



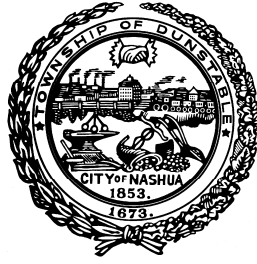
City of Nashua, NH
NPDES Phase II Small MS4
General Permit No. NHR041021

2018 Annual Report

April 1, 2017 to March 31, 2018



Prepared by:
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2018 Annual Report

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Municipality/Organization: City of Nashua, NH

EPA NPDES Permit Number: NHR041021

Annual Report Number

& Reporting Period: No. 15: 4/1/17 – 3/31/18



NPDES Phase II Small MS4 General Permit 2018 Annual Report

General Information

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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:

Title: City Engineer

Date: April 30, 2018





Introduction

This is the fifteenth annual report to comply with the conditions of the 2003 Small MS4 General Permit. This is the last annual report under this permit. During this period the City has worked towards drafting the Notice of Intent under the new permit which took effect in January 2018.

The City continues to experience a lack of funding dedicated to providing maintenance to culverts, wetlands, brooks, catch basins, and drain lines and capital improvements to the drainage system. While the City's Wastewater Department through its sewer user fee has primarily supported the efforts required for the MS4 Permit, these funds should be directed only to the sanitary and combined sewer system, not the storm drainage system. This funding deficiency is expected to grow since the 2018 MS4 General Permit puts further requirements relating to stormwater upon the City.

Knowing that legal authority was given to NH municipalities in 2008 to form stormwater utilities under RSA 149-I, the City applied for and received a grant from the NH Department of Environmental Services (NHDES), and, using additional City fund, completed a feasibility study for a stormwater utility in the City of Nashua. The feasibility study determined that a stormwater fee is a practical and advantageous option for Nashua because it would fairly distribute the cost of stormwater management amongst property owners, provide a stable source of funds dedicated to fulfilling mandated requirements for stormwater management, and allow for proactive maintenance of and necessary improvements to the drainage infrastructure. However, at this time, pursuing a stormwater fee will be delayed until citizens or elected officials champion the cause.

Part I. Self-Assessment

CSO Program

The City of Nashua is under an EPA Consent Decree (Civil Action No. 05-376-PB), dated December 26, 2005 (based on the Long-Term Water Quality and Infrastructure Control Plan), to mitigate combined sewer overflows (CSOs). Currently, there are eight CSO outfalls that are a part of the city's sewer collection system, four that discharge to the Nashua River and four that discharge to the Merrimack River. CSOs have been identified as a probable source for the *Escherichia coli* impairment within reaches of the Nashua and Merrimack Rivers located nearest to the city. While a statewide TMDL has been approved for all waterways impaired with *Escherichia coli*, the City continues to complete projects related to the Consent Decree, and as discussed below, are ongoing and will reduce the amounts of CSOs, and thus *Escherichia coli* being discharged into the Nashua and Merrimack Rivers.

The CSO program was designed based on the philosophy that urban runoff, particularly in the urbanized areas dictated by the MS4 Permit, contains pollutants that are harmful to the waterways. The City moved from a complete separation program to a hold and treat philosophy. The inner city areas are served by combined sewers. The stormwater runoff enters a sewer in the street that also conveys sanitary wastes. Up to a two year storm event, particularly the most polluted first flush, will be collected/stored and conveyed to combined sewage treatment facilities.

The 60 MGD Wet Weather Flow Treatment Facility (WWFTF), located at the Nashua Wastewater Treatment Facility (NWTF), to capture and treat combined sanitary and stormwater, continues to operate, reducing the occurrence of CSOs and the volume of combined flows that is discharged to the rivers. Also, more urban stormwater runoff from approximately 30 percent of the city, which is part of the combined flow, is now conveyed to the WWFTF where it will be treated before being discharged to the Merrimack River.

The construction of a CSO storage tank located near Burke Street was completed in December 2013. This 40,000 gallon tank contains overflow up to a 2 year storm event and reduces the amount of combined sewage discharging to the Merrimack River.

Sewer separation work completed upstream of CSO 003 has eliminated the discharge of combined sewage at CSO 3 up to a 2 year storm event. A stormwater treatment train constructed in 2006 which included a Vortech swirl concentrator, a detention pond and a created wetland allows treated stormwater to be discharged to the Merrimack River.

An automated sluice gate within the CSO 006 regulator chamber to control flow during wet weather events continues to operate. The sluice gate allows the excess volume in the 108" Nashua River Interceptor to be used to store combined flow, reducing the frequency and volume of combined sewage overflowing into the Nashua River.

The drops over structures constructed on the North Merrimack River Interceptor continue to operate. These structures reduce discharges to the Merrimack River at CSO 005 by allowing combined sewage flow from a 2-year and higher storm event in sewer pipes on East Hollis and Crown Streets to flow directly into the larger interceptor that flows directly to the NWTF and the WWFTF where the combined flow is treated prior to being discharged into the Merrimack River.

Separation of the 60 acre combined sewer Harbor Avenue area resulted in reducing the volume of combined sewage flowing to the CSO 005 regulator on the Merrimack River. An additional benefit of this work is that localized flooding of combined sewage in the streets is eliminated.

The Screening and Disinfection Facility (SDF) at CSOs 005/006, the last CSO plan element, was completed and became operational in 2015. This CSO facility has the capacity to hold one million gallons of wet weather wastewater, containing overflow up to a 2 year storm event, and reducing the amount of combined sewage discharging to the Merrimack River. In addition, this CSO facility screens and disinfects combined sewer overflows that previously were discharged

untreated from CSO 005, located on the Merrimack River, and CSO 006, located on the Nashua River slightly upstream of its confluence with the Merrimack River. The new outfall for this facility is located on the Merrimack River.

The City documents the volume of combined sewer overflows discharging into the Nashua and Merrimack Rivers. An annual monitoring program provides information for the volume of discharge at each of the eight CSOs. Rainfall data is also recorded. A plan for the Post Construction Monitoring Program for the CSO program was submitted to the EPA for comment. Included in the program is testing of the Nashua and Merrimack Rivers to determine water quality.

Public Education and Participation

The City continues to be a member of the Nashua Area Stormwater Coalition. During this reporting period, joint meeting with the Manchester Stormwater Coalition were held to share ideas, discuss the 2018 permit and to foster a unified direction in dealing with issues of the Merrimack River watershed of which all the communities lie. During the past year the group met eight times. The groups also discussed successes and challenges in addressing their stormwater management programs and compliance with the MS4 regulations. .

The Paulie the Pickerel “Let Only Rain Go down the Storm Drain” logo continues to be used for marketing the stormwater management program in the city. Magnets with the logo continue to be distributed during educational presentations. Door hangers containing information about stormwater dos and don’ts were distributed during presentations and are available in locations frequented by residents in public buildings. In total, approximately 30 presentations were made to the public consisting of: about 12 presentations to about 125 people of all ages at the Public Works Day Celebration in, September, 15 presentation to about 325 seventh graders in a public middle school, and 2 presentations to 65 elementary school Lego League participants.

The Mine Falls Park Advisory Committee sponsored six Trail Days during the period. In addition to general park maintenance, trash and debris were removed from the waterways and banks of the Nashua River, Nashua Canal and Mill Pond. These events are well attended and include families, high school groups, business teams and the general public.

Updates of stormwater issues are reported at monthly meetings of the Board of Public Works. The Board of Public Works is a five member body of the elected officials that are responsible for the overall direction and performance of the Division of Public Works. This is a public meeting that is recorded and broadcasted repeatedly on the government access channel. The stormwater update discusses city-wide drainage issues, the progress made on addressing them, and any other items that are related to the management of stormwater.

The Nashua Telegraph continues to run articles on the water quality of area brooks, rivers and streams and the volunteer sampling program that is ongoing to determine the health of the waterways. An article on the City’s efforts to investigate the chloride impartment in the Nashua River was also written as well as articles on the Riverfront Walkway along the Nashua River

The waterways continue to have issues with invasive species. Scheduled treatments of the Nashua River, Mine Falls Park Mill Pond and Canal are scheduled for 2018. There are 5 documented invasive aquatic plants in the Nashua River, Mill Pond, and Nashua Canal. City staff collaborates with the State Exotic Species Program Coordinator to monitor invasive species and update the Long-Term Exotic Aquatic Plant Management Plan annually for these waterbodies. In the Nashua River, Water Chestnut is removed by hand pulling done by City staff, the local watershed association, and volunteers. The dominant invasive species present now are fanwort and milfoil; these are being managed with herbicide treatments. The Mill Pond and Nashua Canal are also treated with herbicide to control invasive species every other year. During summer 2017, curly leaf pondweed was identified in Sandy Pond, a 4.5 acres pond in the urban core of Nashua. Herbicide treatments to control this invasive species will begin during summer 2018.

In late 2016, the Mayor created a new Environment and Energy Committee. This committee began meeting in March 2017 and organizes environmental events to complement the work of the Nashua Conservation Commission. For example, in October 2017 this committee organized a volunteer litter clean up around Sandy Pond.

Illicit Discharge Detection and Elimination

The Geographic Information System (GIS) mapping program of outfalls was updated with new information and corrected when discrepancies were found.

Culverts continued to be cleaned and maintained. When a new culvert was identified, the GIS mapping system was updated with accurate culvert information based on the field verification. Where necessary, maintenance work orders were generated.

Hazardous waste collection days, coordinated regionally by the Nashua Regional Planning Committee, occurred on April 22, May 6, June 1, August 5, August 26, October 7 and November 4, 2017. Approximately 98,300 pounds of waste was collected regionally during these events.

Two Pill Take Back Days were held during the reporting period. One of the goals of this program is prevent pharmaceuticals from becoming part of the wastewater stream and eventually entering the waterways in the effluent.

The Nashua River Watershed Association was hired by the City to assist Engineering Interns in identifying, investigating, reporting and sampling stormwater outfalls in the Nashua River and associated impaired waterways. Approximately 80 outfalls were investigated and 23 sampled on dry weather days. E.coli were mainly in the good to excellent range with only one result in the poor range (≥ 630 cfu).

Construction Site and Post-Construction Runoff Control

The Nashua Land Use Code addresses land use planning issues through a variety of provisions related to stormwater management including the protection of wetlands, floodplain regulations,

landscaping requirements, impervious surface requirements, open space requirements, and designs issues discussed during the development review process. The technical review process affords an interdisciplinary review of all applications submitted for Planning Board approval. Stormwater, drainage, and improved landscaping elements are included in discussions for every site and contribute to improving the stormwater directly or indirectly. The open space, impervious surface, parking and other zoning provisions are addressed as part of the process as well. The current land use code (with revisions incorporated dated September 1, 2012), is routinely discussed at staff meeting, noting areas where future amendments may be warranted.

Wetlands and wetland buffer areas are protected and proposals to impact these areas are carefully reviewed by the Nashua Conservation Commission who makes a formal recommendation to the Zoning Board of Adjustment. Wetland Buffer Markers continue to be required to be installed in the buffer areas of impacted wetlands by the Nashua Conservation Commission when proposed developments include wetland impacts. The purpose of the markers is to encourage residents not to dump debris in wetland areas.

The building permit process includes review of not only zoning and building issues, but proximity to local conservation lands and practical things to do or not do. For example, no construction materials shall be stored or left in the wetland buffer areas, best management practices to be followed during construction and site cleanup upon project completion.

Staff provides ongoing assistance to residents with flood insurance and floodplain management questions. This serves as an opportunity to educate the public about floodplain management and the relationship to stormwater management.

Staff routinely provided educational literature to the NCC and Planning Board on issues related to environmental protections such as stormwater management, erosion control and use of salt/sand in winter deicing applications.

Good Housekeeping

Good housekeeping measures included the continuous street sweeping program. Sweepers operate 16 hours a day on week days from April 1 to June 1 and 8 hours per day until December 1. Winter salt and sand use was monitored and controlled.

The City purchased a new CCTV video inspection vehicle during this reporting period. Video inspections of culverts and the storm drain system using a CCTV system and a hand operated pole camera were completed. This equipment assisted in detecting infrastructure issues.

The Parks and Recreation Department continues its practice of Integrated Pest Management (IPM) principles and reduced the amount of pesticides that was applied. The annual 2017 Pesticide Usage Report was submitted to the NH Department of Agriculture. The Department has started experimenting with the use of turf growth regulators which slow down the rate of turf growth which reduces mowing frequency and yard waste. The use of the growth regulator in our field paint has also cut down on the amount of paint that is used.

The Cartegraph Operations Management System is used to track work orders which allows

entering and tracking of all work orders within the Division of Public Works, many of which are related to stormwater management.

Culverts continued to be cleaned and maintained. Where necessary, maintenance work orders were generated using the Cartegraph systems.

Additional activities completed during the permit period are included in Part II of this report.

Impaired Waters

To address Part I.C.1 of the General Permit, Table A is included in Appendix A. Listed in Table A are the water bodies where Nashua is listed as the Primary Town on the NHDES 2014 Draft List of Threatened or Impaired Waters that require a TMDL (303(d) list). Included in the table is the Best Management Practice to address the cause of impairment if the source of impairment has been identified by the NHDES.

The NHDES Final Report for Statewide TMDL for Bacteria Impaired Waters has been approved by the EPA. Certain segments of the Nashua and Merrimack Rivers and portions of Salmon Brook have been identified as being impaired for *Escherichia coli*. The CSO Program is also addressing this impairment in the Nashua and Merrimack Rivers. In order to address Part I.D, the schedule for waterbodies in Nashua identified as bacteria impaired waters covered by the approved statewide TMDL is listed in Table B, located in Appendix B.

In addition, all marine surface waters in New Hampshire, therefore all surface waters in Nashua, are also included on this list due to statewide fish/shellfish consumption advisories issued because of mercury levels in fish/shellfish tissue.

Permit Compliance

The City of Nashua has completed the required self-assessment and is in compliance with permit conditions.

Part II. Summary of Minimum Control Measures

The summary of the activities completed in Permit Year 14 of the six Minimum Control Measures is listed in the attached table, Part II Summary of Minimum Control Measures. Planned activities for the next permitted year, April 2017 through March 2018, are also listed. Revisions to the Best Management Practices have been noted in the table.

Part III. Summary of Information Collected and Analyzed

Volunteers with the Nashua River Watershed Association continue to monitor several locations in Nashua. Results of the sampling completed are included in the New Hampshire Volunteer River Assessment Program 2017 Nashua River Watershed Water Quality Report and can be found in Appendix C. For the portion of the Nashua River that runs through Nashua, the majority

of the results for E.coli were in the excellent range (≤ 88 cfu) with no results in the poor range (≥ 630 cfu).

Staff at the Nashua Wastewater Facility also takes samples of the Merrimack River throughout the year as a requirement of their NPDES permit.

Part IV. Implementation Schedule

The Stormwater Management Program Implementation Schedule for the Best Management Practices is outlined in the attached table. The schedule for the current year, Year 15, is shown in bold. The proposed schedule for Year 16 is also presented.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
1.00	Public Education				
1.01	Storm water education program for school children	Purchase Enviroscope Watershed/Nonpoint Source model	DPW (1) - Amy Gill	Presentations using the Enviroscope were completed at the DPW celebration in September at Stellos Stadium. Fifteen presentations given to approximately 325 seventh graders and two presentation were given to 75 elementary age student at Lego League event.	Continue presenting in the schools and at other events.
Revision		Number of presentations given using Enviroscope			
1.02	Insert flyer in local newspaper describing city wide storm water program	Number of inserts distributed annually	DPW - Amy Gill	Local newspaper continued to publish articles on river water quality, volunteer water sampling, and waterbodies in general.	Continue to seek newspaper coverage on stormwater and water quality issues.
1.03	Create web page on City web site	Web page online by 12/05	DPW - Stephen Dookran, Amy Gill	The City web site was revamp during this period. Finalized stormwater information for web site.	Review and update web page.
Revision		Web page online by 12/08			
1.04	Create Public Service Announcements	Run Announcement quarterly on cable TV channel access	DPW - Amy Gill	Power point slides being revised.	Continue playing educational PowerPoint presentations on local and government cable access channels.
Revision		Number of days presentation runs			
1.05	Create brochure and presentation to inform businesses and industrial users about illicit discharges	Distribute to businesses and industrial users once every two years	DPW - Phil Appert	Visits were made to SIU and deficiencies discussed with property owners. Discussion of stormwater BMPs included in visits.	Continue visiting SIUs.
1.06	Run three videos on Cable Access TV. "After the Storm", "Stormwater is Never Away" and "A River Reborn"	Number of times videos are run.	DPW - Amy Gill	Public meetings where stormwater issues are discussed were replayed on local cable channel.	Continue to replay meetings.
1.07	Create board for display at functions where the public is gathered.	Number of times display is used.	DPW - Amy Gill	Board used as tool during public presentations.	Update board and continue to display board at various public events.
1.08	Install Wetland Buffer Markers to encourage no dumping of debris in a wetland area.	75 markers to be installed in 3 years.	DPW/CDD	Task complete. Wetland markers continued to be installed by developers as stipulations for approval by the Conservation Commission.	Installations of wetland markers will continue to be stipulated by the Conservation Commission as part of the approval process.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
1.09	Mail letters to owners/residents that abut wetland to explain importance of wetland and encourage no dumping in wetland area.	Number of letters mailed to abutters	DPW - Amy Gill, NCC(7)	Letters and Nashua Conservation brochures were sent to homeowners where a concern about adjacent wetlands were identified.	Send out information to abutters of wetlands as needed.
1.10	Design sign for brook/stream crossings	Percent design completed	DPW - Amy Gill, NCC	Draft sign designed for marking waterways.	Design sign. Discuss concept with Nashua Conservation Commission.
1.11	Present Stormwater Management Program at Public Meetings	Number of Presentations	DPW- Amy Gill	Reports presented monthly at Board of Public Works meeting which is carried and replayed on Government access channel.	Continue monthly and quarterly updates.
1.12	Purchase and distribute Magnets with "Paulie the Pickerel" logo at public functions	Number of magnets distributed	DPW - Amy Gill	Magnets continue to be distributed in city offices and at public demonstrations using the Enviroscape. Two thousand magnets were reordered during this reporting period.	Continue to distribute magnets.
1.13	Develop informative flyer about stormwater pollution and include in wastewater bills and display at public places.	Number of flyers distributed	DPW- David Boucher, Amy Gill	Inserts and doorhangers continue to be made available at public locations.	Continue to distribute information flyers/doorhangers.
1a.	Addition				
1.14	Develop Power point to run on Public Access television	Number of days presentation runs	DPW- Amy Gill	Power point slides updated.	Run informational slides on government cable channel.
2.00	Public Participation				
2.01	Attach Storm Drain Markers in or near Catch Basins discharging to open water body	40% installed by 11/04, 80% installed by 11/05, 100% by 11/06	DPW - Amy Gill, Pennichuck Water Works, Inc.	Previously placed markers inspected to determine durability of marker. Some markers replaced.	Continue to have public involved in applying markers.
Revision		50% installed by 10/08			
2.02	Continue phone hotline service for stormwater related concerns	Establish a hotline. Record number of phone calls concerning drainage issues	DPW- David Boucher, NWTF(2)	Hotline for drainage issues continues as well as an email request folder. Record violations and report to NHDES(3) and USEPA(4) as needed. The Cartegraph OMS was used to track phone calls.	Continue hotline and Cartegraph OMS to track drainage issues.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
2.03	Meet with local communities, and the NHDOT(9). Meeting coordinated by the Nashua Regional Planning Commission (NRPC). Group called Nashua Stormwater Coalition.	Meet every two months for a total of 6 meetings per year	DPW, CDD, NRPC (8), NHDES	Eight meetings were held with the Nashua Stormwater Coalition and some jointly with the Manchester Stormwater Coalition to discuss ongoing stormwater issues.	Continue to meet with members of the surrounding communities to discuss stormwater issues.
2.04	Create door hanger with tips on preventing stormwater pollution	Number of door hangers distributed	DPW - Amy Gill	Door hangers were made available at public areas.	Continue to distribute door hangers to the public.
2.05	Provide email links for stormwater related concerns	Number of times email received	DPW	Frequent emails received to report stormwater issues.	Continue to monitor emails.
2.06	Request public input for ordinance revision to Stormwater Management and Wetlands sections	Number of meetings held	CDD (5)	Public comment periods existed for all Public meetings..	Continue to obtain public comment on ordinances.
3.00	Illicit Discharge Detection and Elimination				
3.01	Map outfalls and waters of the United States in Nashua city limits	Complete by 11/04. Count number of outfalls identified	DPW - Amy Gill	Update GIS maps based on field verifications of drainage systems and outfalls, and completion of new drainage systems. City GIS system updated to new ESRI standards. Impaired waters shape file added to drainage layers.	Continue to update GIS maps based on field verification of outfalls and newly constructed outfalls.
3.02	Prepare an Illicit Discharge Detection and Elimination (IDDE) Plan	Complete final plan 10/04	DPW - Amy Gill	Continued to develop Draft IDDE.	Complete IDDE Plan.
Revision		Complete final plan 10/06			
3.03	Review illicit discharge ordinance	Amend ordinance as necessary by 12/ 07	CDD - Sarah Marchant	Ordinance reviewed. Modifications to amend ordinance reviewed and finalized.	Have Ordinance changes approved by Board of Aldermen.
3.04	Continue dry weather field survey of outfalls.	Complete survey of outfalls. Locate other outfalls in water bodies not included in survey by 11/04	DPW - David Boucher, Amy Gill	Continued to locate outfalls on smaller brooks and ponds. Identified undocumented outfalls and record. Additional outfalls documented.	Update outfall list as outfalls are located or newly constructed.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
3.05	Conduct sampling of dry weather discharges and attempt to trace source of illicit discharge	Sample and identify source of suspect outfalls	DPW - Amy Gill	With the assistance of Nashua River Watershed Association, over 80 outfalls surveyed and sampled as needed.	Sample suspect sources as needed.
3.06	Remove illicit discharges as budgetary funding allows	Track number of illicit discharges detected and removed	DPW - David Boucher, Jon Ibarra	Visual inspections of outfalls continue in trying to identify suspect discharges.	Continue testing and tracking suspect discharges.
3.07	Continue Regional Hazardous Waste Collection Day	Conduct 5 collection days per year	DPW - Sally Hyland, NRPC	Hazardous waste collection days occurred on 4/22,5/6, 6/1, 8/5 , 8/26m 10/7 and 11/4/2017. Approximately 98,300 pounds of waste was collected regionally during these events.	Schedule hazardous waste collection days.
3.08	Track Hazardous Spills	Number of Spills identified	DPW - David Boucher	A diesel fuel spill occurred within a City parking garage, which drained into the drainage system. DPW staff cleaned up the spill as needed.	Report on spills as necessary.
3.09	Conduct watershed audit for input in NRPC report	Complete audit	DPW, CDD, NRPC	Audit completed.	
3.10	Sample outfalls in water body RIV700061201-05, identified on the Impaired waters list	Number of outfalls sampled	DPW - David Boucher, Amy Gill	With the assistance of Nashua River Watershed Association, over 80 outfalls surveyed and sampled as needed, including outfalls in this waterbody.	Sample outfalls and trace source, if possible.
4.00	Construction Site Runoff Control				
4.01	Review procedure for site plan review to consider if potential water quality impacts are included	Complete review by Dec. 31 2005	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012. Staff routinely discusses land use code at staff meetings, noting areas where future amendments may be warranted.	Continue review of implementation of new ordinances.
4.02	Review requirements for construction operators to control demolition waste, chemicals, sanitary waste and other waste at the construction site	Complete review by Dec. 31 2005	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012.	Continue review of implementation of new ordinances.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
4.03	Review existing city ordinances concerning stormwater management at construction sites	Make recommendations for improvements by June 2006. Proceed through internal process to change ordinance by Dec. 2007	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012.	Continue review of implementation of new ordinances.
4.04	Develop standard drawings of runoff prevention BMPs to be used by site developers	Produce document containing at least 7 alternative erosion protection measures by Dec. 2006	DPW - Amy Gill	Sample drawings gathered and compile into standards.	Index drawings and finalize drawings. Compile drawings electronically.
4.05	Review procedures for inspection of construction sites to see if BMPs are in place and functioning correctly	Complete review by Dec. 2006	CDD	CDD reviews construction sites of concern and as the availability of staffing allows.	Continue review of inspection procedures and continue to inspect sites.
4.06	Review procedures for enforcement of improper functioning sediment and erosion control measures	Complete review by Dec. 2006	CDD	Enforcement procedures continued to be reviewed and revised.	Continue review of inspection procedures.
5.00	Post Construction Runoff Control				
5.01	Review existing ordinance Sec. 16-145 which requires post development peak discharges be no greater than predevelopment discharges. Modify as necessary	Make recommendations for improvements by June 2006. Proceed through internal process to change ordinance by Dec. 2007	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012.	Continue review of implementation of new ordinances.
5.02	Review ordinance Sec 16-145 for groundwater recharge required on new site plans	Make recommendations for improvements by June 2006. Proceed through internal process to change ordinance by Dec. 2007	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012. Staff continues to make recommendations on improving the quality of landscaping plans submitted.	Continue review of implementation of new ordinances.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
5.03	Implement Annual Operations and Maintenance requirement for BMPs on private properties	Implement by Dec. 2007	CDD- Madeleine Mineau	Land use ordinance revised and updated, effective September 2012.	Continue review of implementation of new ordinances.
5.04	Develop enforcement measures and assign internal staff to enforce requirements	Implement by Dec. 2007	CDD	Review of enforcement procedures ongoing.	Continue review of requirements.
5a.	Addition				
5.05	Install Low Impact Development items on Municipal Properties	Design and Construct on Riverside Street Property	DPW - Steve Dookran	Task complete. Infiltration systems were used in recently completed sewer project on Burke Street.	Continue to design and install LID elements on municipally owned properties.
6.00	Municipal Good Housekeeping				
6.01	Hazardous waste training program for applicable employees	Employees attend annual hazardous spill training program beginning May 2005	DPW	DPW staff reviewed procedures for handling hazardous wastes.	Continue to train employees and review procedures.
6.02	Storm water discharge training program for applicable municipal employees on preventing non-storm water discharges	Employees attend annual storm water discharge training program beginning May 2005	DPW	EPA Stormwater Web Casts viewed by staff. Employees attended various conferences and seminars (APWA, NEWEA, NHDES Non-Point Source Pollution).	Continue to train employees.
6.03	Review program for handling fertilizer on city property	Complete review July 2005	DPW - Nicholas Caggiano	Task complete.	Continue implementation of fertilization policies.
6.04	Continue litter management program by street sweeping entire City at least once a year.	Review program annually and record number of lane miles swept	DPW - Jon Ibarra	Program began in April 2017. Entire City swept once, with commercial/arterial or other critical streets being swept up to 6 times per year, including sidewalks.	Continue street sweeping.
6.05	Review snow dumping procedure to allow snow storage in areas away from surface waters	Complete review July 2005	DPW - Jon Ibarra	Program reviewed. Snow continues to be stored in areas where stormwater treatment is available before the melted snow is discharged to a water body. Area is swept during and after snow melt.	Review program annually.

Part II. Summary of Minimum Control Measures

BMP ID#	Best Management Practice	Measurable Goal	Responsible Party	Progress on Goals Permit Year 15	Planned Activities Next Year
6.06	Continue city wide program to clean catch basins	100% of all catch basins cleaned once every 3 years	DPW - David Boucher	At least 775 catch basins were cleaned.	Continue catch basin cleaning program.
6.07	Continue SSO(6) correction and mitigation program for SSOs that discharge to water bodies	Record number of SSOs corrected.	DPW - David Boucher	Three SSOs was reported that affected a water body.	Continue correction of SSOs.
6.08	Television inspection of storm drains as needed	Record number Inspect as needed	DPW - David Boucher	The City continued to video inspect storm drains as needed.	Continue inspection as needed.
6.09	Calibrate salt and sand truck spreaders	Complete annually before November 1st	DPW - Jon Ibarra	Calibrated salt and sand trucks in November 2017.	Calibrate trucks in fall 2018.
6.10	Review pooper scooper ordinance	Review ordinance by July 2005	DPW- Nick Caggiano	Ordinance reviewed and found adequate. "Mutt Mitt" dog convenience stations continue to be used by the public and are monitored and refilled.	Monitor the use of the dog convenience stations.
6.11	Disseminate information contained within city developed Alternative Storm Water Management Methods guide for Storm Water Control	Make available to developers as guide by July 2004	CDD/DPW	Low impact development ideas continued to be discussed with developers. Developers have proposed permeable pavement, infiltration systems, rain gardens and other LID components at various sites.	Continue discussion with developers about the advantages of LIDs.
Revision		Make available by July 2005			
6.12	Develop a ditch/swale cleaning program	Develop program by July 2005	DPW - David Boucher	Swales continue to be inspected and cleaned as needed. Seasonal help continues to be hired to clean swales.	Clean swales as necessary.
6.13	Develop culvert maintenance program.	Develop and Implement program by 2007	DPW - David Boucher	Culverts were cleaned and inspected as needed.	Continue to locate culverts and clean culverts as needed. Update GIS system as necessary.
7.00	Impaired Waters				
	The 2014 Draft List of Threatened or Waters that require a TMDL within the Limits of the City of Nashua, NH are listed in Appendix A. The NHDES Final Report for Statewide TMDL for Bacteria Impaired Waters has been approved by the EPA. Waterbodies in Nashua Identified as Bacteria Impaired Waters Covered by the Statewide TMDL are listed in Appendix B.				

- (1) DPW - Division of Public Works, City of Nashua
 (2) NWTF -Nashua Wastewater Treatment Facility, City of Nashua
 (3) NHDES - New Hampshire Department of Environmental Services
 (4) USEPA - United States Environmental Protection Agency
 (5) CDD - Community Development Division, City of Nashua

- (6) SSO - Sanitary Sewer Overflow
 (7) NCC - Nashua Conservation Commission
 (8) NRPC - Nashua Regional Planning Commission
 (9) NHDOT - New Hampshire Department of Transportation

Part IV. SWMP Implementation Schedule

BMP ID #	PERMIT YEAR 12				PERMIT YEAR 13				PERMIT YEAR 14				PERMIT YEAR 15				PERMIT YEAR 16			
	Spring 14	Summer 14	Fall 14	Winter 14-15	Spring 15	Summer 15	Fall 15	Winter 15-16	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17
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Part IV. SWMP Implementation Schedule

BMP ID #	PERMIT YEAR 12				PERMIT YEAR 13				PERMIT YEAR 14				PERMIT YEAR 15				PERMIT YEAR 16			
	Spring 14	Summer 14	Fall 14	Winter 14-15	Spring 15	Summer 15	Fall 15	Winter 15-16	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17
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Part IV. SWMP Implementation Schedule

BMP ID #	PERMIT YEAR 12				PERMIT YEAR 13				PERMIT YEAR 14				PERMIT YEAR 15				PERMIT YEAR 16			
	Spring 14	Summer 14	Fall 14	Winter 14-15	Spring 15	Summer 15	Fall 15	Winter 15-16	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17	Spring 16	Summer 16	Fall 16	Winter 16-17
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Appendix A

Table A. 2014 Draft List of Threatened and Impaired Waters
that requires a TMDL, Primary Town, Nashua, NH

**Table A. 2014 Draft List of Threatened or Impaired Waters that requires a TMDL(1)
Primary Town, City of Nashua, NH**

Water Body NH AUID Number Size	Use Description	Impairment Name	TMDL Priority	Source Name	Best Management Practice
Nashua River Mine Falls Dam Pond NHIMP700040402-02 60 acres (upstream of Mine Falls Dam)	Aquatic Life	Chloride	Low	Commercial Districts (Shopping/Office) ; Highway/Road/Bridge Runoff (non-construction related); Municipal (Urbanized High Density Area)	Visual inspections of salt applications and snow storage at locations within watershed.
		Dissolved Oxygen Saturation	Low	Source Unknown	To be determined once probable source identified by NHDES.
		pH	Low	Atmospheric Deposition Acidity	No action
Nashua River -Nashua Canal Dike NHIMP700040402-03 42.00 acres	Aquatic Life	pH	Low	Atmospheric Deposition Acidity	To be determined once probable source identified by NHDES.
	Primary Contact Recreation	Chlorophyll-a	Low	Source Unknown	Vortech unit installed upstream of one outfall. Stormwater detention pond
Harris Pond/Pennichuck Brook, PWS NHLAK700061001-04-01 72.079 acres	Aquatic Life	Iron	Low	Source Unknown	To be determined once probable source identified by NHDES.
	Primary Contact Recreation	Cyanobacteria hepatotoxic microcystins	Low	Source Unknown	To be determined once probable source identified by NHDES.
Lyle Reed Brook NHRIV700040402-04 3.688 miles	Aquatic Life	Oxygen, Dissolved	Low	Source Unknown	To be determined once probable source identified by NHDES.
		pH	Low	Source Unknown	To be determined once probable source identified by NHDES.
Muddy Brook NHRIV700061001-06 4.805 miles	Aquatic Life	Oxygen, Dissolved	Low	Source Unknown	To be determined once probable source identified by NHDES.
		pH	Low	Source Unknown	To be determined once probable source identified by NHDES.

**Table A. 2014 Draft List of Threatened or Impaired Waters that requires a TMDL(1)
Primary Town, City of Nashua, NH**

Water Body NH AUID Number Size	Use Description	Impairment Name	TMDL Priority	Source Name	Best Management Practice
Unnamed Brook to Pennichuck Brook (Boire Fields) RIV700061001-09 0.986 miles	Aquatic Life	Oxygen, Dissolved	Low	Source Unknown	To be determined once probable source identified by NHDES.
		pH	Low	Source Unknown	To be determined once probable source identified by NHDES.
Unnamed Brook RIV700061001-12 0.286 miles	Aquatic Life	Iron	Low	Source Unknown	To be determined once probable source identified by NHDES.
		Oxygen, Dissolved	Low	Source Unknown	To be determined once probable source identified by NHDES.
Merrimack River NHRIV700061002-14 3.714 miles	Aquatic Life	pH	Low	Source Unknown	To be determined once probable source identified by NHDES.
	Primary Contact Recreation	Creosote	Low	Contaminated Groundwater	Substantial remediation planned to be implemented by property owner.
			Low	RCRA Hazardous Waste Site	To be determined once probable source identified by NHDES.
Merrimack River NHRIV700061206-24 5.151 miles	Aquatic Life	Aluminum	Low	Source Unknown	To be determined once probable source identified by NHDES.
		pH	Low	Source Unknown	To be determined once probable source identified by NHDES.
	Primary Contact Recreation	Chlorophyll-a	Low	Source Unknown	To be determined once probable source identified by NHDES.

(1) Source: New Hampshire Department of Environmental Services (NHDES), Water Division, Watershed Management Bureau, New Hampshire, 2014 Draft 303(d) Surface Water Quality List.

PWS - Pennichuck Water System,

Appendix B

Table B. Waterbodies in Nashua Identified as
Bacteria Impaired Waters Covered by the Statewide TMDL

Table B. Waterbodies in Nashua Identified as Bacteria Impaired Waters Covered by the Statewide TMDL

Watershed	Waterbody Name	Assessment Unit #	Primary Town	% Reduction to meet TMDL	
				Single Sample	Geometric Mean
Merrimack River	MERRIMACK RIVER	NHRIV700061002-14	NASHUA	72%	25%
	MERRIMACK RIVER	NHRIV700061206-24	NASHUA	96%	35%
	SALMON BROOK - HASSELLS BROOK - OLD MAIDS BROOK - HALE BROOK	NHRIV700061201-05	NASHUA	92%	no data
	SALMON BROOK	NHRIV700061201-07	NASHUA	96%	90%
Nashua River	NASHUA RIVER - JACKSON PLANT DAM POND	NHIMP700040402-05	NASHUA	92%	no data
	NASHUA RIVER	NHRIV700040402-08	NASHUA	94%	complies
	NASHUA RIVER	NHRIV700040402-09	NASHUA	92%	no data

Source: Final Report New Hampshire Statewide TMDL for Bacteria Impaired Waters by New Hampshire Department of Environmental Services, September 2010

Appendix C

Table C. Nashua River Watershed Association
2017 Monitoring Results

2017 NASHUA RIVER WATERSHED VRAP DATA



Measurements not meeting New Hampshire surface water quality standards
Measurements not meeting NHDES quality assurance/quality control standards

^A Specific conductance > 835 $\mu\text{S}/\text{cm}$ indicate exceedance of chronic chloride standard of 230 mg/L

^B Chronic water quality standard

^C Calculated using 1/2 of the 0.25 mg/L detection limit of Total Kjeldahl Nitrogen (0.125 mg/L)
and/or 1/2 of the 0.050 mg/L detection limit of Nitrate+Nitrite (0.025 mg/L)

06-NSH, Nashua River, Upstream of Route 111 Bridge, Hollis - VRAP Trend Station

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Specific Conductance (US/cm)	Water Temp. (°C)	Chloride (mg/L)	<i>E. coli</i> (CTS/100mL)	<i>E. coli</i> Geometric Mean
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<835 US/cm ^A	NA	230 ^B	<406	<126
05/20/2017	8:20	7.30			231.0	19.2		23	
06/17/2017	8:10	6.10			284.0	20.4		86	
06/22/2017	8:40	7.58	87.8	6.70	317.9	22.2	70	20	34
07/15/2017	8:25	5.50			296.0	20.2		62	47
07/18/2017	9:00	6.12	72.3	6.57	343.2	22.5	72	40	37
08/15/2017	9:00	4.30	50.1	6.58	343.2	21.7	74	60	53
08/19/2017	8:00	5.00			383.0	20.9		64	53
09/16/2017	8:02	8.10			298.0	19.7		35	51

Date	Time of Sample	Total Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Nitrite (NO ₂) + Nitrate (NO ₃) (mg/L)	Total Nitrogen (mg/L)
Standard	NA	Narrative	Narrative	Narrative	Narrative
08/15/2017	9:00	0.037	0.41	0.65	1.06
08/19/2017	8:00	0.036	0.29	0.74	1.03
09/16/2017	8:02	0.024	0.31	0.57	0.88

2017 NASHUA RIVER WATERSHED VRAP DATA



Measurements not meeting New Hampshire surface water quality standards
Measurements not meeting NHDES quality assurance/quality control standards

^A Specific conductance > 835 $\mu\text{S}/\text{cm}$ indicate exceedance of chronic chloride standard of 230 mg/L

^B Chronic water quality standard

^C Calculated using 1/2 of the 0.25 mg/L detection limit of Total Kjeldahl Nitrogen (0.125 mg/L)
and/or 1/2 of the 0.050 mg/L detection limit of Nitrate+Nitrite (0.025 mg/L)

04AK-NSH, Nashua River, 34 Techology Way, Nashua

Date	Time of Sample	DO (mg/L)	Specific Conductance ($\mu\text{S}/\text{cm}$)	Water Temp. ($^{\circ}\text{C}$)	<i>E. coli</i> (CTS/100mL)	<i>E. coli</i> Geometric Mean
Standard	NA	>5.0	<835 $\mu\text{S}/\text{cm}$ ^A	NA	<406	<126
04/15/2017	8:06	8.90	192.0	10.0	12	
05/20/2017	7:40		235.0	20.0	91	
06/17/2017	7:38	6.40	295.0	22.0	58	
07/15/2017	7:50	4.80	295.0	24.0	345	122
08/19/2017	7:35	5.80	385.0	22.0	816	
09/16/2017	7:30	6.70	308.0	20.0	36	
10/21/2017	7:30	8.10	569.0	13.0	36	

04AA-NSH, Nashua River, 4 Water Street, Nashua

Date	Time of Sample	DO (mg/L)	Specific Conductance ($\mu\text{S}/\text{cm}$)	Water Temp. ($^{\circ}\text{C}$)	<i>E. coli</i> (CTS/100mL)	<i>E. coli</i> Geometric Mean
Standard	NA	>5.0	<835 $\mu\text{S}/\text{cm}$ ^A	NA	<406	<126
04/15/2017	8:00	9.10	131.0	10.0	9	
05/20/2017	7:10	7.70			9	
06/17/2017	7:00	5.70	16.3	19.7	105	
07/15/2017	7:00	4.70	262.0	20.0	365	69
08/19/2017	7:00	6.10	42.0	20.8	49	
09/16/2017	7:20	6.60	284.0	20.4	26	
10/21/2017	7:00	8.30	58.4	12.8	30	

04A-NSH, Nashua River, Boat Launch at Mine Falls Park, Nashua

Date	Time of Sample	DO (mg/L)	Specific Conductance ($\mu\text{S}/\text{cm}$)	Water Temp. ($^{\circ}\text{C}$)	<i>E. coli</i> (CTS/100mL)	<i>E. coli</i> Geometric Mean
Standard	NA	>5.0	<835 $\mu\text{S}/\text{cm}$ ^A	NA	<406	<126
04/15/2017	7:15	8.20	201.0	10.5	13	
05/20/2017	8:15	7.30	224.0	19.4	75	
06/17/2017	8:20	3.20	265.0	21.2	17	
07/15/2017	8:11	4.20	289.0	21.0	201	64
08/19/2017	8:28	6.00	349.0	22.4	23	
09/16/2017	8:15	5.20	286.0	21.6	9	
10/21/2017	8:45	9.60	40.5	13.8	25	