated with the discharge.

Right of Refusal for New Connections of Private Drainage

The municipality shall reserve the right to refuse connection of the private drainage to the engineered storm drain system if any of the following can be demonstrated:

1. The municipal system does not have adequate capacity to manage proposed flow from the connection.
2. The private drainage includes flow from municipal users or sources.
3. The stormwater outfall that manages flow from the applicant's property discharges to a water body identified as impaired in the most current version of the Integrated List of Waters (i.e., the 303(d) list) or is subject to stringent local controls.
4. The connection would be located within 100 linear feet of a subsurface wastewater disposal system (i.e., septic system).
5. The connection would be located within a public drinking water supply Zone I.
6. The connection would be located within a public drinking water supply Zone II, and the municipality's water department (or quasi-municipal water district) has not approved of the connection in writing.
7. Flow conveyed by the discharge would create a safety hazard such as ponding or freezing to vehicular, pedestrian, bicycle or other transportation, or would create erosion or the potential for erosion.
8. The connection jeopardizes public health, safety, or natural resources.
9. The the connection fails to meet the terms and conditions of this SOP.

Existing Connections of Private Drainage

Existing private connections are considered to be a grandfathered, as long as they are used only for discharge of non-stormwater discharges allowed by the 2003 Massachusetts MS4 Permit. Any modification made to any grandfathered connection shall be subject to the conditions in this SOP.

The municipality may revoke grandfathered approval if the municipality determines that any of the nine conditions under "Right of Refusal for New Connections of Private Drainage" become applicable.

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Drinking Water Supply (Zone II)	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall)	Yes = 3	Frequent = 3	Poor = 3	High = 3	High = 3	Yes = 3	Yes = 3	Yes = 3	TBD		
		No = 0	No = 0	Occasional = 2	Fair = 2	Medium = 2	Medium = 2	No = 0	No = 0	No = 0			
				None = 0	Good = 0	Low = 1	Low = 1						
50	Parker River	0	0	0	3	1	1	0	3	0		8	High
51	Parker River	0	0	0	3	1	1	0	3	0		8	High
55	Mill River	0	0	0	3	1	1	0	3	0		8	High
58	Mill River	0	0	0	3	1	1	0	3	0		8	High
82	Mill River	0	3	0	3	1	1	0	0	0		8	High
106	Mill River	0	3	0	3	1	1	0	0	0		8	High
2512	Mill River	0	3	0	3	1	1	0	0	0		8	High
52	Mill River	0	0	0	3	1	1	0	0	0		5	High
53	Mill River	0	0	0	3	1	1	0	0	0		5	High
54	Mill River	0	0	0	3	1	1	0	0	0		5	High
56	Mill River	0	0	0	3	1	1	0	0	0		5	High
57	Mill River	0	0	0	3	1	1	0	0	0		5	High
59	Mill River	0	0	0	3	1	1	0	0	0		5	High
63	Mill River	0	0	0	3	1	1	0	0	0		5	High
64	Mill River	0	0	0	3	1	1	0	0	0		5	High
65	Mill River	0	0	0	3	1	1	0	0	0		5	High
66	Mill River	0	0	0	3	1	1	0	0	0		5	High
67	Mill River	0	0	0	3	1	1	0	0	0		5	High
68	Mill River	0	0	0	3	1	1	0	0	0		5	High
71	Mill River	0	0	0	3	1	1	0	0	0		5	High
83	Mill River	0	0	0	3	1	1	0	0	0		5	High
90	Hood Pond	0	3	0	0	1	1	0	0	0		5	Low
92	Mill River	0	0	0	3	1	1	0	0	0		5	High
93	Mill River	0	0	0	3	1	1	0	0	0		5	High
94	Mill River	0	0	0	3	1	1	0	0	0		5	High
104	Mill River	0	0	0	3	1	1	0	0	0		5	High
105	Mill River	0	0	0	0	1	1	0	3	0		5	Low
107	Mill River	0	0	0	3	1	1	0	0	0		5	High
2911	Mill River	0	0	0	3	1	1	0	0	0		5	High
2912	Mill River	0	0	0	3	1	1	0	0	0		5	High
45	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
47	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
60	Mill River	0	0	0	0	1	1	0	0	0		2	Low
61	Mill River	0	0	0	0	1	1	0	0	0		2	Low
62	Mill River	0	0	0	0	1	1	0	0	0		2	Low

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Drinking Water Supply (Zone II)	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Outfall)	Yes = 3	Frequent = 3	Poor = 3	High = 3	High = 3	Yes = 3	Yes = 3	Yes = 3	TBD		
		No = 0	No = 0	Occasional = 2	Fair = 2	Medium = 2	Medium = 2	No = 0	No = 0	No = 0			
				None = 0	Good = 0	Low = 1	Low = 1						
69	Mill River	0	0	0	0	1	1	0	0	0		2	Low
70	Mill River	0	0	0	0	1	1	0	0	0		2	Low
72	Mill River	0	0	0	0	1	1	0	0	0		2	Low
73	Mill River	0	0	0	0	1	1	0	0	0		2	Low
74	Mill River	0	0	0	0	1	1	0	0	0		2	Low
77	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
78	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
79	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
91	Muddy Brook	0	0	0	0	1	1	0	0	0		2	Low
95	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
96	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
97	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
98	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
99	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
100	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
101	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
102	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
111	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
511	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
512	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
911	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
1311	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
1711	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low
2111	Ox Brook Pasture	0	0	0	0	1	1	0	0	0		2	Low

Scoring Criteria:

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

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

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

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

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

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

Table 5 1. Outfall Inventory and Priority Ranking Matrix
Rowley, Massachusetts
Revision Date: June 28, 2019

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		No = 0	No = 0	Occasional = 2	Fair = 2	Medium = 2	Medium = 2	No = 0	No = 0	No = 0			
				None = 0	Good = 0	Low = 1	Low = 1						

[5] Age of development and infrastructure:

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

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

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

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

MCM 4

Construction Site Stormwater Runoff Control

Permit Part 2.3.5

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

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

BMP: Sediment and Erosion Control Ordinance

BMP Number (Optional) **MCM4-1** **Completed** (by May 1, 2008) ☒

Ordinances Link or Reference: http://www.townofrowley.net/pdf/ConCom_StormwaterBylaw2007.pdf
http://www.townofrowley.net/
pdf/100325_ConCom_StormwaterRegulations2008.pdf

Department Responsible for Enforcement: Conservation

BMP: Site Plan Review Procedures

BMP Number (Optional) **MCM4-2** **Written procedures completed** (by year 1) ☒

Document Name and/or Web Address: Construction Site Stormwater Runoff Control Program Procedures (http://www.townofrowley.net/pdf/Rowley%20OMP%20revisedBB.pdf)

Description:
Conduct Site Plan review of 100% of projects disturbing 1 acre or more according to the procedures outlined in the Rowley Stormwater Bylaw and associated Regulations.

Responsible Department/Parties: Conservation

Measurable Goal(s):
Conduct site plan review of 100% of projects according to the procedures outlined above. Track projects reviewed annually.

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

BMP Number (Optional) **MCM4-3** **Completed** (by year 1) ☒

Document Name and/or Web Address: Construction Site Stormwater Runoff Control Program Procedures (http://www.townofrowley.net/pdf/Rowley%20OMP%20revisedBB.pdf)

Description:
Written procedures for site inspection (including inspection form) and enforcement in accordance with Section 2.3.5 of the Permit and as detailed in the Stormwater Bylaw and associated Regulations

Responsible Department/Parties: Conservation

Measurable Goal(s):
Inspect 100% of construction sites as outlined in the above document and take enforcement actions as needed.

Document number of sites inspected annually.

BMP: Erosion and Sedimentation Control References

BMP Number (Optional) **MCM4-4** **Completed** ☒

Document Name and/or Web Address: SOP 6: Erosion and Sedimentation Control & Inspection Report (http://www.townofrowley.net/pdf/Rowley%20OMP%20revisedBB.pdf)

Description:
Rowley will provide developers performing land disturbance activities within the MS4 jurisdiction with information on BMPs appropriate for the conditions at the construction site.

Responsible Department/Parties: Conservation

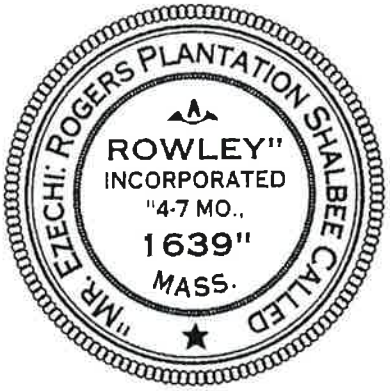
Measurable Goal(s):
Track materials distributed

Add BMP

Construction Site Stormwater Runoff Control Program Procedures

Town of Rowley

June 2019



Merrimack Valley Planning Commission

Table of Contents

Construction Site Stormwater Runoff Control Program Procedures

Town of Rowley

1 Introduction

These procedures have been prepared by the Town of Rowley to address Construction Site Stormwater Runoff Control Program requirements[1] of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

These procedures address Minimum Control Measure 4, Construction Site Stormwater Runoff Control, by documenting the processes that the Town of Rowley will use for inspection and enforcement of sediment and erosion control measures and review, inspection and enforcement of site plans. These procedures are part of Town of Rowley's Construction Site Stormwater Runoff Control Program. Together with the other components of Minimum Control Measure 4, these procedures will help to reduce the discharge of pollutants from the MS4 by minimizing or eliminating erosion and sediment transport from construction sites.

In addition to the inspection and enforcement procedures detailed in this program it is important to note that construction site operators within the MS4 jurisdiction are required to control construction wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. These wastes may not be discharged to the MS4.

2 Site Inspection and Enforcement of Sediment and Erosion Control Measures

The Conservation Department performs routine inspections of sediment and erosion control measures for construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area and construction activities that disturb less than one acre when that disturbance is part of a larger common plan of development or sale that would disturb one or more acres. Under the Town of Rowley's Stormwater Management Bylaw, the Conservation Commission has the authority to enforce sediment and erosion control procedures and/or impose sanctions to ensure compliance when necessary. The Town of Rowley will implement the following site inspection and enforcement procedures for sediment and erosion control measures.

Inspection Procedures

Construction sites will be inspected to ensure that sediment and erosion control measures are in place consistent with approved site plans. Inspections will be conducted by Conservation Department or a qualified member of the site crew. Inspections will be conducted in accordance with the Massachusetts Stormwater Handbook. Inspections may include, but are not limited to:

- Inspection during or immediately following initial installation of sediment controls.
- Inspection following severe rainstorms to check for damage to controls.

[1] See Parts 2.3.5.c.ii and 2.3.5.c.v. of the 2016 MS4 Permit for Construction Site Stormwater Runoff Control Written Procedure requirements.

- Inspection prior to seeding deadlines, particularly in fall.
- Final inspection of projects nearing completion to ensure that temporary controls have been removed, stabilization is complete, drainage ways are in proper condition, and the final contours agree with the proposed contours on the approved plan.

All inspections will be completed using the Sediment and Erosion Control Inspection form, included in **Appendix A**. All completed inspection forms will be maintained on file by Town of Rowley in the Conservation Department office. During inspection, the inspector will verify that sediment and erosion control measures are functioning as intended and are being maintained properly. Specific sediment and erosion control measures that will be assessed during inspection are detailed on the Inspection Form.

Enforcement Procedures

In the event that a non-compliance issue is discovered during pre-construction or routine inspection, the Conservation Commission or its authorized agent will document the occurrence and inform the site operator of the violation and the required corrective action. The Conservation Commission/authorized agent will provide the site operator with a copy of the inspection form, noting the non-compliance and the required corrective action. The site operator will have 2 days from the receipt of notice to perform the corrective action. The Conservation Commission/authorized agent will revisit the site for inspection after 2 days to verify that the corrective action was performed and that the site has achieved compliance.

Instructions: Refer to the CMRSWC Standard Operating Procedure "Erosion and Sedimentation Control" for detailed procedures.
https://www.centralmastormwater.org/sites/centralmastormwater/files/uploads/erosion_and_sedimentation_control_sop_final.pdf

The following information will be included in each annual report:

- Number of site inspections conducted
- Number of violations issued
- Record of enforcement actions

3 Site Plan Review, Inspection and Enforcement

Under the authority of the Town of Rowley Stormwater Management Bylaw, the Conservation Commission/authorized agent have the authority to perform construction site plan review, inspection and enforcement. Town of Rowley will implement the following construction site plan review, inspection and enforcement procedures:

Site Plan Review Procedure

- The applicant will submit site plans to the Conservation Department for pre-construction review. Review will be conducted by Health Department, Planning Department, and Public

Works. The Conservation Department, with input from the other departments, will make the final decision to approve, reject, or request modifications to the site plan.

- Site plan review will be completed within 2 days, taking into consideration the following standards with regard to water quality protection and stormwater management:
    - General site design will include appropriate stormwater drainage system details and calculations.
    - Planned construction operations will include adequate Best Management Practices (BMPs) and Sediment and Erosion Control Measures to reduce water quality impacts.
    - Planned BMPs must be designed to the standards found in the Massachusetts Stormwater Handbook. When possible BMPs should promote on-site infiltration of stormwater runoff from impervious surfaces.
    - For sites located in areas subject to Total Maximum Daily Load (TMDL) requirements, BMPs will be selected and prioritized to address the pollutant identified as the cause of the impairment.
    - When possible, low impact designs (LID) and/or Green Infrastructure (GI) should be included in site design. If LID/GI are not included in the site plan, the ##AGENCY OR DEPARTMENT will require that the applicant review opportunities for the use of LID/GI.

- The Conservation Department will make all site plans available for public review and comment and will consider all public comments prior to issuing or denying a permit.

- The Conservation Department may require the applicant to revise the site plan as necessary before issuing or denying a permit.

Site Inspection Procedures

Inspections will be conducted, at a minimum, during BMP construction as well as after construction of BMPs to ensure they are working as described in the approved plans. Inspection will be completed by a Professional Engineer or other qualified person with sufficient training, experience, and/or education to be able to adequately read site plans and assess the installation, operation and maintenance of BMPs in accordance with approved plans. An inspection form will be filled out for each site inspection and stored in the Conservation Department office. A copy of the Inspection Form is available in **Appendix B.**

Instructions: The Inspection Process steps detailed below are meant to be a baseline for inspections. Refer to the CMRSWC Standard Operating Procedure "Construction Site Inspection" for detailed procedures.
https://www.centralmastormwater.org/sites/centralmastormwater/files/uploads/construction_inspection_sop_final.pdf
The procedures may be updated as needed in accordance with the Stormwater and/or Erosion Control bylaws.

Inspection Process:

1. Pre-inspection Review
2. Meet with Site Contractor
3. Inspect Perimeter Controls
4. Inspect slopes and temporary stockpiles
5. Compare BMPs in the site plan with the construction site conditions
    - Inspect BMPs during their construction
    - Inspect BMPs after construction
6. Inspect site entrances/exits
7. Inspect sediment basins
8. Inspect pollution prevention and good housekeeping practices
9. Inspect discharge points and downstream, off-site areas
10. Meet with the contactor again prior to leaving
11. Provide a written copy of the inspection report to the contractor.
12. Follow up, as determined, and provide copies of subsequent inspections to the contractor.
13. Use Stop Work orders, as needed, until compliance can be achieved.

Enforcement Procedure

In the event that a non-compliance issue is discovered during inspections, the Conservation Commission/authorized agent will document the occurrence and inform the site operator of the violation and the required corrective action. The Conservation Commission/authorized agent will provide the site operator with a copy of the inspection form, noting the non-compliance and the required corrective action. The site operator will have 2 days from the receipt of notice to perform the corrective action. The Conservation Department will revisit the site for inspection to verify that the corrective action was performed and that the site has achieved compliance.

Instructions: Refer to the CMRSWC Standard Operating Procedure "Construction Site Inspection" for detailed procedures. The procedures may be updated in accordance with Stormwater and/or Erosion Control bylaws.
https://www.centralmastormwater.org/sites/centralmastormwater/files/uploads/construction_inspection_sop_final.pdf

The number of site reviews, inspections and enforcement actions will be tracked electronically or on paper. Records will be maintained and included in the annual report.

The following information will be included in each annual report:

- Number of site reviews conducted
- Number of site inspections conducted
- Number of violations issued
- Record of enforcement actions

Appendix A

Sediment and Erosion Control Inspection Form

"SOP 6: Erosion and Sedimentation Control Inspection Form."

SOP 6: EROSION AND SEDIMENTATION CONTROL

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

Controlling Erosion and Sediment through Design and Planning

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

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

Controlling Erosion and Sediment on Construction Sites

During the construction phase, it is important to inspect active sites regularly to ensure that practices are consistent with approved site plans and the site's Stormwater Pollution Prevention Plan (SWPPP) or other document, as required by the municipality's legal authority. The following guidelines apply:

1. Erosion and sediment control features should be constructed before initiating activities that remove vegetated cover or otherwise disturb the site. These shall be installed consistent with the approved site plans and with manufacturer's instructions.
2. Erosion and sediment control devices shall be inspected by the contractor regularly, and maintained as needed to ensure function.

3. In the SWPPP or other document, the contractor shall clearly identify the party responsible for maintaining erosion and sediment control devices.
4. An inspection should be completed of active construction sites every month, at a minimum, to check the status of erosion and sedimentation controls. Refer to SOP 5, "Construction Site Inspection", for construction site stormwater inspection procedures.
5. Existing vegetation should be maintained on site as long as possible.
6. Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed.
7. Stockpiles shall be stabilized by seeding or mulching if they are to remain for more than two weeks.
8. Disturbed areas shall be protected from stormwater runoff by using protective Best Management Practices (BMPs).
9. Clean water shall be diverted away from disturbed areas on construction sites to prevent erosion and sedimentation.
10. Sediment traps and sediment barriers should be cleaned out regularly to reduce clogging and maintain design function.
11. Vegetated and wooded buffers shall be protected.
12. Soils shall be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
13. Vegetation shall be allowed to establish before introducing flows to channels.
14. Regular light watering shall be used for dust control, as this is more effective than infrequent heavy watering.
15. Excessive soil compaction with heavy machinery shall be avoided, to the extent possible.
16. Construction activities during months with higher runoff rates shall be limited, to the extent possible.

Controlling Erosion and Sediment by Proper Maintenance of Permanent BMPs

Many construction phase BMPs can be integrated into the final site design, but ongoing inspection and maintenance are required to ensure long-term function of any permanent BMP. Refer to SOP 9, "Inspection of Constructed Best Management Practices", for more information. The following guidelines summarize the requirements for long-term maintenance of permanent BMPs.

1. Responsibility for maintaining erosion and sediment control devices shall be clearly identified.
2. Erosion and sediment control devices shall be inspected following heavy rainfall events to ensure they are working properly.
3. Erosion control blankets shall be utilized when seeding slopes.
4. Vegetated and wooded buffers shall be protected, and left undisturbed to the extent possible.
5. Runoff shall not be diverted into a sensitive area unless this has been specifically approved.
6. Sedimentation basins shall be cleaned out once sediment reaches 50% of the basin's design capacity.
7. Snow shall not be plowed into, or stored within, retention basins, rain gardens, or other BMPs.

8. Easements and service routes shall be maintained, to enable maintenance equipment to access BMPs for regular cleaning.

Related Standard Operating Procedures

1. SOP 5, Construction Site Inspection
2. SOP 9, Inspection of Constructed Best Management Practices

EROSION AND SEDIMENTATION CONTROL INSPECTION REPORT

General Information

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

Erosion and Sediment Control (ESC) on Construction Sites

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

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

(continued)

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

Non-Compliance Actions

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

Appendix B

Construction Site Inspection Form

"SOP 5: Construction Site Inspection Form"

SOP 5: CONSTRUCTION SITE INSPECTION

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

Stormwater Construction Inspection Plan

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

This SOP assumes that the municipality has legal authority (i.e., a bylaw or ordinance) in place, per the requirements of the 2003 Massachusetts MS4 Permit, to require sediment and erosion control at construction sites. This legal authority must require construction site operators "to implement a sediment and erosion control program which includes [Best Management Practices] that are appropriate for the conditions at the construction site, including efforts to minimize the area of the land disturbance." The legal authority must also give inspectors the authority to enter the site.

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

1. Construction Site Inventory
    - A tracking system to inventory projects and identify sites for inspection.
    - Track the results of inspection and prioritize sites based on factors such as proximity to waterways, size, slope, and history of past violations.
2. Construction Requirements and BMPs
    - Municipalities provide contractors with guidance on the appropriate selection and design of stormwater BMPs.
3. Plan Review Procedures
    - Submitted plans must be reviewed to ensure they address local requirements and protect water quality.
4. Public Input
    - Per the 2003 Massachusetts MS4 Permit, a program must allow the public to provide comment on inspection procedures, and must consider information provided by the public.
5. Construction Site Inspections
    - Identify an inspection frequency for each site.
    - See more detailed information below.
6. Enforcement Procedures
    - A written progressive enforcement policy for the inspection program.
    - Sanctions, both monetary and non-monetary, shall be utilized to ensure compliance with the program

7. Training and Education
    - Municipal staff conducting inspections should receive training on regulatory requirements, BMPs, inspections, and enforcement.

Conducting Stormwater Inspections at Construction Sites

The role of the construction inspector is to ensure that site operations match the approved site plans and the Stormwater Pollution Prevention Plan (SWPPP) for the project, and that all precautions are taken to prevent pollutants and sediment from the construction site from impacting local waterways. The inspector is also expected to determine the adequacy of construction site stormwater quality control measures.

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

1. Inspections to monitor stormwater compliance should be performed at least once per month at each active construction site, with priority placed on sites that require coverage under the USEPA 2012 Construction General Permit (i.e., that disturb one or more acres), and sites that are located in the watershed of any 303(d) water bodies.
2. The inspection shall begin at a low point and work uphill, observing all discharge points and any off-site support activities.
3. Written and photographic records shall be maintained for each site visit.
4. During the inspection, the inspector should ask questions of the contractor. Understanding the selection, implementation, and maintenance of BMPs is an important goal of the inspection process, and requires site-specific input.
5. The inspector should not recommend or endorse solutions or products. The inspector may offer appropriate advice, but all decisions must be made by the contractor.
6. The inspector shall always wear personal protective equipment appropriate for the site.
7. The inspector shall abide by the contractor's site-specific safety requirements.
8. The inspector has legal authority to enter the site. However, if denied permission to enter the site, the inspector should never force entry.

Prior to planning a site visit, the inspector shall determine if the project is subject to USEPA's 2012 Construction General Permit, which is true if the the project disturbs one or more acres, total. The 2012 Construction General Permit replaces the 2008 Construction General Permit , which expired on February 15, 2012. Operators of sites that required coverage under the USEPA's 2008 Construction General Permit but continue to be active should have submitted a new Notice of Intent (NOI) under the 2012 Permit.

If the site requires this coverage, the inspector shall visit the USEPA Region 1 eNOI website (http://cfpub.epa.gov/npdes/stormwater/cgpenoi.cfm or http://cfpub.epa.gov/npdes/stormwater/

noi/noisearch.cfm) to determine if the contractor filed for coverage under the 2012 and/or 2008 Construction General Permits, respectively. Print a copy of the project's NOI.

If the project disturbs one or more acres and is under construction, but does not show up in either database, the project is in violation of the Construction General Permit. Call the contractor to determine if the NOI process has been started. If not, notify the contractor verbally of this requirement and the violation. Work cannot proceed on the site until a Notice of Intent (NOI) for coverage under the 2012 Construction General Permit has been approved by USEPA. The inspector may choose to print instructions on how to file an NOI and meet with the contractor to review these. Issue a written Stop Work Order until the NOI has been approved by USEPA.

Once it has been determined that the site is in compliance with the 2012 Construction General Permit, the site inspection process can continue. The Construction Site Inspection process shall include the following:

1. Plan the inspection before visiting the construction site
    a. Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
    b. Print the approved NOI from the USEPA 2012 Construction General Permit NOI website, listed previously.
    c. Inform the contractor of the planned site visit.
2. Meet with the contractor
    a. Review the Construction SWPPP (if the site includes over one acre of disturbance) or other document, as required by the municipality's legal authority. Compare BMPs in the approved site plans with those shown in the SWPPP.
    b. Review the project's approved NOI and confirm that information shown continues to be accurate.
    c. Get a general overview of the project from the contractor.
    d. Review inspections done by the contractor.
    e. Review the status of any issues or corrective actions noted in previous inspection reports.
    f. Discuss any complaints or incidents since the last meeting.
3. Inspect perimeter controls
    a. Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
    b. For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.
4. Inspect slopes and temporary stockpiles
    a. Determine if sediment and erosion controls are effective.
    b. Look for slumps, rills, and tracking of stockpiled materials around the site.
5. Compare BMPs in the site plan with the construction site conditions
    a. Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.

   b. Note any areas where additional BMPs may be needed which are not specified in the site plans.
6. Inspect site entrances/exits
   a. Determine if there has been excessive tracking of sediment from the site.
   b. Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
7. Inspect sediment basins
   a. Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
8. Inspect pollution prevention and good housekeeping practices
   a. Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
   b. Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.
9. Inspect discharge points and downstream, off-site areas
   a. Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
   b. Inspect down-slope catch basins to determine if they are protected, and identify whether sediment buildup has occurred.
10. Meet with the contactor again prior to leaving
   a. Discuss the effectiveness of current controls and whether modifications are needed.
   b. Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.
   c. Agree on a schedule for addressing all discrepancies, and schedule a follow-up inspection.
11. Provide a written copy of the inspection report to the contractor.
12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.
13. Use Stop Work orders, as needed, until compliance with the 2012 Construction General Permit and/or other document, as required by the municipality's legal authority, can be achieved.

Attachments

1. Construction Site Stormwater Inspection Report

Related Standard Operating Procedures

1. SOP 9, Inspecting Constructed Best Management Practices

CONSTRUCTION SITE STORMWATER INSPECTION REPORT

General Information

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

Site-Specific BMPs

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

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

2		Yes ☐ No ☐	

(continued)

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

Erosion and Sedimentation Control

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

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

(continued)

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

Overall Site Conditions

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

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

Are perimeter controls and sediment barriers installed and maintained?	Yes ☐ No ☐	

(continued)

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

Non-Compliance Actions

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

MCM 5

Post Construction Stormwater Management in New Development and Redevelopment

Permit Part 2.3.6

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

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

BMP: Post-Construction Ordinance

BMP Number (Optional) **MCM5-1** **Completed** (by year 2) ☐

Town Ordinances Link or Reference: Modify local regulations to address 2.3.6.a of the permit

Department Responsible for Enforcement: Planning, Conservation

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BMP: Street Design and Parking Lot Guidelines Report

BMP Number (Optional) **MCM5-2** **Completed** (by year 4) ☐

Document Name and/or Web Address:

Description:
Develop a report assessing current street design and parking lot guidelines and other local guidelines that affect the creation of impervious cover to address section 2.3.6.b of the permit

Responsible Department/Parties: Planning

Measurable Goal(s):
Recommendations are implemented by June 30, 2022 with progress reported annually.

BMP: Green Infrastructure Report

BMP Number (Optional) **MCM5-3** **Completed** (by year 4) ☐

Document Name and/or Web Address:

Description:
Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices (green roofs, infiltration practices, water harvesting) allowable when appropriate site conditions exist

Responsible Department/Parties: Conservation, Planning, DPW

Measurable Goal(s):
Recommendations are implemented by June 30, 2022 with progress reported annually.

BMP: List of Municipal Retrofit Opportunities

BMP Number (Optional) **MCM5-4** **Completed** (by year 4) ☐

Document Name and/or Web Address:

Description:

Identify a minimum of 5 town-owned properties that could be modified or retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to and from its MS4 through a reduction in impervious cover.

Responsible Department/Parties: Conservation, Planning, Highway

Measurable Goal(s):

The list is completed by June 30, 2020 and updated as needed (keep running list of at least 5 retrofit sites).

BMP:[BMP name here]

BMP Number (Optional) **Completed** ☐

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

Add BMP

MCM 6

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Permit Part 2.3.7

Objective: The permittee shall implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned operations.

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

PERMITTEE OWNED FACILITIES

BMP: Parks and Open Spaces Operations and Maintenance Procedures

BMP Number (Optional) **MCM6-1** **Written Document Completed** (by year 2) ☐

Document Name and/or Web Address:

Description:
Develop an Inventory of all municipal parks and open space and establish O&M procedures to address material storage, landscaping activities to protect water quality, pet waste handling, waterfowl management, trash management (# of containers and cleaning), and erosion/vegetative cover (esp. within 50 feet of surface water)

Responsible Department/Parties: Highway, Parks

Measurable Goal(s):
Implement the SOP listed above on 100% of the parks and open spaces by June 30, 2020

Properties List (Optional):
List of Parks and Open Space Properties

BMP: Buildings and Facilities Operations and Maintenance Procedures

BMP Number (Optional) **MCM6-2** **Written Document Completed** (by year 2) ☐

Document Name and/or Web Address:

Description:
For all municipal owned buildings and facilities where pollutants are exposed to stormwater runoff, evaluate use, storage and disposal of petroleum products and other potential pollutants. Provide employee training for proper use and disposal. Ensure that Spill Prevention Plans are in place. Develop management procedures for dumpsters and waste management equipment. Establish O&M procedures for parking lots.

Responsible Department/Parties: Highway

Measurable Goal(s):
Implement the SOP listed above on 100% of buildings and facilities

Properties List (Optional):
Include schools, town offices, police and fire stations, municipal pools, and parking garages and other municipally owned or operated facilities.

BMP: Vehicles and Equipment Operations and Maintenance Procedures

BMP Number (Optional) **MCM6-3** **Written Document Completed** (by year 2) ☐

Document Name and/or Web Address:

Description:
Create list of procedures for the storage of municipal vehicles and equipment. Vehicles with leaks shall be stored indoors or containment shall be provided until repair. Evaluate fueling areas (place under cover if possible). Establish procedures to ensure no stormwater or surface water discharge of wash waters.

Responsible Department/Parties: Highway

Measurable Goal(s):
Implement the SOP listed above for 100% of vehicles and equipment according to the above document.

Properties List (Optional):
List of Vehicles

INFRASTRUCTURE

BMP: Infrastructure Operations and Maintenance Procedures

BMP Number (Optional) **MCM6-4** **Written Procedure Completed** (by year 2) ☐

Document Name and/or Web Address: SOP 9: Inspecting Constructed Best Management Practices (http://www.townofrowley.net/pdf/Rowley%20SWMP%20Draft%20June%202019.pdf)

Description:
Establish written program detailing the activities the town will implement for repair and maintenance of MS4 infrastructure.

Responsible Department/Parties: Highway

Measurable Goal(s):
100% of infrastructure is maintained to ensure proper function in accordance with the procedures above.

BMP: Catch Basin Cleaning Program

BMP Number (Optional) **MCM6-5** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Municipal Stormwater Infrastructure Operation and Maintenance Plan (http://www.townofrowley.net/pdf/Rowley%20SWMP%20Draft%20June%202019.pdf)

Description:

Develop and implement procedures to optimize routine inspections, cleaning and maintenance of catch basins in accordance with the conditions is section 2.3.7.a.iii.2 of the 2016 Permit

Responsible Department/Parties: Highway

Measurable Goal(s):

All catch basins are cleaned in accordance to the document above such that no catch basin is more than 50% full at any given time.

BMP: Street Sweeping Program

BMP Number (Optional) **MCM6-6** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Municipal Stormwater Infrastructure Operation and Maintenance Plan (http://www.townofrowley.net/pdf/Rowley%20SWMP%20Draft%20June%202019.pdf)

Description:

Develop and implement procedures for sweeping and/or cleaning streets, and town-owned parking lots in accordance with the requirements of section 2.3.7.a.iii.3 (separate requirements for rural uncurbed roads with no catch basins and high speed limited access highways)

Responsible Department/Parties: Highway

Measurable Goal(s):

Annually sweep 100% of all streets and 50% of all municipal parking lots in accordance with the schedule listed above.

BMP: Winter Road Maintenance Program

BMP Number (Optional) **MCM6-7** **Written Procedure Completed** (by year 1) ☒

Document Name and/or Web Address: Municipal Stormwater Infrastructure Operation and Maintenance Plan (http://www.townofrowley.net/pdf/Rowley%20SWMP%20Draft%20June%202019.pdf)

Description:

Develop and implement procedures for winter road maintenance including use and storage of salt and sand. In addition, minimize the use of sodium chloride and other salts and evaluate opportunities for alternative materials. See Snow and Ice SOP.

Responsible Department/Parties: Highway

Measurable Goal(s):

Evaluate at least one salt/chloride alternative for use in the municipality.

BMP: Stormwater Treatment Structures Inspection and Maintenance Procedures

BMP Number (Optional) **MCM6-8** **Completed** (by year 1) ☒

Document Name and/or Web Address: Municipal Stormwater Infrastructure Operation and Maintenance Plan

Description:
Develop and implement inspection and maintenance frequencies and procedures for all town-owned stormwater treatment structures (swales, basins, proprietary devices, etc.). All structures to be inspected annually.

Responsible Department/Parties: Highway

Measurable Goal(s):
Inspect and maintain 100% of treatment structures to ensure proper function.

BMP: SWPPP

BMP Number (Optional) **MCM6-9** **Completed** (by year 2) ☐

Document Name and/or Web Address:

Description:
Develop and fully implement a SWPPP for all town-owned and operated facilities (garages, public works yards, transfer stations). SWPP to contain all elements found in section 2.3.7.b.ii

Responsible Department/Parties: DPW

Measurable Goal(s):
Develop and implement SWPPPs for 100% of facilities by year 2

BMP:

BMP Number (Optional) **Completed** ☐

Document Name and/or Web Address:

Description:

STANDARD OPERATING PROCEDURE ROWLEY DEPARTMENT OF PUBLIC WORKS PROGRAM: Snow Removal and De-Icing	SOP NUMBER: S&I - 1	ISSUE DATE: 9/23/2019

APPROVED BY:

_____

Highway Surveyor [or other]

MA SMALL MS4 PERMIT REQUIREMENT SUMMARY:

Part 2.3.7.a.iii.5.
The permittee shall establish and implement procedures for winter road maintenance including the use and storage of salt and sand; minimize the use of sodium chloride and other salts, and evaluate opportunities for use of alternative materials; and ensure that snow disposal activities do not result in disposal of snow into waters of the United States. For purposes of this MS4 Permit, salt shall mean any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

Personnel

The following personnel are responsible for snow and ice removal. Employees performing the procedures in this SOP shall attend yearly stormwater pollution prevention training.

TABLE 1

Name	Responsibility
Patrick Snow	Highway Surveyor
Lorant Ronai	Foreman/Operator/Truck Driver
Kirk Salvatore	Operator/Truck Driver
Robert Diehl	Operator/Truck Driver
Matthew Nadeau	Operator/Truck Driver

Equipment

The municipality owns and maintains ice control and snow removal equipment listed in Table 2. Equipment maintenance shall be conducted consistent with the Vehicles and Equipment maintenance SOP found here: **[*enter location of vehicle washing SOP*]**. The wash bay/ area is located at: **[*40 Independent St.*]**

Plowing
When conditions warrant, plows are installed on the **[*3*]** larger trucks to move snow from the traveled roadway. Average time to install a plow is approximately **[*30*]** minutes. **[*3*]** smaller trucks are available for plowing of residential streets and clearing public lots.

Sand Spreaders
When conditions warrant, sand spreaders are installed on the **[*3*]** larger trucks to spread sand on the traveled roadway. Each sand spreader is calibrated prior to the deicing season and every **[*1 week or as needed*]** thereafter. Sand spreaders are calibrated to dispense **[*1*]** cubic yards of sand per lane mile.

Salt Spreaders and Pre-Wetting Devices

When conditions warrant, salt spreaders are installed on the **[*3*]** larger trucks to spread salt on the traveled roadway. Each salt spreader is calibrated prior to the deicing season and every **[*1 week or as needed*]** thereafter. Salt application shall be calibrated to dispense rates of **[*500*]** pounds per lane.

TABLE 2

Equipment Number	Make	Description	Additional Equipment	Primary Use
[00001]	*[XXXX]*	*[12-yard dump truck]*	*[4-yard salt spreader. 11' Side-cast plow]*	*[General Salting and Plowing]*
1	Chevrolet	¾ Ton Pick Up	8.5' V Plow	Plowing
2	Chevrolet	1 Ton Dump Truck	1 yard salt spreader. 9.5' V Plow	Salting and Plowing
3	International	12-yard dump truck	4-yard salt spreader. 11' plow	Salting and Plowing
4	International	12-yard dump truck	4-yard salt spreader, 11' plow	Salting & Plowing
5	Peterbilt	12-yard dump truck	4-yard salt spreader, 11' plow	Salting & Plowing
6	Chevrolet	¾ Ton Pick Up	8.5' V Plow	Plowing

Other Equipment available from other divisions:
[Fill in other equipment here]

Materials

The major materials are used in snow and ice control are coarse sand and coarse salt. These materials are stockpiled in advance of an event and are immediately available when needed and stocks are replenished between events.

Sand
Sand is used as an abrasive for traction on slick roadways. Approximately **[*900*]** cubic yards are anticipated to be used per year and are ordered from **[*Bentley Warren's Trucking*]** prior to each deicing season. Sand is stored in the covered facility located at: **[*40 Independent Street*]**. Loading areas and yards are swept **[*after every weather event*]** to prevent sand build-up and run-off.

Salt
Salt is used to expedite the melting of snow and ice from the street surface and also to keep the ice from forming a bond to the street surface. Approximately **[*1,400*]** tons of **[*Rock Salt*]** are anticipated to be used per year and are ordered from **[*Eastern Minerals*]** prior to each deicing season. Salt is stored in the covered facility located at: 40

Independent Street. Loading areas and yards are swept **[*after every weather event*]** to prevent salt build-up and run-off.

Procedures

Salt Application

1. Whenever conditions warrant, salt is applied to the roadway prior to accumulation of snow to prevent compacted snow from bonding to the roadway surface. **[*Patrick Snow – Highway Surveyor*]** will instruct staff when salt application is appropriate. Salting will not be done when pavement temperatures are above **[*35*]** degrees F or below [*10*] degrees F.
2. Prior to salt application, equipment will be checked to ensure proper working order and ensure proper calibration of equipment. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. The standard salt application speed is: **[*10-15*]** mph.
4. Follow the prioritized route or schedule. This schedule is located at: **Highway Garage 40 Independent Street and is supplied to every operator.**
5. Before parking any truck or equipment after use, all fluid levels will be checked and filled. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to **[*Patrick Snow – Highway Surveyor*]. [*Patrick Snow – Highway Surveyor*]** will determine importance and will assign the repairs according to schedule. All deicing chemical will be washed from equipment at the wash bay or designated wash area.

Snow Plowing

1. As the storm develops and **[*1-2*]** inches of snow has accumulated, all of the drivers and available equipment will begin to plow their assigned routes.
2. Prior to plowing operations, equipment will be checked to ensure proper working order. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. Avoid plowing, pushing, blowing or storing excess snow, deicer, or other debris in or near creeks, watercourses or storm drainage systems.
4. Reduce plowing speed in sensitive areas (near creeks, wetlands or other water courses) to prevent snow and deicing materials from entering waterways.
5. The standard plowing speed is: **[*10-15*]** mph.
6. Follow the prioritized route or schedule. This schedule is located at: **[*Highway Garage – 40 Independent Street*].**
7. Before parking any truck or equipment after use, all fluid levels will be checked and filled. Blades or bolts, which need replacing, will be taken care of unless told to do otherwise. Chains that need repairs will be repaired. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to **[*Patrick Snow – Highway Surveyor*]. [Patrick Snow - *Highway Surveyor*]** will determine importance and will assign the repairs according to schedule.

STANDARD OPERATING PROCEDURE ROWLEY DEPARTMENT OF PUBLIC WORKS PROGRAM: Snow Removal and De-Icing	SOP NUMBER: S&I - 1	ISSUE DATE: 9/23/2019

Sand Application

1. Whenever conditions warrant, sand is applied to the roadway to increase traction. **[*Patrick Snow – Highway Surveyor*]** will instruct staff when sand application is appropriate. Sanding will not be done when pavement temperatures are above **[*15*]** degrees F.
2. Prior to sand application, equipment will be checked to ensure proper working order and ensure proper calibration of equipment. All fluid levels will be checked and filled to proper levels, all lights must be in working order. A visual walk-around inspection of the truck or equipment must be made. Any repairs must be made and reported to a supervisor or mechanic before leaving the yard.
3. The standard sanding speed is: **[*10-15*]** mph.
4. Follow the prioritized route or schedule. This schedule is located at: **[*Highway Garage 40 Independent Street*]**.
5. Before parking any truck or equipment after use, all fluid levels will be checked and filled. Blades or bolts, which need replacing, will be taken care of unless told to do otherwise. Chains that need repairs will be repaired. All minor repairs will be done by the operator. Any repairs the operator cannot perform will be written up on the proper forms and turned in to **[*Patrick Snow – Highway Surveyor*]**. **[*Patrick Snow – Highway Surveyor*]** will determine importance and will assign the repairs according to schedule.

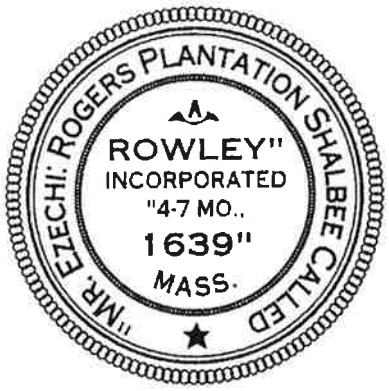
Record Keeping and Documentation

1. Maintain a master schedule of prioritized snow and sanding routes and the miles or roads plowed or sanded. **[*Highway Surveyor's Office*]**
2. Keep copies of manufacturer's recommendations for equipment calibration, plowing speed and salt/sand application rates. **[*Highway Garage*]**
3. Keep records of the amounts of salt and sand applied per season. **[*Highway Surveyor's Office*)]**
4. Keep a list of all employees trained in the facility's Stormwater Pollution Prevention binder or computer file.

Municipal Stormwater Infrastructure Operation and Maintenance Plan

Town of Rowley

June 2018



Merrimack Valley Planning Commission

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Municipal Stormwater Infrastructure Operation and Maintenance Plan

Town of Rowley

Appendices

1 Introduction

This Operation and Maintenance (O&M) Plan has been prepared by the Town of Rowley to address stormwater infrastructure O&M requirements[1] of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

This O&M Plan addresses Minimum Control Measure 6, Good Housekeeping and Pollution Prevention for Permittee Owned Operations, by describing the activities and procedures the Town of Rowley will implement so that the MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4. The O&M Plan outlines inspection and maintenance procedures for catch basins, municipally-owned streets and parking lots, and structural stormwater Best Management Practices (BMPs).

The Department of Public Works (DPW) is responsible for inspection and maintenance of the stormwater infrastructure in Rowley. A map of the existing stormwater infrastructure in Rowley is provided in **Appendix A**.

2 Catch Basins

The DPW performs routine inspections, cleaning, and maintenance of the approximately 563 catch basins that are located within the MS4 regulated area. The Town of Rowley will implement the following catch basin inspection and cleaning procedures to reduce the discharge of pollutants from the MS4

- Routine inspection and cleaning of catch basins. Catch basins should be cleaned such that they are no more than 50 percent full[2] at any time. The Town of Rowley will initially inspect all catch basins within the regulated area within two (2) years of the effective date of the permit to evaluate sediment or debris accumulation and establish optimal inspection and maintenance frequencies to meet the "50 percent" goal. A catch basin inspection/cleaning procedure, inspection form, and log of catch basins cleaned or inspected are included in **Appendix B**.

See Standard Operating Procedure "Catch Basin Inspection and Cleaning" for detailed procedures: https://www.centralmastormwater.org/sites/centralmastormwater/files/uploads/catch_basin_inspection_sop_final.pdf

- If a catch basin sump is more than 50 percent full during two consecutive routine inspections or cleaning events, the finding will be documented, the contributing drainage area will be investigated for sources of excessive sediment loading, and to the extent practicable,

[1] See Part 2.3.7.a.iii of the 2016 MS4 Permit for Infrastructure Operation and Maintenance program requirements.

[2] A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin

contributing sources will be addressed. If no contributing sources are found, the inspection and cleaning frequency will be increased.

- Catch basins located near construction activities (roadway construction, residential, commercial, or industrial development or redevelopment) will be inspected and cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings (i.e., catch basins more than 50 percent full). Priority will also be given to catch basins that discharge to impaired waters.

- The following information will be included in each annual report:
    - Any action taken in response to excessive sediment or debris loadings
    - Total number of catch basins
    - Number of catch basins inspected
    - Number of catch basins cleaned
    - Total volume or mass of material removed from catch basins.

3 Streets and Parking Lots

Streets and municipally-owned parking lots are swept once per year in the spring.

All Town roads and parking lots are swept once a year in the spring by a private contractor.

The Town of Rowley will implement the following street and parking lot sweeping procedures to reduce the discharge of pollutants from the MS4:

- All streets with the exception of rural uncurbed roads with no catch basins or high-speed limited access highways will be swept and/or cleaned a minimum of once per year in the spring (following winter activities such as sanding).

- More frequent sweeping will be considered for targeted areas based on pollutant load reduction potential, inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired waters, or other factors.

- More frequent sweeping is required for municipally-owned streets and parking lots in areas that discharge to certain nutrient-impaired waters. Sweeping must be performed in these areas a minimum of two times per year, once in the spring (following winter activities such as sanding) and at least once in the fall (Sept 1 – Dec 1; following leaf fall).

- For rural uncurbed roadways with no catch basins and limited access highways, the Town of Rowley will either meet the minimum frequencies above, or develop and implement an inspection, documentation, and targeted sweeping plan outlining reduced frequencies within two (2) year of the effective date of the permit, and submit such plan with its year one annual report.

- The following information will be included in each annual report:

- Number of miles cleaned, or the volume or mass of material removed (see sweeping log in **Appendix C**).

4 Catch Basin Cleanings and Street Sweepings

Catch basin cleanings (i.e., solid materials such as leaves, sand and twigs removed from stormwater collection systems during cleaning operations) and street sweepings will be managed in compliance with current Massachusetts Department of Environmental Protection policies:

- Catch Basin Cleanings
  http://www.mass.gov/eea/agencies/massdep/recycle/regulations/management-of-catch-basin-cleanings.html

- Street Sweepings
  http://www.mass.gov/eea/docs/dep/recycle/laws/stsweep.pdf

Prior to disposal or reuse, catch basin cleanings and street sweepings will be stored indoors or using proper controls such that they do not discharge to receiving waters.

5 Winter Road Maintenance

The Town of Rowley performs a variety of maintenance activities to ensure safe winter driving conditions on its roads and parking lots.

The Town uses Salt and Sand/Salt mix. Snow is stored on an as needed basis at two locations.

The Town of Rowley will implement the following winter maintenance procedures to reduce the discharge of pollutants from the MS4:

- Minimize the use and optimize the application of sodium chloride and other salt[3] (while maintaining public safety) and consider opportunities for use of alternative materials.

- Optimize sand and/or chemical application rates through the use, where practicable, of automated application equipment (e.g., zero velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals. Maintain records of the application of sand, anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.

- 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

[3] For purposes of the MS4 Permit, salt means any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.

- The MS4 Permit prohibits snow disposal into waters of the United States. Snow disposal activities, including selection of appropriate snow disposal sites, will adhere to the Massachusetts Department of Environmental Protection Snow Disposal Guidance, Guideline No. BWR G2015-01 (Effective Date: December 21, 2015), located at: http://www.mass.gov/eea/agencies/massdep/water/regulations/snow-disposal-guidance.html

- Provide training for municipal employees on winter roadway maintenance procedures.

6 Structural Stormwater BMPs

An inventory of structural stormwater Best Management Practices (BMPs) owned and/or maintained by Town of Rowley is provided in **Appendix D**. The stormwater infrastructure map in **Appendix A** shows the locations of the structural BMPs.

Instructions: List all structural stormwater Best Management practices (BMPs) that the municipality owns or maintains. Also include a map showing the locations of the following types of BMPs and associated maintenance access areas:

- *Bioretention Areas and Rain Gardens*
- *Water Quality Swales*
- *Constructed Stormwater Wetlands*
- *Retention/Detention Basins*
- *Proprietary Treatment Devices*
- *Sand and Organic Filters*
- *Dry Wells*
- *Infiltration Structures*

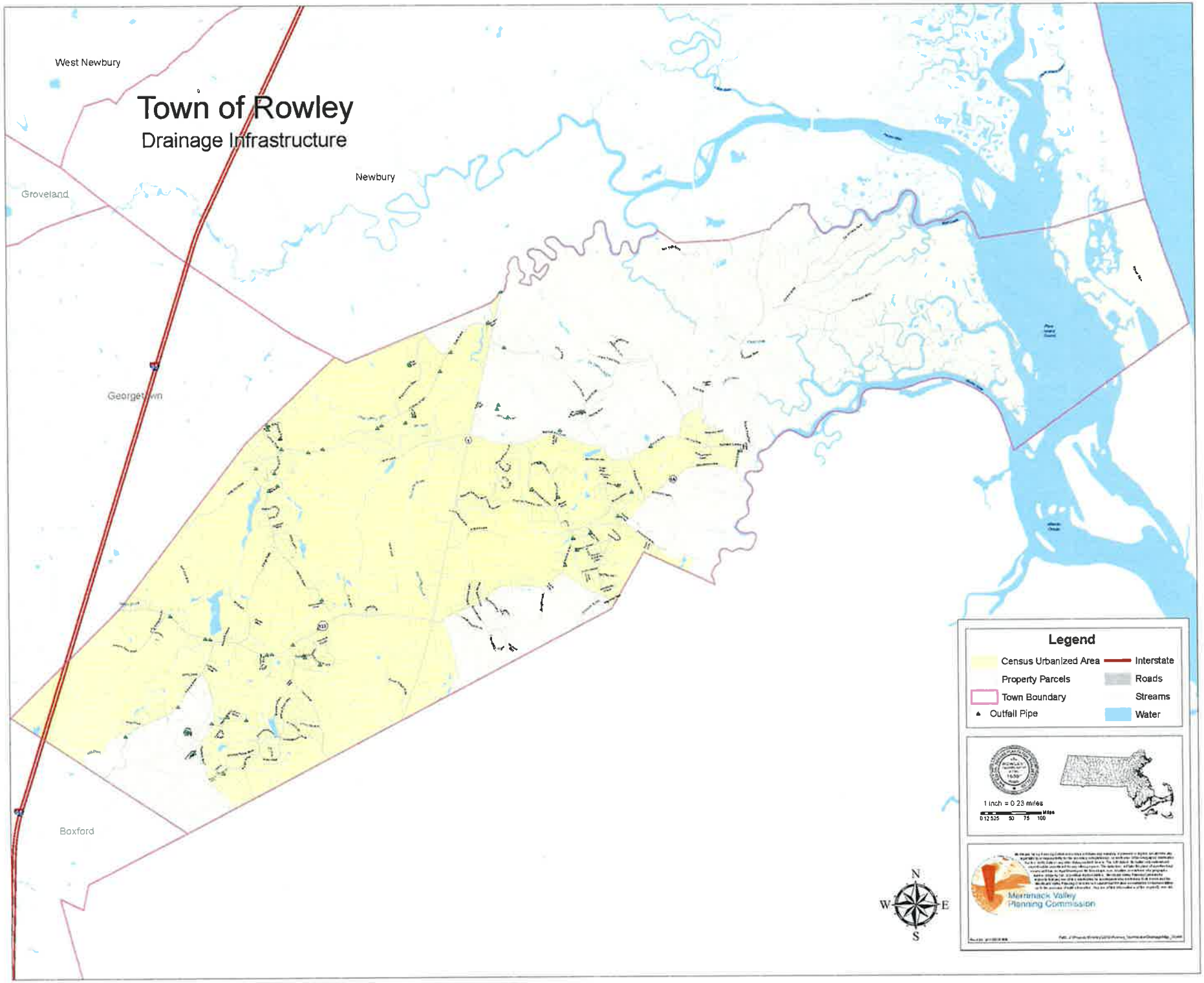
Structural stormwater BMPs will be inspected annually at a minimum. Recommended inspection procedures and checklists are provided in ***Appendix E***.

Instructions: The CMRSWC "SOP 9: Inspecting Constructed Best Management Practices" provides recommended inspection procedures and checklists for common types of structural BMPs: https://www.centralmastormwater.org/sites/centralmastormwater/files/uploads/constructed_bmp_inspection_sop_final.pdf

The applicable procedures and checklists are in Appendix D of this O&M Plan.

Appendix A

Stormwater Infrastructure Map for Rowley


West Newbury
Town of Rowley
Drainage Infrastructure
Newbury
Groveland
Georgetown
Boxford
Legend
Census Urbanized Area
Property Parcels
Town Boundary
Outfall Pipe
Interstate
Roads
Streams
Water
1 inch = 0.23 miles
0 1.2 2.5 5 7.5 10 Miles
N
W
E
S
Merrimack Valley Planning Commission

Appendix B

Catch Basin Inspection and Cleaning Procedure
Catch Basin Inspection Form
Catch Basin Cleaning Log

Maintain a log of catch basins inspected and cleaned, including the following information:
- *Date*
- *Inspector*
- *Weather conditions*
- *Number of catch basins inspected and cleaned*
- *Amount of material removed*
- *Catch basins observed to be more than 50% full*
- *Corrective action taken or recommended*

SOP 3: CATCH BASIN INSPECTION AND CLEANING

Introduction

Catch basins help minimize flooding and protect water quality by removing trash, sediment, decaying debris, and other solids from stormwater runoff. These materials are retained in a sump below the invert of the outlet pipe. Catch basin cleaning reduces foul odors, prevents clogs in the storm drain system, and reduces the loading of suspended solids, nutrients, and bacteria to receiving waters.

During regular cleaning and inspection procedures, data can be gathered related to the condition of the physical basin structure and its frame and grate and the quality of stormwater conveyed by the structure. Observations such as the following can indicate sources of pollution within the storm drain system:

- Oil sheen
- Discoloration
- Trash and debris

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by a oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial sheen is not a pollutant but should be noted.

Observations such as the following can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit discharge.

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

Each catch basin should be cleaned and inspected at least annually. Catch basins in high-use areas may require more frequent cleaning. Performing street sweeping on an appropriate schedule will reduce the amount of sediment, debris, and organic matter entering the catch basins, which will in turn reduce the frequency with which structures need to be cleaned.

Cleaning Procedure

Catch basin inspection cleaning procedures should address both the grate opening and the basin's sump. Document any and all observations about the condition of the catch basin structure and water quality on the Catch Basin Inspection Form (attached).

Catch basin inspection and cleaning procedures include the following:

1. Work upstream to downstream.
2. Clean sediment and trash off grate.
3. Visually inspect the outside of the grate.

4. Visually inspect the inside of the catch basin to determine cleaning needs.
5. Inspect catch basin for structural integrity.
6. Determine the most appropriate equipment and method for cleaning each catch basin.
    a. Manually use a shovel to remove accumulated sediments, or
    b. Use a bucket loader to remove accumulated sediments, or
    c. Use a high pressure washer to clean any remaining material out of catch basin while capturing the slurry with a vacuum.
    d. If necessary, after the catch basin is clean, use the rodder of the vacuum truck to clean downstream pipe and pull back sediment that might have entered downstream pipe.
7. If contamination is suspected, chemical analysis will be required to determine if the materials comply with the Massachusetts DEP Hazardous Waste Regulations, 310 CMR 30.000 (http://www.mass.gov/dep/service/regulations/310cmr30.pdf). Chemical analysis required will depend on suspected contaminants. Note the identification number of the catch basin on the sample label, and note sample collection on the Catch Basin Inspection Form.
8. Properly dispose of collected sediments. See following section for guidance.
9. If fluids collected during catch basin cleaning are not being handled and disposed of by a third party, dispose of these fluids to a sanitary sewer system, with permission of the system operator.
10. If illicit discharges are observed or suspected, notify the appropriate Department (see "SOP 10: Addressing Illicit Discharges").
11. At the end of each day, document location and number of catch basins cleaned, amount of waste collected, and disposal method for all screenings.
12. Report additional maintenance or repair needs to the appropriate Department.

Disposal of Screenings

Catch basin cleanings from storm water-only drainage systems may be disposed at any landfill that is permitted by MassDEP to accept solid waste. MassDEP does not routinely require stormwater-only catch basin cleanings to be tested before disposal, unless there is evidence that they have been contaminated by a spill or some other means.

Screenings may need to be placed in a drying bed to allow water to evaporate before proper disposal. In this case, ensure that the screenings are managed to prevent pollution.

Attachments

1. Catch Basin Inspection Form

Related Standard Operating Procedures

1. SOP 10, Addressing Illicit Discharges
2. SOP 13, Water Quality Screening in the Field

Job No.: _____ **Town:** _____

Inspector: _____ **Date:** _____

CATCH BASIN INSPECTION FORM

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

Required Maintenance/ Problems (check all that apply):

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

Other: _____

Catch Basin Grate Type :	**Sediment Buildup Depth :**	**Description of Flow:**	**Street Name/ Structure Location:**
Bar: ☐ Cascade: ☐ Other: _____ Properly Aligned: Yes ☐ No ☐	0-6 (in): ____ 6-12(in): ____ 12-18 (in): ____ 18-24 (in): ____ 24 + (in): ____	Heavy ☐ Moderate ☐ Slight ☐ Trickling ☐	

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

☐ **Flow**
☐ **Standing Water**
(check one or both)

Observations:

Color:
Odor:

Weather Conditions : Dry > 24 hours ☐ Wet ☐

Sample of Screenings Collected for Analysis? Yes ☐ No ☐

Comments:

Circle those present:

Foam	Oil Sheen
Sanitary Waste	Bacterial Sheen
Orange Staining	Floatables
Excessive sediment	Pet Waste
Other:_____	Optical Enhancers

Appendix C

Street and Parking Lot Sweeping Log

Instructions: Maintain a street and parking lot sweeping log, including the following information:

- *Date*
- *Operator*
- *Weather conditions*
- *Streets/parking lots swept*
- *Number of miles swept*
- *Volume or mass of material removed*
- *Corrective action taken or recommended*

Street Sweeping Log
Rowley, Massachusetts

Date	Operator	Weather Conditions	Streets/Parking Lots Swept	Number of Miles Swept	Volume/Mass of Material Removed	Corrective Action Taken/Recommended

Appendix D

Inventory of Structural Stormwater Best Management Practices

Inventory of structural stormwater BMPs owned or maintained by the Town of Rowley.

Inventory of Structural Stormwater Best Management Practices (BMPs)
Rowley, Massachusetts

BMP ID or Description	Location	BMP Type	Inspection Frequency	Date of Last Inspection	Additional Notes

Appendix E

Structural Stormwater BMP Inspection Procedures and Checklists

The applicable Constructed Best Management Practices procedures and checklists are attached in Appendix E of this O&M Plan.

SOP 9: INSPECTING CONSTRUCTED BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Constructed BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body.

This Standard Operating Procedure provides a general summary of inspection procedures for eight common constructed BMPs, including:

1. Bioretention Areas and Rain Gardens
2. Constructed Stormwater Wetlands
3. Extended Dry Detention Basins
4. Proprietary Media Filters
5. Sand and Organic Filters
6. Wet Basins
7. Dry Wells
8. Infiltration Basins

This SOP is based on the Massachusetts Stormwater Handbook and is not intended to replace that document. This SOP is also not intended to replace the Stormwater BMP Operation and Maintenance (O&M) Plan required by the Massachusetts Wetlands Protection Act, Order of Conditions.

Bioretention Areas and Rain Gardens

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

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

Inspection & Maintenance

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

Maintenance Schedule: Bioretention Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

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

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

Constructed Stormwater Wetlands

Constructed stormwater wetlands maximize the pollutant removal from stormwater through the use of wetland vegetation uptake, retention and settling. Constructed storm water wetlands must be used in conjunction with other BMPs, such as sediment forebays.

Inspection & Maintenance

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

Maintenance Schedule, Constructed Stormwater Wetlands: Years 0-3

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Record and Map:	Year round	Annually
Types and distribution of dominant wetland plants	Year round	Bi-Annually
Presence and distribution of planted wetland species	Spring	Annually
Presence and distribution of invasive species	Fall and Spring	Bi-Annually
Indications other species are replacing planted wetland species	Spring	Annually
Percent of standing water that is not vegetated	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed
Stability of original depth zones and micro-topographic features		
Accumulation of sediment in the forebay and micropool and survival rate of plants		

Maintenance Schedule, Constructed Stormwater Wetlands: Years 4-Lifetime

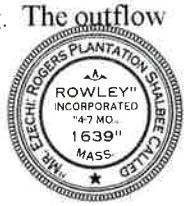
Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Clean forebays	Year round	Annually
Clean sediment in basin/wetland system	Year round	Once every 10 years
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

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

Never store snow within a constructed stormwater wetland. This would prevent required water quality treatment and the recharge of groundwater.

Extended Dry Detention Basins

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



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

Inspection & Maintenance

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

Maintenance Schedule: Extended Dry Detention Basins

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

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals or nutrients, which are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite. Two types of Media Filters are manufactured: Dry Media Filters, which are designed to dewater within 72 hours; and Wet Media Filters, which maintain a permanent pool of water as part of the treatment system.

Inspection & Maintenance

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

Maintenance Schedule: Proprietary Media Filters

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

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

Inspection & Maintenance

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

Maintenance Schedule: Proprietary Media Filters

Activity	Frequency
Inspect filters and remove debris	After every major storm for the first 3 months after construction completion. Every 6 months thereafter.

Wet Basins

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

Inspection & Maintenance

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

Maintenance Schedule: Wet Basins

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

Dry Wells

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

Inspection & Maintenance

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

Maintenance Schedule: Dry Wells

Activity	Frequency
Inspect dry wells	After every major storm for the first 3 months after construction completion. Annually thereafter.

Infiltration Basins

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

Inspection & Maintenance

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

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-Annually
Inspection	Spring and Fall	After every major storm for the first 3 months after construction completion. Bi-annually thereafter and discharges through the high outlet orifice.
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-Annually
Remove trash, debris and organic matter	Spring and Fall	Bi-Annually

Annual Evaluation

Year 1 Annual Report

Document Name and/or Web Address:

Year 2 Annual Report

Document Name and/or Web Address:

Year 3 Annual Report

Document Name and/or Web Address:

Year 4 Annual Report

Document Name and/or Web Address:

Year 5 Annual Report

Document Name and/or Web Address:

Year X Annual Report

Document Name and/or Web Address:

Add a Year

TMDLs and Water Quality Limited Waters

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

Impairment(s)

☒ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☐ Phosphorus

☐ Solids/oil/grease (hydrocarbons)/metals

TMDL(s)

In State:

☐ Assabet River Phosphorus ☐ Bacteria and Pathogen ☐ Cape Cod Nitrogen

☐ Charles River Watershed Phosphorus ☐ Lake and Pond Phosphorus

Out of State:

☐ Bacteria and Pathogen ☐ Metals ☐ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Bacteria/Pathogens

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)	Add/Delete Row
Mill River		+ -
Plum Island Sound		+ -
Egypt River		+ -
Rowley River		+ -

Annual Requirements Beginning Year 1

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

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

See IDDE Plan for priority outfall ranking

Public Education and Outreach

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

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

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

MCM1-1: Available materials include Greenscapes Pet Waste Info Sheet and Rack Card

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

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

MCM1-1: Available Materials include Greenscapes Pet Waste Info Sheet and Rack Card

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

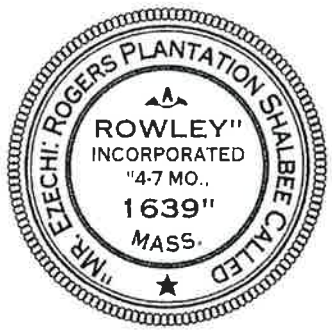
The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

MCM1-1: Available Materials include Greenscapes What not to Flush rack card and EPA Septic Homeowners Brochure
Post EPA SepticSmart Posters in Health Department

STORMWATER MANAGEMENT AND EROSION CONTROL BYLAW

TOWN OF ROWLEY

EFFECTIVE November 28, 2007



Rowley Conservation Commission
39 Central Street
PO Box 24
Rowley, MA 01969

Tel.: 978 948-2330; Fax: 978 948-7196
email: Conservation@TownofRowley.org

Public Hearing(s): October 9th, and October 15th, 2007
This bylaw was passed at the Special Town Meeting of November 5, 2007 (Article 20), unanimously by voice vote without amendment.
It was approved by the Attorney General on November 20, 2007, and posted in accordance with the law on November 28, 2007.

Table of Contents Page

Sections

STORMWATER MANAGEMENT AND EROSION CONTROL BYLAW

Town of Rowley

SECTION 1. PURPOSE

A. Increased volumes of stormwater, contaminated stormwater runoff from impervious surfaces, and soil erosion and sedimentation are major causes of:
   1. Impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater;
   2. Contamination of drinking water supplies;
   3. Erosion of stream channels;
   4. Alteration or destruction of aquatic and wildlife habitat;
   5. Flooding; and
   6. Overloading or clogging of municipal catch basins and storm drainage systems.

The United States Environmental Protection Agency has identified sedimentation from land disturbance activities and polluted stormwater runoff from land development and redevelopment as major sources of water pollution, impacting drinking water supplies, natural habitats, and recreational resources. Regulation of activities that result in the disturbance of land and the creation of stormwater runoff is necessary for the protection of the water resources within the Town of Rowley, to safeguard the health, safety, and welfare of the general public and protect the natural resources of the Town.

B. The objectives of this Bylaw are to:
   1. Protect water resources;
   2. Require practices that minimize and manage soil erosion and sedimentation;
   3. Control the volume and rate of stormwater runoff resulting from land disturbance activities in order to minimize potential impacts of flooding;
   4. Require practices to manage and treat stormwater runoff generated from new development and redevelopment;
   5. Protect groundwater and surface water from degradation;
   6. Promote infiltration and the recharge of groundwater;
   7. Maximize recharge of groundwater in the Municipal Water Supply Protection District as defined by Section 4.11 of the Town of Rowley Protective Zoning Bylaw, as amended;
   8. Prevent pollutants from entering the municipal storm drain system;
   9. Ensure that soil erosion and sedimentation control measures and stormwater runoff management practices are incorporated into the site planning and design process and are implemented and maintained;
   10. Ensure adequate long-term operation and maintenance of structural stormwater best management practices;
   11. Require practices to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at construction sites that may cause adverse impacts to water quality;
   12. Comply with state and federal statutes and regulations relating to stormwater discharges; and
   13. Establish the Town of Rowley's legal authority to ensure compliance with the provisions of this Bylaw through inspection, monitoring and enforcement.

SECTION 2. AUTHORITY

This Bylaw is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule statutes, and pursuant to the regulations of the Federal Clean Water Act found at 40 CFR 122.34 published in the Federal Register on December 8, 1999, as amended and as authorized by the residents of the Town of Rowley at Special Town Meeting, dated November 5, 2007.

SECTION 3. APPLICABILITY

This Bylaw shall apply to all new land-disturbing activities within the jurisdiction of the Town of Rowley. All persons shall be required to obtain a Stormwater Management Permit from the Conservation Commission subject to the following:

A. Regulated Activities. Regulated activities shall include, but not be limited to:

1. Land disturbance of greater than 20,000 square feet or a land disturbance that will alter an area of 10,000 square feet or more on existing or proposed slopes steeper than 15 %, unless exempt pursuant to Subsection 3 C. Exempt Activities.

2. Development or redevelopment involving multiple separate activities in discontinuous locations or on different schedules if the activities are part of a larger common plan of development that all together disturbs 20,000 square feet or more of land,

3. Any development or redevelopment of land involving any of the following uses identified by Massachusetts Stormwater Management Policy as having higher potential pollutant loads: vehicle salvage yard, vehicle fueling facility, fleet storage yard, commercial parking lot, road salt storage area, garden center and landscaping facility, outdoor storage and loading area of hazardous substances, or marina,

4. Paving or other change in surface material over an area of 20,000 square feet or more causing a significant reduction of permeability or increase in runoff,

5. Construction of a new drainage system or alteration of an existing drainage system or conveyance serving a drainage area of more than 20,000 square feet,

6. Any other activity altering the surface of an area exceeding 20,000 square feet that will, or may, result in increased stormwater runoff flowing from the property into a public way, the municipal storm drain system, an adjacent or abutting parcel of land, or

7. Construction or reconstruction of structures where more than 20,000 square feet of roof drainage is altered.

B. Erosion and Sedimentation Control Requirement
A project which includes land disturbance of less than 20,000 square feet or a land disturbance that will alter an area of less than 10,000 square feet on existing or proposed slopes steeper than 15 % shall be considered to be in conformance with this Bylaw if soils or other eroded matter have been and will be prevented from being deposited onto adjacent properties, rights-of-ways, public storm drainage systems, or wetlands or watercourses. These projects do not need to apply as long as appropriate sedimentation and erosion control measures are implemented. The design, installation, and maintenance of erosion and sediment control operations and facilities shall adhere to the standards specified in the Regulation to the Bylaw.

C. Exemptions
No person shall alter or disturb land within the Town of Rowley without having obtained a Stormwater Management Permit (SMP) for the property with the following exceptions:

1. Normal maintenance and improvement of land in agricultural use as defined by the Wetland Protection Act M.G.L. c. 131, § 40 and its implementing regulations at 310 CMR 10.04;

2. Repair of septic systems when required by the Board of Health for the protection of public health and in compliance with Section 3, Paragraph B;

3. Normal maintenance of existing landscaping, gardens or lawn areas associated with a single family dwelling; construction of patios, walkways, driveways less than the minimum square foot thresholds, swimming pools below the minimum square foot thresholds, or replacement of wells or septic systems on lots having an existing dwelling;

4. The construction of any fencing that will not alter existing terrain or drainage patterns;

5. Construction of utilities (gas, water, electric, telephone, cable, etc.) other than drainage, which will not alter terrain, ground cover, or drainage patterns, the reconstruction of or resurfacing of any public way; the construction and associated grading of a street that has been approved by the Planning Board;

6. Any activity that will alter an area of less than 10,000 square feet on existing or proposed slopes steeper than 15 %. This exception may not be applied for contiguous properties held in common ownership at the time of adoption of this Bylaw that may have been previously subdivided and/or are attributed to multiple separate owners;

7. Emergency repairs to any utilities (gas, water, electric, telephone, etc.), stormwater management facility or practice that poses a threat to public health, safety, or the environment or as deemed necessary by the Conservation Commission;

8. Any work or projects for which all necessary approvals and permits have been issued before the effective date of this Bylaw.

SECTION 4. DEFINITIONS

For the purposes of this Bylaw, the following shall mean:
ABUTTER: The owner(s) of land abutting the activity.

AGRICULTURE: The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act MGL c. 131 § 40 and its implementing regulations 310 CMR 10.00.

ALTERATION OF DRAINAGE CHARACTERISTICS: Any activity on an area of land that changes the water quality, or the force, quantity, direction, timing or location of runoff flowing from the area. Such changes include: change from distributed runoff to confined, discrete discharge; change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

APPLICANT: Any "person" as defined below requesting a soil erosion and sediment control permit for proposed land-disturbance activity.

BEST MANAGEMENT PRACTICE (BMP): Structural, non-structural and managerial techniques that are recognized to be the most effective and practical means to prevent and/or reduce increases in stormwater volumes and flows, reduce point source and nonpoint source pollution, and promote stormwater quality and protection of the environment. "Structural" BMPs are devices that are engineered and constructed to provide temporary storage and treatment of stormwater runoff. "Nonstructural" BMPs use natural measures to reduce pollution levels, do not require extensive construction efforts, and/or promote pollutant reduction by eliminating the pollutant source.

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

CHANNEL: An open conduit either naturally or artificially created which periodically, or continuously contains moving water, or forms a connecting link between two bodies of water.

CLEARING: Any activity that removes the vegetative surface cover. Clearing activities generally include grubbing activity as defined below.

DEVELOPMENT: The modification of land to accommodate a new use or expansion of use, usually involving construction.

DISTURBANCE OF LAND: Any action, including clearing and grubbing, that causes a change in the position, location, or arrangement of soil, sand, rock, gravel, or similar earth material.

ENVIRONMENTAL SITE MONITOR: A registered professional engineer (PE) or other trained professional acceptable to the Conservation Commission and retained by the holder of a Stormwater Management Permit to periodically inspect the work and report to the Conservation Commission.

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

EROSION AND SEDIMENTATION CONTROL PLAN: A document containing narrative, drawings and details developed by a registered professional engineer (PE) or a professional land surveyor (PLS), which includes best management practices, or equivalent measures designed to control surface runoff, erosion and sedimentation during pre-construction and construction related land disturbance activities.

ESTIMATED HABITAT OF RARE WILDLIFE; and CERTIFIED VERNAL POOLS: Habitats delineated for state-protected rare wildlife and certified vernal pools for use with the Wetlands Protection Act Regulations (310 CMR 10.00) and the Forest Cutting Practices Act Regulations (304 CMR 11.00) as defined by these state regulations.

GRADING: Changing the level or shape of the ground surface.

GRUBBING: The act of clearing land surface by digging or grinding up roots and stumps.

IMPERVIOUS SURFACE: Any material or structure on or above the ground that prevents water infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops. Impervious surface also includes soils, gravel driveways, and similar surfaces with a runoff coefficient (Rational Method) greater than 85.

LAND-DISTURBING ACTIVITY or LAND DISTURBANCE: Any activity, including without limitation: clearing, grubbing, grading, digging, cutting, excavation of soil, placement of fill, and construction that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

LOT: A single parcel of land held in identical ownership throughout and defined by metes, bounds, or boundary lines in a recorded deed on a recorded plan.

MASSACHUSETTS ENDANGERED SPECIES ACT: (M.G.L. c. 131A) and its implementing regulations at (321 CMR 10.00) which prohibit the "taking" of any rare plant or animal species listed as Endangered, Threatened, or of Special Concern.

MASSACHUSETTS STORMWATER MANAGEMENT POLICY: The Policy issued by the Department of Environmental Protection, as amended, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act MGL c. 131 § 40 and the Massachusetts Clean Waters Act MGL c. 21, § 23-56. The Policy addresses stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site.

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

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

OUTFALL: The point at which stormwater flows out from a discernible, confined point source or discrete conveyance into waters of the Commonwealth.

OUTSTANDING RESOURCE WATERS (ORW): Waters designated by the Massachusetts Department of Environmental Protection as Outstanding Resource Waters. These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Water Quality Standards (314 CMR 4.00) and the Massachusetts Stormwater Management Standards set forth in the Massachusetts Stormwater Management Policy. Outstanding Resource Waters include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated.

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

PERMITTEE: The person who holds a Stormwater Management Permit and therefore bears the responsibilities and enjoys the privileges conferred thereby.

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

POINT SOURCE: Any discernible, confined, and discrete means of conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged.

PRE-CONSTRUCTION: All activity in preparation for construction.

PRIORITY HABITAT OF RARE SPECIES: Habitats delineated for rare plant and animal populations protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its regulations at (321 CMR 10.00).

REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

RESPONSIBLE PARTIES: owner(s), persons with financial responsibility, persons with operational responsibility, and persons with administrative responsibility.

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

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

SEDIMENTATION: The process or act of deposition of sediment.

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

SLOPE: The vertical rise divided by the horizontal distance and expressed as a fraction or percentage, e.g. one-fifth (1/5) or twenty (20) percent.

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

STABILIZATION: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

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

STORMWATER AUTHORITY: The Town of Rowley Conservation Commission or its authorized agent(s). The Rowley Conservation Commission or its authorized agent(s) are responsible for coordinating the review, approval and permit process as defined in this Bylaw.

STORMWATER MANAGEMENT PERMIT (SMP): A permit issued by the Conservation Commission, after review of an application, plans, calculations, and other supporting documents, which is designed to protect the environment of the Town from the deleterious affects of uncontrolled and untreated stormwater runoff.

STORMWATER MANAGEMENT PLAN: A document containing narrative, drawings and details prepared by a registered professional engineer (PE) or a professional land surveyor (PLS), which includes structural and non-structural best management practices to manage and treat stormwater runoff generated from regulated development activity. A stormwater management plan also includes an Operation and Maintenance Plan describing the maintenance requirements for structural best management practices.

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

TOTAL SUSPENDED SOLIDS (TSS): Material, including but not limited to trash, debris, and sand suspended in stormwater runoff.

VERNAL POOL: A confined basin depression which, at least in most years, holds water for a minimum of two continuous months during the spring and/or summer, and which are free of adult fish populations. These areas are essential breeding habitat, and provide other extremely important wildlife habitat functions during non-breeding season as well, for a variety of amphibian species such as wood frog (Rana sylvatica) and the spotted salamander (Ambystoma macultum), and are important habitat for other wildlife species.

WATERCOURSE: A natural or man-made channel through which water flows, including a river, brook, stream, underground stream, pond or lake.

WATER QUALITY: Systematic application of standards to describe water pursuant to the Massachusetts Surface Water Quality Standards (314 CMR 4.00).

WETLAND RESOURCE AREA: Area specified in the Massachusetts Wetlands Protection Act M.G.L. c. 131, § 40 and in the Town of Rowley Wetlands Protection Bylaw.

WETLANDS: Tidal and non-tidal areas characterized by saturated or nearly saturated soils most of the year that are located between terrestrial (land-based) and aquatic (water-based) environments, including freshwater marshes around ponds and channels (rivers and streams), brackish and salt marshes; common names include marshes, swamps and bogs. Wetlands are defined in M.G.L. c. 131, § 40, and are collectively known as vegetated wetlands.

SECTION 5. ADMINISTRATION

A. The Conservation Commission shall administer, implement and enforce this Bylaw. Any powers granted to or duties imposed upon the Conservation Commission through this Bylaw may be delegated in writing by the Conservation Commission to its employees or agents.

B. Stormwater Management Policy. The Conservation Commission will utilize the policy, criteria and information including specifications and standards of the latest edition of the Massachusetts Stormwater Management Policy, for execution of the provisions of this Bylaw. This Policy includes a list of acceptable stormwater treatment practices, including the specific design criteria for each stormwater practice. The Policy may be updated and expanded periodically, based on improvements in engineering, science, monitoring, and local maintenance experience. Unless specifically altered in the Stormwater Regulations, stormwater management practices that are designed, constructed, and maintained in accordance with these design and sizing criteria will be presumed to be protective of Massachusetts's water quality standards.

SECTION 6. REGULATIONS

The Conservation Commission may adopt, and periodically amend, rules and regulations relating to the terms, conditions, definitions, enforcement, fees (including application, inspection, and/or professional review fees), procedures and administration of this Stormwater Management Bylaw by majority vote of the Conservation Commission, after conducting a public hearing to receive comments on any proposed rules and regulations, or revisions thereto. Such hearing dates shall be advertised in a newspaper of general local circulation, at least fourteen (14) days prior to the hearing date. The Conservation Commission may promulgate rules and regulations to effectuate the purposes of this Bylaw. Failure by the Conservation Commission to promulgate such rules and regulations or a legal declaration of their invalidity by a court shall not act to suspend or invalidate the effect of this Bylaw.

SECTION 7. PERMITS

Stormwater Management Permit (SMP) issuance is required prior to any activity disturbing 20,000 or more square feet of land or a land disturbance that will alter an area of 10,000 square feet or more on existing or proposed slopes steeper than 15 %. The site owner or his or her agent shall apply to the Conservation Commission for the SMP. While application may be made by a representative, the permittee must be the owner of the site or legal successor.

A. Applications: An application shall be made to the Conservation Commission in a form and containing information as specified in this Bylaw and in the Regulations adopted by the Conservation Commission and shall be accompanied by payment of the appropriate application and review fees. Projects within the jurisdiction of the Conservation Commission and requiring an Order of Conditions need not submit a separate SMP application.

B. Fees: Fees shall be established by Conservation Commission to cover expenses connected with administration, for application review, and monitoring permit compliance. An additional fee shall be paid to cover professional review. The Conservation Commission is authorized to retain a registered professional engineer or other professional consultant to advise the Commission on any or all aspects of these plans. Applicants must pay review fees before the review process may begin. The applicant for a Stormwater Management Permit may be required to cover the costs of said consultant through an account established pursuant to GL. c. 44 § 53G.

C. Information Requests: The Conservation Commission may request such additional information as is necessary to enable the Conservation Commission to determine whether the proposed land disturbance activity will protect water resources and comply with the requirements of this Bylaw.

D. Determination of Completeness: The Conservation Commission shall make a determination as to the completeness of the application and adequacy of the materials submitted. No review shall take place until the application has been found to be complete.

E. Coordination with Other Boards: On receipt of a complete application for a Stormwater Management Permit the Conservation Commission shall distribute one copy each to the Planning Board, Highway Department, and other appropriate Board(s) for review and comment. Said agencies shall, in their discretion, investigate the case and report their recommendations to the Conservation Commission.

F. Entry: Filing an application for a Stormwater Management Permit grants the Conservation Commission or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with permit conditions, to the extent permitted by law.

G. Hearing: Within twenty-one (21) days of receipt of a complete application for a Stormwater Management Permit, the Conservation Commission shall hold a public hearing and shall take final action within thirty (30) days from the close of the hearing unless such time is extended by agreement between the applicant and the Conservation Commission. Notice of the public hearing shall, at least seven (7) days prior to said hearing, be given by publication in a local paper of general circulation, at the applicant's expense and by posting. The Conservation Commission shall prepare the notice for publishing in the local newspaper and posting the notice at the Town Hall. The Conservation Commission shall make the application available for inspection by the public during business hours at the Town of Rowley Conservation Office.

H. Abutter Notification: Concurrent with the filing of an application for a Stormwater Management Permit, the applicant also shall provide notification to all abutters and any property owner within 100 feet of the property line of the land where the activity is proposed including if separated from that land by a public or private street or a body of water and not unreasonably distant from the project site. The applicant shall provide notification at the mailing addresses shown on the most recent applicable tax list from the municipal assessor. Notification shall be at the applicant's expense. The notification shall state where copies of the application for a Stormwater Management Permit may be examined or obtained and where information on the date, time, and location of the public hearing may be obtained. To ensure compatibility with local procedures, applicants must comply with any rules of the Conservation Commission on the location for examining or obtaining the application for a Stormwater Management Permit and information about the hearing. The applicant shall notify abutters by certified mail, return receipt requested, or by certificates of mailing. Mailing at least seven days prior to the public hearing shall constitute timely notice. The applicant shall present either the certified mail receipts or certificate of mailing receipts for all abutters at the beginning of the public hearing. The presentation of the receipts for all abutters identified on the tax list shall constitute compliance with abutter notification requirements. The Conservation Commission shall determine whether the applicant has complied with abutter notification requirements.

I. Action: The Conservation Commission may:

1. Approve the Application and issue a permit if it finds that the proposed plan will protect water resources and complies with the requirements of this Bylaw;

2. Approve the Application and issue a permit with conditions, modifications or restrictions that the Conservation Commission determines are required to ensure that the project will protect water resources and complies with the requirements of this Bylaw; or

3. Disapprove the application and deny a permit if it finds that the proposed plan will not protect water resources or fails to meet the objectives of and to comply with the requirements of this Bylaw. If the Conservation Commission finds that the applicant has submitted insufficient information to describe the site, the work, or the effect of the work on water quality and runoff volume, the Conservation Commission may disapprove the application, denying a permit. A denial shall be provided in written form.

J. Duration of Permit: Except at the discretion of the Commission, no activity governed by a Stormwater Management Permit shall be performed unless such Stormwater Management Permit has been recorded

or registered at the Essex South District Registry of Deeds or in the Land Court, within the chain of title of the affected property and all applicable appeal periods have expired. Proof of recording shall be submitted to the Commission in written form bearing the stamp of the Registry of Deeds, prior to the commencement of work. The Commission shall have the right to record or register its Stormwater Management Permit with said Registry or Land Court at the expense of the applicant. All Stormwater Management Permits shall expire three (3) years after the date of issuance. At the discretion of the Commission a Stormwater Management Permit may be extended for one (1) year at a time upon the request of the applicant in writing. The request for an extension of a Stormwater Management Permit shall be made to the Commission at least 30 days prior to expiration of the Stormwater Management Permit.

K. Project Changes: The permittee, or his or her agent, must notify the agent of the Conservation Commission in writing of any change or alteration of a planned land-disturbing activity before the change or alteration occurs. If the agent of the Conservation Commission determines that the change or alteration is significant, based on the design requirements listed in the Regulations adopted by the Conservation Commission under this bylaw, the agent of the Conservation Commission may require that an amended application or a full application be filed in accordance with this Section. If any change or alteration from the Stormwater Management Permit occurs during land disturbing activities, the agent of the Conservation Commission may require the installation of interim erosion and sedimentation control measures before approving the change or alteration.

L. Revocations: The Commission shall have the power (on its own motion or upon petition of any abutter) to initiate a revocation of a Stormwater Management Permit, for causes specified. The Commission shall notify the applicant or owners and abutters by certified mail of its intent to consider revocation and shall hold a public hearing within 21 days of the notification date.

SECTION 8. STORMWATER MANAGEMENT PLAN

The Stormwater Management Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed best management practices for the permanent management and treatment of stormwater. The Stormwater Management Plan shall contain sufficient information for the Conservation Commission to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Plan shall be designed to meet the Massachusetts Stormwater Management Standards set forth in the Massachusetts Stormwater Management Policy and DEP Stormwater Management Handbook Volumes I and II. The Stormwater Management Plan shall fully describe the project in drawings, and narrative. The applicant shall submit such material as is required by the Regulations adopted by the Conservation Commission for the administration of this Bylaw.

A. Erosion and Sedimentation Control Plan

The Erosion and Sedimentation Control Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion and sedimentation controls. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design standards and contain the information listed in the Regulations adopted by the Conservation Commission for administration of this Bylaw.

B. Operation and Maintenance Plan

1. An Operation and Maintenance Plan (O&M Plan) for the permanent stormwater management system is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with this Bylaw and that the Massachusetts Surface Water Quality Standards contained in 314 CMR 4.00 are met in all seasons and throughout the life of the system. The Operation and Maintenance plan shall include any requirements deemed necessary by the Conservation Commission to insure compliance with said plan, including without limitation, a covenant. The Conservation Commission shall make the final decision of what maintenance option is appropriate in a given situation. The Conservation Commission will consider natural features, proximity of site to water bodies and wetlands, extent of

impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. Once approved by the Conservation Commission the Operation and Maintenance Plan shall be recorded at the Registry of Deeds by the permittee, shall run with the land, shall remain on file with the Conservation Commission and shall be an ongoing requirement. The Operation and Maintenance Plan shall conform to the requirements listed in the Regulations adopted by the Conservation Commission for the administration of this Bylaw. Stormwater management easements shall be provided by the property owner(s) in areas and as necessary to carry out the required maintenance.

2. Changes to Operation and Maintenance Plans

a. The owner(s) of the stormwater management system must notify the Conservation Commission or its agent of changes in ownership or assignment of financial responsibility.

b. The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of this Bylaw by mutual agreement of the Conservation Commission and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, persons with operational responsibility, and persons with administrative responsibility. Once the amended Plan is signed the owner(s) shall file it at the Registry of Deeds at their expense and provide written proof of recording to the Commission.

SECTION 9. INSPECTION AND SITE SUPERVISION

A. Preconstruction Meeting. Prior to clearing, excavation, construction, or any land disturbing activity requiring a permit, the applicant, the applicant's technical representative, the general contractor, pertinent subcontractors, and any person with authority to make changes to the project, shall meet with the Conservation Commission or its designated agent to review the permitted plans and proposed implementation.

B. Commission Inspection. The Conservation Commission or its designated agent shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the approved plans and any conditions of approval. One copy of the approved plans and conditions of approval, signed by the Conservation Commission shall be maintained at the site during the progress of the work. In order to obtain inspections, the permittee shall notify the agent of the Conservation Commission at least three (3) working days before each of the following events:

1. Erosion and sediment control measures are in place and stabilized;

2. Rough Grading has been substantially completed;

3. Final Grading has been substantially completed;

4. Bury Inspection: prior to backfilling of any underground drainage or stormwater conveyance structures;

5. Close of the Construction Season; and

6. Final landscaping (permanent stabilization) and project final completion.

C. Permittee Inspections. The permittee or his or her agent shall conduct and document inspections of all control measures no less than weekly or as specified in the permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the control plan, and the need for maintenance or additional control measures. The permittee or his or her agent shall prepare and may be required to submit monthly reports to the Conservation Commission or designated agent in a format approved by the Conservation Commission. The Conservation Commission may

require, as a condition of approval, that an Environmental Site Monitor, approved by the Conservation Commission, be retained by the applicant to conduct such inspections and prepare and submit such reports to the Conservation Commission or its designated agent.

D. Access Permission. To the extent permitted by law, or if authorized by the owner or other party in control of the property, the Conservation Commission, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this Bylaw and may make or cause to be made such examinations, surveys or sampling as the Conservation Commission deems reasonably necessary to determine compliance with the permit.

SECTION 10. SURETY

The Conservation Commission may require before the start of land disturbance activity the permittee to post a surety bond, cash, or other acceptable security. The form of the bond shall be approved by Town Counsel, and be in an amount deemed sufficient by the Conservation Commission to insure that the work will be completed in accordance with the permit. If the project is phased, the Conservation Commission may release part of the bond as each phase is completed in compliance with the permit but the bond may not be fully released until the Conservation Commission has received the final report as required by Section 11 and issued a Certificate of Completion.

SECTION 11. FINAL REPORTS

Upon completion of the work, the permittee shall submit a report (including certified as-built plan prepared and signed by a registered professional engineer (PE) or professional land surveyor (PLS), showing grading, stormwater facilities, and structures in areas subject to this Stormwater Management Permit. This as-built may be the originally submitted site plan with changes highlighted and explained.) from a registered professional engineer (PE) or registered professional land surveyor (PLS) certifying that all erosion and sedimentation control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. Any discrepancies should be noted in the cover letter.

SECTION 12. ENFORCEMENT

A. The Conservation Commission or an authorized agent of the Conservation Commission shall enforce this Bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

B. Orders.

1. The Conservation Commission or an authorized agent of the Conservation Commission may issue a written order to enforce the provisions of this Bylaw or the regulations hereunder, which may include:

a. A requirement to cease and desist from the land-disturbing activity until there is compliance with the Bylaw and provisions of the land-disturbance permit;

b. Maintenance, installation or performance of additional erosion and sedimentation control measures;

c. Monitoring, analyses, and reporting; and

d. Remediation of erosion and sedimentation resulting directly or indirectly from the land-disturbing activity.

2. If the enforcing person determines that abatement or remediation of erosion and sedimentation is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town of Rowley may, at its option, undertake such work, and the property owner shall reimburse the Town's expenses.

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

C. Non-Criminal Disposition. As an alternative to criminal prosecution or civil action, the Town of Rowley may elect to utilize the non-criminal disposition procedure set forth in G.L. Ch. 40, §21D in which case the Conservation Commission or authorized agent shall be the enforcing person. The penalty for the first violation shall be $75.00, the second violation shall be $150.00, and for the third and all subsequent violations shall be $300.00 per violation. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

D. Appeals. All decisions or orders of the Conservation Commission shall be final. Further relief shall be to a court of competent jurisdiction.

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

SECTION 13. CERTIFICATE OF COMPLETION

The Conservation Commission will issue a Certificate of Completion upon receipt and approval of the final reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with this Bylaw. The Certificate of Completion shall be recorded at the Registry of Deeds by the owner(s). Proof of such recording shall be provided to the Commission in written form bearing the stamp of the Registry.

SECTION 14. SEVERABILITY

If any provision, paragraph, sentence, or clause of this Bylaw or the application thereof to any person, establishment or circumstance shall be held invalid for any reason, all other provisions shall continue in full force and effect to the extent permitted by law.

This bylaw was passed at the Special Town Meeting of November 5, 2007 (Article 20), unanimously by voice vote without amendment. It was approved by the Attorney General on November 20, 2007, and posted in accordance with the law on November 28, 2007.

Town of Rowley
Drainage Infrastructure

West Newbury

Newbury

Groveland

Georgetown

Boxford

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W E
S

Legend

- Census Urbanized Area
- Property Parcels
- Town Boundary
- Catch Basin
- Manhole
- Outfall Pipe
- Interstate
- Roads
- Streams
- Water

1 inch = 0.23 miles

Merrimack Valley Planning Commission