

Municipality/Organization: Town of Andover
EPA NPDES Permit Number: MAR041178
MassDEP Transmittal Number: W-041021
Annual Report Number & Reporting Period: Year 15
May 1, 2017 – April 30, 2018

NPDES PII Small MS4 General Permit Annual Report

Part I. General Information

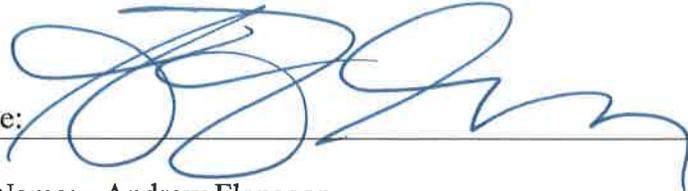
Contact Person: Andrew Flanagan Title: Town Manager

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Certification:

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

Signature: _____



Printed Name: Andrew Flanagan

Title: Town Manager

Date: _____

5/1/18

Part II. Self-Assessment

The Town of Andover has completed the required self-assessment of the annual compliance review for the Phase II Stormwater Program. In accordance with the NPDES Phase II Stormwater requirements, the following topics were evaluated for the completion of the Annual Report:

1. Compliance with the Phase II Permit Conditions
2. Appropriateness of the Selected BMPs
3. Progress Towards Achieving the Program's Measurable Goals
4. Results of Any Information that has been Collected and Analyzed
5. Activities for the Next Reporting Cycle
6. Changes in Identified BMPs or Measurable Goals

The Town has determined that our municipality is in compliance with all permit conditions.

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
1A	Develop Stormwater Section of Town Website	Dept. of Public Works/Engineering Dept., Water Dept., and Town Website Manager(s)	Measure the number of hits over permit term.	The “Stormwater Management” section of the Town’s website was maintained and updated as necessary. Information provided includes an overview of the NPDES Phase II program, pollutant prevention information, and illicit discharge information, as well as links to additional resources were provided. The stormwater section of the website had 249 views during this reporting period.	Continue to track website hits and update the website with pertinent information and links.
Revised					
1B	Distribute Brochures and Fact Sheets to Businesses and Residents	Department of Public Works/Engineering Dept., and Water Dept.	Number of articles and copies of materials.	A section on stormwater management was published in the annual “Recycling and Trash Collection Guide for Residents”, which was made available to the public via the Town website and email. Approximately 2,000 additional printed copies were made available for pickup at various public buildings during Permit Year 15. Publications generally discussed the Town’s requirements on recycling, household hazardous waste, yard waste, and illicit discharge	Continue providing informational brochures and materials for pickup at public locations. Continue to update and direct interested residents to the Stormwater Management section of the Town website. Cooperation with Greenscapes North Shore Coalition will be ongoing during the next permit year, with the development of information distribution towards the required four audiences (residential, commercial, developers, and

Revised				information, as well as providing general information on the NPDES Phase II program. <i>(continued on next page)</i>	industrial).
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any) <i>(continued)</i>	Planned Activities – Next Permit Term
				Source water protection and water quality information was provided in the 2017 Annual Drinking Water Quality Report (i.e., Consumer Confidence Report) of which hard copies were made available at town offices, the public library, and the water treatment plant. In April 2018, the report was made available online via the Town’s website. Topics included drinking water protection and contaminants, water quality test results, lead and copper, and water conservation. The Town partnered with the Greenscapes North Shore Coalition to cooperate on public education and outreach materials. Deliverables during Permit Year 15 included approximately 2000 copies of a pet waste information flyer that covers proper pet waste disposal procedures and stormwater pollution prevention information regarding pet waste.	

1C	Submit Advertisements/Articles on Stormwater Protection for Local Newspaper	Department of Public Works/Engineering Dept., and Water Dept.	Clippings of articles and advertisements printed in local newspaper.	In March 2017, the online news source "Andover Patch" published the 2016 Andover Annual Drinking Water Quality report, which included water quality test results and information on water conservation, stormwater pollution prevention and water resource protection.	Continue to inform residents of upcoming activities and stormwater management techniques in conjunction with Minimum Measures 1 and 2 by publishing articles in the newspaper and in online sources. Continue to distribute information using social media outlets.
Revised	<i>Submit Advertisements/Articles on Stormwater Protection to Local Newspaper or Online Media Sources</i>				

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
2A	Reduce Pesticide Usage in the Fish Brook Watershed	Town Departments and Residents	Implement a Pesticide Use Policy	During past permit years, the Pesticide Reduction Task Force was joined with the Fish Brook Watershed Advisory Committee (FBWAC). The FBWAC created a Pesticide Use Policy that was adopted by the Town for use in the watershed to help protect water quality. During Permit Year 8, the FBWAC issued its final report and has since disbanded. The Pesticide Use Policy remains in effect as part of the school IPM Plan, as well as mosquito control response, and is available from the Health Department and on the Town website. The Pesticide Use Policy was revised on August 21, 2017 by the Pesticide Reduction Task Force.	Continue to enforce the Pesticide Use Policy under existing regulatory methods. Provide education to residents and businesses about proper pesticide usage and potential water quality impacts under BMP 1B.
Revised		Pesticide Reduction Task Force (Town Departments and Residents)			
2B	Establish a Stormwater Call Directory	Department of Public Works/Engineering Dept., Water Dept., and Town Website Manager(s)	Record number of calls to each Department	One complaint was received by the plumbing inspector, and the call was logged as part of the Stormwater Call Directory as outlined in BMP 4B, set up through the DPW Engineering Division and advertised on the Town	Continue to receive calls made to the Stormwater Call Directory and take corrective actions. Continue to document the complaint in the log including investigation findings, actions taken, and follow-

Revised				website. The call pertained to a residential sump pump connected to the town sewer. The log includes investigation findings and actions taken.	up actions.
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
2C	Establish Classroom Education/Field Trip Program	Department of Public Works/Engineering Dept. Water Dept., and Education Department	Host one annual classroom educational event or field trip	A Greenscapes-sponsored educational event was presented to 5 th grade students at the Bancroft School in November 2017, the South School in February 2018 and the Sanborn Elementary School in April 2018. The	Continue to visit classrooms and explore expanding future programs to other schools. Encourage class projects and activities related to stormwater issues. Continue to use the Virtual Tour of the water

Revised				program, called “Keeping Water Clean” was a hands-on event, designed to introduce concepts of the water cycle, stormwater, wastewater, drinking water, and the local watershed. Personal tours of the water treatment plant are no longer offered due to security issues; however a virtual tour is available to schools and other interested parties through the Town’s website. In Permit Year 14, Merrimack College began a classroom exercise concerning eutrophication of Field Pond at Harold Parker State Forest. They conducted limited water quality analysis and weed control, and have presented some preliminary findings to Health & Conservation. No additional progress occurred in Permit Year 15.	treatment plant. Continue collaborating with Merrimack College to perform additional testing and land use review of Field Pond at Harold Parker State Forest in the future.
2D	Install Storm Drain Markers or Stencils	Department of Public Works/Engineering Dept., Water Dept., and Volunteers	100% of storm drains marked, with door hangers placed in associated neighborhoods.	A goal of marking 50% of storm drains was met in year 5. Through collaboration between Town employees and volunteers, another 1,720 markers were installed at catch basins during Permit Years 9 and 10, completing town-wide coverage, with additional minor changes occurring since.	Goal of 50% of the catch basins was completed in Year 5, and the DPW continues to mark storm drains throughout the watersheds as new developments occur and refresh markers as needed through the use of Town personnel and volunteers. Additional marking and door hanger distribution will be performed as volunteers and materials become available in the future.
Revised				<i>(continued on next page)</i>	
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term

				<i>(continued)</i>	
				Storm drain markers were installed at 13 catch basins on two formerly private roads that were accepted by the Town in 2017, and an additional marker was installed at one catch basin on Abbot St. in February 2018.	
2E	Work With Watershed Organizations to Incorporate Stormwater Information into Their Programs	Department of Public Works/Engineering Dept., Water Dept., and Conservation Commission	Document quarterly meeting topics. Agenda, meeting notes, and attendance sheets. Copies of advertisements and articles about programs	The Town has partnered with the Greenscapes North Shore Coalition, Salem Sound Coastwatch, Ipswich River Watershed Association, the Great Marsh Committee, Merrimack River Watershed Council and Eight Towns to offer an educational program “Greenscapes 101: Create a Healthier Landscape” to provide information on landscape management and the benefits to stormwater quality. Andover continues to work with 14 other municipalities in the area as a member of the Merrimack Valley Stormwater Collaborative (MVSC) through the Merrimack Valley Planning Commission (MVPC). Meetings are held monthly and public information, tools, and events are posted on the MVPC and MVSC websites. As part of the partnership with “Shawsheen Greenway,” Conservation Commissioner, Dr. Jon Honea, has worked with the organization to add stormwater education, awareness, and monitoring to their “Junior Ranger” program.	Continue working with local watershed groups and residents to discuss stormwater concerns.
Revised				<i>(continued on next page)</i>	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
				<p><i>(continued)</i></p> <p>Shawsheen Greenway has implemented a volunteer program to monitor fish counts and has added water quality testing to the program at the Shawsheen River Herring observation station. Thomas Carbone, the Andover Director of Public Health, and Mar Fournier, Assistant Director of Municipal Services, meet periodically to discuss watershed protection, including landfill closure and salt reduction. The departments of Health, Municipal Services, and Conservation have been asked to address Fosters Pond Corporation, an environmental protection organization, about water quality protection.</p>	

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3A	Develop Primary Town Storm Drain System Map	Department of Public Works/Engineering Dept., Consultant	90% of system mapped on GIS.	90% of the drainage system was mapped during Permit Year 1 using existing plans. Through subsequent mapping efforts, >99.9% of the drainage system was mapped by Permit Year 14. Complete.	Complete. No further action needed.
Revised					
3B	Complete Storm Drain System Map	Department of Public Works/Engineering Dept., Consultant	Outfalls map completed.	Storm drain pipes, structures and outfalls were continually added to the GIS drainage map from new subdivisions and site developments, as well as newly located infrastructure. Additional stormwater infrastructure has been added through research of existing records and through field inspections with GPS equipment during Permit Year 15 as follows: 2,024 ft. of drainage pipe (1,862 ft. Town and 162 ft. private); 23 catch basins (22 Town and 1 private); 19 manholes (all Town); and 2 inlets (1 Town and 1 private). The GIS base map was updated to reflect this information. 6 new town outfalls were located and inspected.	Continue verifying the location of the drainage system and incorporate changes as funds, manpower, and equipment are available. The Town will also update the GIS map as new drainage systems and new roads and developments are constructed. Excavation and flushing will likely be required to find remaining outfalls.
Revised					
3C	Develop Illicit Discharge Prohibition Ordinance	Planning Board, Board of Health, and Selectmen	Obtain authorization to control inputs to the municipal drainage system.	Illicit Discharge Rules and Regulations were adopted by the Board of Health on July 9, 2007. Complete.	Complete. No further action needed.

Revised					
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3D	Develop Illicit Discharge Detection and Elimination Plan and Implement Activities	Department of Public Works/Engineering Dept., Water Dept., Board of Health, and Consultant	All outfalls examined. Sources traced and results documented within one year of discovery.	An IDDE plan was established in Permit Year 1 and continues to be used during IDDE investigations. As possible illicit discharges are located, Board of Health works with DPW to conduct water testing and trace lines. During Permit Year 15, 6 new outfalls were found and inspected, with 3 exhibiting dry weather flows:	Continue work on locating remaining outfalls and inspecting for signs of illicit discharges as funding is available. Continue follow up on suspect outfall locations identified during previous permit years as necessary and obtain necessary funding. As dry weather screening showed E. coli

Revised				<p>OUT-1550, OUT-437 and OUT-438. Dry weather samples were collected and analyzed from these outfalls for E. coli, with results of < 20 for all three. Additional inspection and sampling was performed at 2 previously identified outfalls: OUT-1013 behind 11 Lupine Road, OUT-1412 at 12/16 Prides Circle. Dry weather samples were collected and sampled for E. coli, with results of TNTC (too many to count) and <20. OUT-1412 will no longer be monitored. While repairing the sewer service for Woodworth Motors office, it was discovered the service was directly discharging into a stone culvert nearby, which discharges into the Shawsheen River. The sewer service was then tied to a new wye located in the nearby sewer service for the Woodworth Motor Garage. In addition, there was a complaint regarding an illicit discharge of paint at the St. Augustine Church in Andover. The complaint was logged in the tracking system, and the responsible party was notified.</p>	<p>results of TNTC, OUT-1013 will continue to be monitored. Evaluate connections for future dye testing or additional inspection if required. Complaints concerning illicit discharges and pollution will continue to be logged into the tracking system and investigated as needed.</p>
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3E	Incorporate Information on Illicit Discharges into Public Education and Outreach Topics	Department of Public Works/ Engineering Dept., Water Dept., and Board of Health	Copies of materials.	General information on illicit discharges is posted on the Stormwater Management section of the Town website as outlined in BMP 1A. Stormwater management information	Continue incorporating information on illicit discharge into public education.

Revised	<i>Incorporate Information on Illicit Discharges into Public Education</i>			was included in the annual Consumer Confidence Report (i.e., Water Quality Report) distributed by Health as noted under BMP 1B. A section on IDDE was published in the annual “Recycling and Trash Collection Guide”, dated July 2017-June 2018 and was made available at various town buildings, through the Town emails, and at various events.	
3F	Establish a Procedure to Receive Calls	Department of Public Works/ Engineering Dept., and Board of Health	Log of complaints and actions taken.	The Stormwater Call Directory was established as outlined in BMP 4B, and set up through the DPW Engineering Division and advertised on the Town website. All complaints are investigated and actions taken to alleviate the problem. All non-illicit discharge calls were addressed as outlined in BMPs 2B and 4B. A link was provided from the Health Division website to the stormwater website and call directory.	Continue to receive complaints and take corrective actions based on calls to the Stormwater Call Directory outlined in BMP 2B. Continue to document the complaint in the log including investigation findings, actions taken, and follow-up actions. Since maintaining the illicit discharge complaint log separately from the municipal work order system has proved time consuming, the Town will continue to evaluate the feasibility of transferring to the Maint Star System where much of this information is already documented.
Revised					

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4A	Develop Erosion Control Bylaw	Planning Board and Selectmen	Bylaw at Town meeting by year 3.	The Stormwater Management & Erosion Control Bylaw was adopted at the 2008 Annual Town Meeting. The Planning Board adopted Stormwater Management Rules and Regulations in February of 2009. Complete.	Complete. No further action needed.
Revised					
4B	Establish a Procedure for the Receipt of Information Submitted by the Public	Planning Board and Department of Public Works/ Engineering Dept.	Record number of phone calls, copies of articles.	A Stormwater Call Directory, as outlined in BMP 3F and 2B, was established through the DPW Engineering Division and advertised on the Town website. The log includes investigating findings, actions taken, and follow-up actions.	Continue to receive calls made to the Stormwater Call Directory and take corrective actions. Continue to document the complaint in the log including investigation findings, actions taken, and follow-up actions.

Revised					
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4C	Develop Guidance for Erosion Controls & Conduct Inspections	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant	Inspection checklist and documented inspections.	The Stormwater Management & Erosion Control Regulations implemented during Permit Year 5 provide specific guidelines of erosion controls and inspections along with annual reporting. Each large construction site is assigned an inspector who regularly checks the site and documents findings using a standard inspection form, photographs, and brief daily report. Construction projects located within 100 ft. of wetlands and 200 ft. of rivers were inspected in Permit Year 15.	Continue to abide by the design standards set forth in the Stormwater Management & Erosion Control Regulations when managing erosion controls. Continue to inspect construction projects located near or in wetlands and riverfront areas.
Revised					

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
5A	Develop BMP Bylaws	Planning Board	Bylaw at Town meeting by year 3.	The Stormwater Management & Erosion Control Bylaw was adopted at the 2008 Annual Town Meeting. The Planning Board adopted the accompanying Stormwater Management Rules and Regulations in February of 2009. Complete.	Complete. No further action required.
Revised					
5B	Develop and Implement Inspection Program	Planning Board, Department of Public Works/ Engineering Dept., Conservation Commission, Selectmen and Consultant	Copies of maintenance reports received annually, plus records of inspections completed and results.	The Conservation Commission required that post-construction development projects conform to conservation standards for stormwater control annual inspection and maintenance, including submitting an Operation and Maintenance Plan before a Certificate of Compliance is issued. Projects must also conform to state standards as required. For every Homeowners Association (HOA) documented, the Town has established a comprehensive file to track BMP inspections and maintenance. The Planning Division requires that HOAs establish a bylaw requiring inspection and reporting on drainage system maintenance, with annual reports submitted on an annual basis.	Continue to document annual maintenance and inspection of HOA BMPs. Follow-up meetings and reminder letters to the Homeowners' Associations will be necessary on a yearly basis to ensure that the drainage areas are being inspected and maintained and Operation and Maintenance Plans are being followed.
Revised				<i>(continued on next page)</i>	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				<p><i>(continued)</i> The Planning Dept. sent reminder letters to owners and together with the Engineering Dept., received reports during Permit Year 15 for 4 sites: Murray Hill Estates, Courtney Lane, Steeple Court, and Andover Medical Center. An inspection report for Gregory Circle was also received in Permit Year 14. The Conservation Commission has also inspections conducted by outside independent engineers of ongoing constructing projects. Inspections are terminated when work is completed and the site is stabilized.</p>	
5C	Develop BMP Design Standards	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant	Copy of draft bylaws.	Design standards consistent with the Stormwater Management Handbook were adopted as part of the Stormwater Management & Erosion Control Regulations, adopted in February 2009. No additional work took place during Permit Year 15.	Continue to abide by the design standards in the Stormwater Management Handbook for all BMP designs.
Revised					

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6A	Sweep Streets in Town	Department of Public Works/Highway Division	Priority plan of sweeping based on water quality impact.	All streets were swept at least twice. More heavily used areas, such as the downtown area, were swept multiple times per month. Some sidewalks were also swept as part of the spring cleanup.	Continue implementing the current street sweeping program, occurring from April through November.
Revised	<i>Street Sweeping</i>				
6B	Clean Catch Basins	Department of Public Works/Highway Division and Consultant	Records of cleaning, inspections and maintenance.	Catch basins are cleaned approximately every other year, with high priority catch basins cleaned more frequently. Limited labor and financial resources reduces the frequency of catch basin cleaning. Andover has requested additional resources and continues to improve GIS capabilities in tracking catch basin maintenance activities.	Continue to clean all catch basins in Town approximately every other year, pending available resources and funding. Continue to identify problem areas and modify cleaning frequency as needed. Begin consideration of evaluating catch basins to maintain sumps less than 50% full. Continue to improve GIS capabilities in tracking catch basin maintenance activities.
Revised					
6C	Develop and Implement an Inspection and Maintenance Plan	Department of Public Works/Highway Division, Plant and Facilities Dept., Water/Sewer Dept.	Written policy. Records of inspections and maintenance.	Inspections and maintenance are performed and procedures are modified as necessary. Stormwater structures are inspected as part of routine operations as time and budget constraints allow. A standard maintenance checklist was developed during previous permitting years and utilized during inspection and cleaning operations. 10 facilities were inspected during Permit Year 15. Four oil/water/sand separators were inspected at West Hollow (3) & River Street (1). <i>(continued on next page)</i>	Continue to perform inspection and maintenance of BMPs and catch basins. Modify maintenance frequency as necessary. DPW and Plant and Facilities stormwater BMPs needing service will be scheduled to be cleaned during the Summer of 2018.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				<p><i>(continued)</i> Additionally, a drainage manhole (DMH) at 29 Lincoln Circle East with a weir was also inspected on April 6, 2018. Two separators at West Hollow and the DMH at Lincoln Circle were cleaned May 25, 2017; no BMPs currently require maintenance. DPW, Plant & Facilities, and Engineering Dept. staff performed annual inspections of the stormwater BMPs for the following locations: Andover High School (6), Andover Public Safety Center (8), Ballardvale Fire Station (1), Bancroft School (5), Doherty Middle School (6), High Plain Elementary/Wood Hill Middle School (2), Highway Department Building (1), Lewis Street – Town Yard (1), Lillian Terrace (1), Lincoln Circle at Lillian Terrace (1), River Street (1), West Andover Fire Station (1), West Knoll Road (8), West Middle School (2). One separator at Town Yard and one separator at West Middle School require maintenance.</p>	
6D Revised	Berm Sand/Salt Pile and Evaluate Options for Protection	Department of Public Works/ Highway Division	Records of modifications, including photos.	A storage shed was constructed in Permit Year 1 to store the sand/salt pile away from stormwater runoff. Complete.	Complete. No further action required.

6E	Store Paving Tools and Equipment Indoors	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	All paving tools and equipment are now stored indoors in designated areas. No further action was performed during Permit Year 15.	Continue to store all tools and equipment indoors in designated areas.
Revised					
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6F	Rinse Marking Paint Buckets to the Sanitary Sewer System and Store Buckets Indoors	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	All marking paint equipment is rinsed into the sanitary sewer system.	Continue to rinse all marking paint equipment into the sanitary sewer system
Revised	<i>Rinse Marking Paint Equipment into the Sanitary Sewer</i>				
6G	Implement BMPs to Reduce Sediments Entering the Drainage System	Department of Public Works/Highway Division	Records of sweeping and inspection records.	Paved roadways and other hardscape surfaces in Town were swept regularly. The Town no longer uses road sand to treat roads.	Continue to sweep the paved roadway and clean the catch basins at the DPW Yard on a frequent basis.
Revised	<i>Reduce Sediments Entering Storm Drain System</i>				
6H	Bring Floor Drain System at the Water/Sewer Building into Compliance	Department of Public Works/Engineering Dept.	As-built sketches.	Floor drain was brought into compliance in Permit Year 1. Complete.	Complete. No further action is required.
Revised					
6I	Bring Floor Drain System at the Vehicle Maintenance Building into Compliance	Department of Public Works/Engineering Dept.	As-built sketches.	Floor drain was brought into compliance in Permit Year 1. Complete.	Complete. No further action is required.
Revised					

6J	Wash Vehicles in Accordance with DEP Regulations	Department of Public Works/Highway Division	Record of Memo.	Vehicles are washed indoors to floor drains that discharge into an oil/water separator and the sanitary sewer system.	Continue washing vehicles indoors.
Revised	<i>Washing Highway Vehicles in accordance with MassDEP Regulations</i>				
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6J	Wash Vehicles in Accordance with DEP Regulations	Department of Public Works/Highway Division	Record of Memo.	Vehicles are washed indoors to floor drains that discharge into an oil/water separator and the sanitary sewer system.	Continue washing vehicles indoors.
Revised	<i>Washing Highway Vehicles in accordance with MassDEP Regulations</i>				
6K	Implement Stormwater BMPs at the Fueling Station	Plant and Facilities Dept. and Consultant	Repair Records. Better housekeeping for small spills. As-built sketches or plans. Record of memo.	A fully stocked spill kit and disposal containers are maintained onsite to clean up future leaks. Any waste will be disposed of properly.	Continue to keep fully stocked spill kit and disposal container on-site to clean up any future leaks and to dispose of wastes properly.
Revised		Plant and Facilities Dept.			

6L	Develop an Inspection and Maintenance Program for the Liquid Calcium Chloride (CaCl) ASTs.	Department of Public Works/Highway Division	Inspection and Maintenance Plan. As-built sketches or action taken. Record of memo.	An inspection and maintenance plan and procedures for handling large leaks and spills was completed in Permit Year 2. A Calcium Chloride Use and Inspection Plan has been developed for operations at the Town Yard, including inspecting the calcium chloride tanks and calibrating truck-mounted spreaders. The liquid calcium chloride dispensing system was completely redesigned and rebuilt in 2016 to improve efficiency and safety, and a covered shed was installed for distribution of a sand/salt mix to residents as noted under BMP 6W.	Continue with the current inspection and maintenance program consistent with previous years. Continue with the current Calcium Chloride use and storage plan.
Revised	Develop a Use and Storage Plan for CaCl at the Town Yard		Use and Storage Plan. As-built sketches or action taken. Record of memo.		
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6M	Implement BMPs at the Ledge Road Landfill	Department of Public Works	Complete landfill cap.	A Comprehensive Site Assessment (CSA) and semi-annual groundwater & air sampling was performed during Permit Year 6, and an additional risk study as requested by MassDEP was completed. Voters approved a \$7.34M construction bond during Permit Year 6. During Permit Year 15, Andover has been in the final design phase of the project in conjunction with CDM Smith and MassDEP and others.	Continue the final design phase during Permit Year 15. Construction of the cap and associated work is expected to begin in the Fall of 2018, pending approval of necessary permits and funding.
Revised	<i>Ledge Road Landfill Cap & Closure Plan</i>				
6N	Provide Additional Slope Stabilization at the Snow Dump and Storage Location	Department of Public Works/Engineering Dept. and Highway Division	As-built sketches or plans and photos.	Slope stabilization at the snow dump location was completed during Permit Year 1. Complete.	Complete. No additional work is needed.

Revised					
6O	Ensure Compliance for Floor Drains and Vehicle Washing Activities at the West Fire Station	Plant and Facilities Dept. and Fire Dept.	Sketches or inspection memos. Record of memo.	Continued washing vehicles indoors to prevent discharges to the Town's MS4. Floor drains are periodically inspected and personnel observed to ensure compliance with proper washing procedures.	Continue to prohibit outdoor vehicle washing and wash vehicles indoors. Continue to monitor floor drains and observe personnel for proper washing routines.
Revised	<i>Ensure Compliance for Floor Drains and Vehicle Washing Activities at the West Fire Station – 200 Greenwood Road</i>				
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6P	Ensure Compliance for Floor Drains and Vehicle Washing Activities at the Ballardvale Fire Station	Plant and Facilities Dept. and Fire Dept.	Sketches or inspection memos. Record of memo.	Continued washing vehicles indoors to prevent discharges to the Town's MS4. Floor drains are periodically inspected and personnel observed to ensure compliance with proper washing procedures.	Continue to prohibit outdoor vehicle washing and wash vehicles indoors. Continue to monitor floor drains and observe personnel for proper washing routines.
Revised	<i>Ensure Compliance for Floor Drains and Vehicle Washing Activities at the Ballardvale Fire Station – 1 Clark Road</i>				

6Q	Wash Vehicles at the Approved Vehicle Wash Area at the Police Station (Public Safety Building)	Plant and Facilities Dept. and Police Dept.	Record of memo.	Continued washing vehicles at approved wash areas. Outdoor vehicle washing is prohibited. Floor drains are periodically inspected and personnel observed to ensure compliance with proper washing procedures. .	Continue to wash all vehicles indoors at approved vehicle wash areas. Continue to monitor floor drains and observe personnel for proper washing routines.
Revised	<i>Wash Vehicles at the Approved Vehicle Wash Area at the Headquarters Fire Station – 32 N. Main Street, and Police Station (Public Safety Building)</i>	Plant and Facilities Dept. Fire Dept. and Police Dept			
6R	Prohibit Vehicle Washing at the Cemetery Buildings	Plant and Facilities Dept. and Fire Dept.	Record of memo.	DPW staff are now working together to wash vehicles at the Town Yard, which drains into the sanitary sewer.	Continue washing vehicles at approved sites.
Revised	<i>Develop a Vehicle Washing Program for the Parks and Grounds Cemetery Vehicles</i>	Department of Public Works			
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6S	Rinse Marking Paint Buckets to the Sanitary Sewer System at the Park Shop	Plant and Facilities Dept. and School Dept.	Record of memo.	Continued rinsing all marking paint equipment to the sanitary sewer system.	Continue rinsing all marking paint equipment to the sanitary sewer system.
Revised	<i>Rinse Marking Paint Equipment into the Sanitary Sewer</i>				

6T	Ensure Compliance with SPCC Plans for the West, Shawsheen, and Bancroft Elementary Schools	Plant and Facilities Dept. and School Dept.	Record of inspections and activities in accordance with the plan.	Continued inspecting facilities in accordance with the SPCC Plans.	Continue inspecting facilities in accordance with the SPCC Plans. Update SPCC plans as required under applicable regulations.
Revised					
6U	Use IPM Program for Application of Pesticides in Town	Plant and Facilities Dept.	Copy of "Chapter 85 of the Acts of 2000".	Continued to implement and fine tune an Integrated Pest Management (IPM) Program to minimize the amount of pesticides (herbicides and insecticides) and fertilizers on Town-owned lands in order to comply with the Massachusetts Pesticide Control Act and the Children Protection Act 2000/Executive Order 2003 (an act protecting children and families from harmful pesticides).	Continue Integrated Pest Management (IPM) Program. Survey the mosquito population to identify potential virus outbreaks of West Nile or Eastern Equine Encephalitis. If a virus outbreak is threatening, the Town will spray for adult mosquitoes.
Revised	<i>Develop and Implement an Integrated Pest Management (IPM) Program</i>	Department of Public Works			
6V	Use Licensed Applicators for Fertilizers and Pesticides in Town	Plant and Facilities Dept.	Record quantities of fertilizers and pesticides purchased annually.	Continued to use a licensed applicator to apply chemicals such as fertilizers and pesticides that require a license to ensure the safety of the public and environment in Town. The requirements in Massachusetts are outlined in the following website: http://www.mass.gov/eea/agencies/agr/pesticides/pesticide-applicator-licensing-and-certification-fees.html	Continue to use a licensed applicator to apply fertilizers and pesticides in Town.
Revised	<i>Use a Licensed Pesticide Applicator</i>	Department of Public Works			
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6W	Store Road Salt Under Cover and Clean Loading Area	Department of Public Works/Highway Division	Minimize stormwater contact with salt.	Continued to store all road salt materials under cover at the DPW Facilities Plant and Yard and cleaned loading area on a regular basis. In	Continue to store all road salt materials under cover at the DPW Facilities Plant and Yard and clean loading area on a regular basis.

Revised	<i>Store Salt Under Cover and Clean Up The Loading Area Regularly</i>			order to further improve salt management, a new, custom designed, open front shed was purchased for storing sand/salt mix for residents.	
6X	Use Low Salt Applications at Designated Areas	Department of Public Works/Highway Division	Use less salt within the Haggetts Pond watershed, as demonstrated with application rate.	During Permit Year 6, deicing practices were modified to reduce salt application within the Fish Brook and Haggetts Pond watersheds; these modified practices were continued in Permit Year 15. Low salt applications are performed when able within the watershed. Additionally, MassDOT has incorporated sodium reduction policies throughout its operations area in Andover, including use of speed controllers on the spinners and the use of wetting agents to improve the efficiency of the treatment.	Continue to use low salt applications in the Fish Brook and Haggetts Pond watershed for water supply protection.
Revised	<i>Reduce Road Salt in Designated Areas</i>				
6Y	Ensure Proper Waste Disposal in Town for Hazardous and Special Wastes	Department of Public Works and Consultant	Document quantity of wastes collected annually.	The Town implemented an athletic field recycling program and an enhanced Zero Waste Day in Permit Year 14. Hazardous household wastes (HHW) and electronics waste were collected at annual drop-off events. Two HHW collection events were held during Permit Year 15, taking place on June 10, 2017 and November 18, 2017 at West Elementary School.	Continue to ensure proper waste disposal in Town for hazardous and special wastes as conducted in the past. A HHW event is currently scheduled for November 2018, and an event for disposal of CRTs, batteries, and electronic equipment is scheduled for June 2018 at West Elementary School. Recycling, reuse, and waste programs are always being adjusted to improve participation and results.
Revised	<i>Develop and Implement Proper Recycling, Reuse, and Waste Disposal Programs for Town Operations and Special Events</i>			<i>(continued on next page)</i>	
BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities

				(continued) Two additional collections for other waste, including cathode ray tubes (CRTs), batteries, and electronics took place on June 3, 2017 and September 16, 2017. All events were advertised on the Town website and in flyers made available.	
6Z	Ensure Compliance for Snow Disposal in Town	Department of Public Works/Highway Division	Utilize designated snow disposal location.	Continued existing practices for snow disposal activities at the designated snow disposal area on High St.	Continue existing practices for snow disposal activities in Town to ensure surface water quality protection.
Revised	<i>Ensure Compliance with Massachusetts Snow Disposal Guidance</i>				
6AA	Conduct Town Employee Stormwater Training	Town Manager, Department of Public Works, Plant and Facilities Dept., Police and Fire Dept. and Consultant	Attendance sheet and copy of program.	NPDES Annual Stormwater Management Training was held on April 25, 2018. 17 town employees, including representative from schools, engineering, water, public works, fire and highway departments attended this comprehensive training & refresher session held by staff from the Horsley Witten Group. Training focused on stormwater-related topics, such as program background, green infrastructure, and pollution prevention and good housekeeping practices as required under the Phase II permit. Informal training was conducted at applicable work sites. Personnel also attended stormwater management training addressing indoor vehicle washing requirements.	Conduct formal refresher training as in years past. Also conduct informal training at applicable work sites.
Revised	<i>Conduct Town Employee Stormwater Training And Ensure Town Employees attend NPDES Stormwater Training Programs</i>	Department of Public Works, Plant and Facilities Dept., Police and Fire Dept.			

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 8 (Reliance on non-municipal partners indicated, if any)	Planned Activities
7A	Develop a Water Quality Strategy for 303d Waters	Town Engineer & Consultant	Summary of pollution prevention efforts, future needs, and responsible parties. Copy of surface water quality strategic plan.	The Town discussed developing a strategy to meet the TMDL considering existing actions under the Phase II stormwater management program and available resources during previous permit years. The next steps for developing a water quality strategy are pending the reissuance of the Phase II Permit. No additional progress occurred during Permit Year 15.	Review the Phase II Permit and begin to develop an implementation strategy to meet the TMDL that considers the goals of the TMDL, available resources, actions currently being undertaken by Andover, and actions by others under the MassDEP RIA Permit.
Revised					
7B	Implement BMPs from Water Quality Strategy	Town Engineer, Consultant, & Town Departments (to be determined)	Photographs, logs, and BMP descriptions for completed efforts and water quality improvements.	Progress on this BMP will follow the progress made on BMP 7A.	Progress on this BMP will follow the progress made on BMP 7A.
Revised					

7b. WLA Assessment

A TMDL, No. 2587, was completed for the entire Shawsheen River Basin for pathogens only. The following waterbodies were included in this TMDL and are listed on the 303d list as impaired due to pathogens:

- 1) Rogers Brook: segment ID MA83-04; from the outlet of the unnamed impoundment upstream of Morton Street, Andover (formerly listed as “Headwaters Billerica...”) to the confluence with the Shawsheen River in Andover.
- 2) Shawsheen River: segment ID MA83-18 (formerly part of segment MA83-02); Burlington Water Department’s surface water intake, including Billerica to the inlet of the Ballardvale Impoundment in Andover (excluding Ballardvale Impoundment’s pond segment MA83011, since 2016 cycle).
- 3) Shawsheen River: segment ID MA83-19 (formerly part of segment MA83-02 and MA83-03); from the outlet of the Ballardvale Impoundment in Andover to the confluence with the Merrimack River.

The TMDL Report set a WLA for fecal coliform standard of 200 organisms/100 mL per outfall. The report also points out that outfalls from Roger’s Brook will need an 89.5% reduction in coliform to reach the standard of 200 organisms/100mL at each outfall. To meet these standards the Report suggests the following measures, many of which are already included in Andover’s Stormwater Management Plan:

- 1) Implement an illegal connection identification and removal program;
- 2) Collect additional monitoring data to isolate coliform sources;
- 3) Implement more intensive “good housekeeping” practices; and
- 4) Assess water quality in response to implementation activities.

Andover’s Phase II program addresses general water quality concerns associated with 303d waters through the implementation of BMPs under the six minimum measures for Phase II. The approach for addressing impaired waters will be updated based on the new permit.

The final 2016 303d list (list of impaired waters) outlines several waterbodies in Andover that are classified as Category 5, meaning

waters in need of a TMDL:

1. Brackett Pond: segment ID MA92004; impaired for turbidity
2. Collins Pond: segment ID MA92010; impaired for excess algal growth and turbidity
3. Frye Pond: segment ID MA92023; impaired for excess algal growth
4. Salem Pond: segment ID MA92057; impaired for turbidity
5. Fish Brook: segment ID MA84A-40; impaired for chloride and E. coli
6. Haggetts Pond: segment ID MA84022; impaired for mercury in fish tissue
7. Ballardvale Impoundment: segment ID MA83011; impaired for mercury in fish tissue, aquatic plants (macrophytes) and non-native aquatic plants*
8. Fosters Pond: segment ID MA83005; impaired for non-native aquatic plants*, mercury in fish tissue and dissolved oxygen
9. Hussey Pond: segment ID MA83009; impaired for excess algal growth
10. Pumps Pond: segment ID MA83014; impaired for mercury in fish tissue and non-native aquatic plants*
11. Rabbit Pond: segment ID MA83015; impaired for turbidity
12. Unnamed Tributary: segment MA83-15; impaired for low flow alterations* and chloride; impairments for E. coli and fecal coliform (reported in TMDL No. 2587)
13. Unnamed Tributary: segment MA83-20; impaired for chloride

*A TMDL is not required for impairment of non-native aquatic plants and low flow alterations

Once TMDLs are developed for any of the above waterbodies, Section 7 of the annual reports will be updated to reflect changes associated with each TMDL.

Note that under the new permit, Andover is subject to the requirements for approved TMDLs for bacteria or pathogens (multiple waterbodies), and those for water quality limited waterbodies for Total Phosphorus (Merrimack River).

Part IV. Summary of Information Collected and Analyzed

Copies of all educational materials, newspaper articles, and memos distributed have been kept on file. Meeting memos, phone logs, and website hits have also been kept on file. Locations and physical descriptions of approximately 1,089 outfalls have been gathered since Permit Year 1. All outfalls, along with catch basins, manholes, pipes and stormwater BMPs are incorporated into a GIS-based map. As of Permit Year 15, the entire system has been mapped, and BMP 3A has been completed. During outfall inspections, each Town owned outfall was inspected for potential dry weather flows. 12 illicit discharges have been detected since Permit Year 1.

Detailed records of all illicit discharges and follow-up actions are maintained by the DPW. BMP inspections and maintenance activities are tracked and documented.

Part V. Program Outputs & Accomplishments (OPTIONAL)

Programmatic

Stormwater management position created/staffed	(y/n)	No
Annual program budget/expenditures	(\$)	

Education, Involvement, and Training

Estimated number of residents reached by education program(s)	(# or %)	95%
Stormwater management committee established	(y/n)	
Stream teams established or supported	(# or y/n)	
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	
Household Hazardous Waste Collection Days (including collection events for cathode ray tubes (CRTs), batteries, and electronic equipment)		
▪ days sponsored	(#)	4
▪ community participation	(%)	
▪ material collected	(tons or gal)	
School curricula implemented	(y/n)	yes

Legal/Regulatory

	In Place Prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X

Mapping and Illicit Discharges

Outfall mapping complete	(%)	>99%
Estimated or actual number of outfalls	(#)	1,089
System-Wide mapping complete	(%)	100%
Mapping method(s)		
▪ Paper/Mylar	(%)	
▪ CADD	(%)	
▪ GIS	(%)	
Outfalls inspected/screened	(# or %)	1,089
Illicit discharges identified	(#)	12 since Permit Year 1
Illicit connections removed	(#) (est. gpd)	12 since Permit Year 1
% of population on sewer	(%)	55%
% of population on septic systems	(%)	45%

Construction

Number of construction starts (>1-acre)	(#)	
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	
Site inspections completed	(# or %)	
Tickets/Stop work orders issued	(# or %)	
Fines collected	(# and \$)	
Complaints/concerns received from public	(#)	

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	
Site inspections completed	(# or %)	
Estimated volume of stormwater recharged	(gpy)	

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	Once/ 2 years
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	Once/ 2 years
Total number of structures cleaned	(#)	
Storm drain cleaned	(lf or mi.)	
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		
Cost of screenings disposal	(\$)	

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	2/year
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	2/year
Qty. of sand/debris collected by sweeping	(lbs. or tons)	
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	
Cost of sweepings disposal	(\$)	

Vacuum street sweepers purchased/leased	(#)	
Vacuum street sweepers specified in contracts	(y/n)	

Reduction in application on public land of: (“N/A” = never used; “100%” = elimination)		
▪ Fertilizers	(lbs. or %)	
▪ Herbicides	(lbs. or %)	
▪ Pesticides	(lbs. or %)	

Anti-/De-Icing products and ratios	% NaCl % CaCl ₂ % MgCl ₂ % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized	(y/n)	
Manual control spreaders used	(y/n)	
Automatic or Zero-velocity spreaders used	(y/n)	
Estimated net reduction in typical year salt application	(lbs. or %)	
Salt pile(s) covered in storage shed(s)	(y/n)	Yes
Storage shed(s) in design or under construction	(y/n)	No