

Municipality/Organization: City of Woburn, Massachusetts

EPA NPDES Permit Number: MAR041073

MassDEP Transmittal Number: W-041026

Annual Report Number & Reporting Period: Year 13
April 1, 2015 – March 31, 2016

NPDES PII Small MS4 General Permit
Annual Report
(Due: May 1, 2016)

Part I. General Information

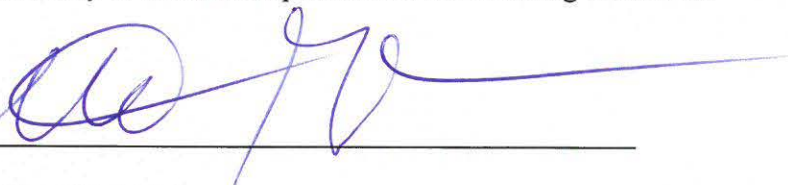
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Certification:

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:



Printed Name: Scott D. Galvin

Title: Mayor

Date: 5/2/2016

Part II. Self-Assessment

As required by Part II.D.1 of the 2003 General Permit as part of developing this Annual Report, the City of Woburn evaluated compliance of the City's Stormwater Management Program with the conditions of the 2003 General Permit. **The City has made substantial progress completing the Best Management Practices (BMPs) and measurable goals defined in our written Stormwater Management Plan, and our municipality is in compliance with the 2003 General Permit.** The City also evaluated the appropriateness of selected BMPs towards achieving the defined measurable goals, and has determined that the selected BMPs and measurable goals continue to be appropriate at this time. During Permit Year 13, the City of Woburn continued to implement its Stormwater Management Program.

The following program highlights demonstrate Woburn's comprehensive local program and may not have been described under the City's BMPs for each Minimum Control Measure in previous Permit Years.

Programmatic Achievements

- During this past year, we engaged outside consultants to help the City comprehensively evaluate the City's entire Stormwater Management Program to prepare Woburn for meeting the next General Permit requirements. The City Engineer is an active member of the Mystic River Watershed Initiative Municipal Subcommittee and has participated in many multi-community events and cooperative efforts. In October 2015, two of the City's Engineering Department interns presented at the Mystic River Watershed Municipal Subcommittee Illicit Discharge Detection and Elimination Program Workshop hosted by the Town of Lexington, where they discussed Woburn's MS4 Stormwater Management Program.
- Two Engineering interns also participated in the New England Water Environment Association's (NEWEA's) Student Poster and Presentation competition at the January 2016 annual conference. The interns won first place for their presentation on Woburn's MS4 Stormwater Management Program.
- The City Engineer is also represents the New England Chapter – American Public Works Association (NEAPWA) on the working committee for the New England Stormwater Collaborative¹. The New England Stormwater Collaborative was formed by the New England Water Works Association (NEWWA), NEWEA, and NEAPWA in 2013 with the conceptual drivers of EDUCATION, UNDERSTANDING, and ACTION. The collaborative works to engage the stormwater community, provide a forum for information and education exchange, and advocate sound stormwater management practices.

¹ More information about the New England Stormwater Collaborative can be found here:
<http://www.newwa.org/Resources/UtilityResources/NewEnglandStormwaterCollaborative.aspx>.

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 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
1-1	Hold Earth Day Celebration	Conservation Commission	Hold event annually	Due to constraints on budget and staff time, no formal Earth Day events were held by the Town. The intent of this BMP is being met through BMP 1-2.	BMP completed in prior permit years.
1-2	Hold Conservation Day Event	Conservation Commission	Hold event annually	Woburn holds an annual Conservation Day event in the spring. The City notifies the public about the event through newspapers, on the City's website, and with flyers about 2 weeks prior to the event. In Permit Year 13, Conservation Day was held on Saturday, May 2, 2015 at Horn Pond. Approximately 100 volunteers participated in cutting back brush overhanging trails, maintained trail markers, picking up trash, and planting flowers. The stormwater program posters developed as part of BMP 6-8 have also been displayed at previous Conservation Day events.	Permit Year 14 Conservation Day festivities are planned for Saturday, May 7, 2016 at the Horn Pond Conservation Area.
1-3	Continue Pet Waste Disposal Practices	Dept. of Public Works	Maintain signs and doggie mitts	Pet waste bag ("doggie mitts") supplies were checked and restocked if needed daily during Permit Year 13. Pet waste disposal signs and waste bins were checked daily from April 1st through November 30th.	BMP completed. Continue existing program.
1-4	Maintain Environmental Awareness Brochures	Dept of Public Works and Conservation Commission	Brochures available	Environmental Awareness Brochures were distributed in 2012. These brochures were restocked once during Permit Year 9.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
1-5	Develop Stormwater Brochure	Dept. of Public Works	Brochure developed by May 1, 2004	BMP completed. Brochures were developed in May of 2004.	BMP completed.
	Brochure Available for Distribution	Dept. of Public Works	Distribute brochure via mass mailing once during permit term	BMP Completed. The brochures developed under BMP 1-5 were distributed in February of 2005.	BMP completed.
1-6	DPW staff available for classroom discussions/tours	Dept. of Public Works	Schools aware of opportunity for speakers each fall and spring	Schools were notified of the opportunity. Massachusetts Water Resources Authority has also been involved at the middle school level giving stormwater presentations in previous Permit Years.	BMP completed. The City plans to continue to notify schools of this opportunity.
1-7	Stormwater bulletins added to Kiosks at Horn Pond	Dept. of Public Works	Bulletin posted on kiosks by May 1, 2004	BMP Completed. No goals for this BMP were planned for Permit Year 13.	BMP completed. Maintain/update bulletins on kiosks as budget allows.
1-8	Stormwater Information added to DPW's Website	Dept. of Public Works	Stormwater information added to website by May 1, 2005	The City developed multiple stormwater web pages to supplement its public education program in 2005. The stormwater website is accessible from the Department of Public Works (DPW) page on the City's website (http://www.cityofwoburn.com/index.asp?nid=386). The site includes information on stormwater contamination, the City's NOI and Annual Reports, and links to environmental groups in the City and the Mystic River Watershed Association (MyRWA). On August 9, 2006, the DPW, in conjunction with CDM and the Woburn Residents' Environment Network (WREN), sponsored an event to install markers at approximately 100 catch basins around Horn Pond. The markers were used to promote public involvement and raise awareness about the City's stormwater management program. In addition, a video was	BMP completed. Maintain/update the stormwater website as necessary.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				prepared in conjunction with the City's Local Access Channel (LAC) to discuss stormwater impacts and the catch basin marking program. This video has run periodically on the LAC.	
	Maintain/update information on DPW Website	Dept. of Public Works	Maintain/update website as necessary	The website is updated as necessary to provide residents notice of public stormwater events and relevant stormwater information.	BMP completed. Continue to update website as necessary.

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
2-1	Comply with State Public Notification Guidelines	Planning Board and Any City Department	Post notices on all applicable meetings and environmental awareness events	The City complied with MGL Ch. 39 S 23B (state) and local meeting notification requirements during Permit Year 13.	BMP completed. Notify public of meetings as necessary. DPW to consider adding meeting notifications to website.
2-2	Used Oil Collection Program	Board of Health	Collection held monthly	Murphy's Waste Oil accepts waste oil, oil filter, and anti-freeze from Woburn residents on the first Saturday of each month from 8:00 AM until 12:00 PM. Information is provided on the City's Trash and Recycling Calendar, which is distributed to residents annually.	BMP completed. Continue monthly collection.
2-3	Hold Household Hazardous Waste/Tire Collection Days	Board of Health	Collection held every three months	Woburn residents are provided multiple opportunities to dispose of hazardous waste, including items such as automobile batteries, tires, propane tanks, batteries, and fluorescent lights. The City's Board of Health collects any mercury-bearing waste, such as thermometers, button batteries, and	BMP completed. Continue quarterly collection. In Permit Year 14, Woburn will provide eight opportunities to dispose of household hazardous waste for a fee at the Minuteman Hazardous Household Product Facility in Lexington, MA. These collections

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				fluorescent lighting, from residents at any time. In addition, Waste Management picks up appliances and CRT screens from residents for a small fee.	will take place once per month from April through November.
2-4	City-Wide Recycling Program	Board of Health	Recyclables collected every two weeks	The City offers single-stream recycling, which is collected every other week by a subcontractor. Christmas trees and yard waste are collected during the weekly trash pickups.	BMP completed. Continue existing program.
2-5	Street Tree Planting Program	Dept. of Public Works	Maintain tree-planting program	Under the direction of the Tree Warden, the City maintains the public shade trees within the City right of way. The City also offers a street tree planting program whereby residents may request that the City install a public shade tree near their property within the public right of way. 20 public shade trees were planted in April 2015.	BMP completed. Maintain existing program.

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3-1	Continue to inspect new sewer connections	Engineering Department	Continue inspection of all new sewer connections	The City inspected 40 new or updated sewer connections to confirm that they connect to the sewer system, and not the MS4.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3-2	Map Outfalls/Receiving Waters	Engineering Department	Map completed by May 1, 2005	BMP Completed. The City's robust IDDE Program has been ongoing since 2003. Woburn has met the requirements of the 2003 General Permit to map outfalls and receiving waters. The City had no substantial mapping available of the existing drainage pipe system at the start of the permit in 2003 and undertook a comprehensive field inspection program to compile the drainage database. A map of the drainage system, including catch basins, manholes, outfalls, receiving waters, and some connectivity, was completed by May 2005. Mapping is available in ArcGIS, and is updated as drain pipes are replaced or added to the system. The City has located and inventoried 722 outfalls (approximately 90% of which are public outfalls). The City has inspected all known municipal outfalls for the presence of illicit discharges during dry weather. See BMP 3-3 for more information about dry weather inspections. To date more than 2,100 manholes were inspected and mapped comprising approximately 88 miles of drain pipe. Drain system manhole and pipe information is collected during the inspections and is incorporated into the GIS system to locate and record all drainage system physical features. During the inspections, cleaning needs for manholes, catch basins and drain lines are identified. The City has followed up on nearly all of the	BMP completed. Mapping of the drainage system continues and the GIS will be updated, as needed, as pipes are either added to the system or replaced.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				recommended system cleaning. See BMP 6-2.	
3-3	Complete dry weather screening of outfalls	Engineering Department	All outfalls screened once during permit period	BMP Completed. Woburn has inspected all mapped public outfalls during dry weather at least once during the permit period. In Permit Year 13, 41 outfall monitoring samples were collected, 27 of which were during dry weather flows and 14 during wet weather flows. Reports summarizing mapping and IDDE investigations are available from the Engineering Department. A summary of these ongoing efforts is included in <i>Part IV. Summary of Information Collected and Analyzed</i>.	BMP completed.
3-4	Stormwater Ordinance	Engineering Department	Stormwater ordinance adopted January 2007	BMP Completed. The City has adopted a drainage system ordinance (Title 1 <i>Public Services</i>, Section IV <i>Stormwater, Illicit Discharge/ Connection and Construction Site Management</i>) that regulates flows entering the municipally owned storm drainage system. This ordinance defines prohibited activities and the enforcement authority for the Superintendent of Public Works.	BMP completed. Stormwater ordinance adopted 1/22/07.
3-5	Develop and implement system for elimination of illicit discharges	Dept. of Public Works	Based on prioritized results in BMP #3-3, determine procedures to identify and remove illicit connections to drain; maintain records.	BMP Completed. Woburn adopted the <i>Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments</i> prepared by the Center for Watershed Protection and Robert Pitt (October 2004) for its IDDE program. In preparation for the City's stormwater program with UMass Lowell student	The City will continue the illicit connection identification and removal program as budget allows.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				interns, the City worked with a consultant to refine IDDE procedures for outfall monitoring, including a field protocol and inventory field form (through PeopleGIS), a Site Safety Plan, and watershed-based monitoring requirements and benchmarks based on the General Permit.	

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4-1	Continue to apply Standard 8 of MA Stormwater Policy	Conservation Commission	Standard 8 of the MSP applied during the permit term	City applied Standard 8 of the Massachusetts Stormwater Policy, Erosion and Sediment Controls, as necessary to all relevant development projects. 29 development plans were reviewed by the Conservation Commission during Permit Year 13.	BMP completed. Continue existing program.
4-2	Procedures for Collection of Public Comments	Engineering Department	Maintain existing procedure throughout permit term	Public comments are received/reviewed and filed accordingly.	BMP completed. Continue existing program.
4-3	Continue inspections for erosion control measures at construction sites within Conservation Commission review	Conservation Commission	Maintain existing policy throughout permit term. Number of construction sites inspected each year	The City completed construction site inspections for erosion and sediment control at 24 sites during Permit Year 13.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4-4	Procedure for Control of Discarded Building Materials	Board of Health and Building Department	Maintain existing procedure throughout permit term. Number of demolition permits issued each year.	44 demolition permits were issued by the City during Permit Year 13. Every applicant is required to complete a debris disposal form, which includes the location of the facility that will be accepting the debris.	BMP completed. Continue existing program.
4-5	Amend Subdivision Regulations to Require Erosion and Sediment Control Plan for Sites Disturbing More than 1-acre	Engineering Department	Draft amendment to regulations by May 1, 2005.	The City adopted Title 13 <i>Public Services</i> , Section IV <i>Stormwater, Illicit Discharge/Connection and Construction Site Management</i> , which regulates new development and redevelopment that disturbs 20,000 square feet or more of land. The ordinance defines performance standards (Massachusetts Stormwater Management Standards), the enforcement authority (Building Commissioner and Police Department), and requires the control of waste. Stormwater regulations are being developed by the City to formalize inspection, reporting, and enforcement procedures.	BMP completed. Continue existing program. According to the compliance schedule in the final General Permit, the City will determine if the Ordinance will need to be modified or Regulations adopted to meet the requirements for construction site runoff control.
4-6	Amend Zoning Ordinance to Require Erosion and Sediment Control Plan for Sites Disturbing More than 1-acre	Engineering Department	Draft amendment to regulations by May 1, 2005.	The City addressed this BMP through the adoption of a General Ordinance instead of by amending Zoning amendments. See BMP 4-5 above for more information about the Stormwater Ordinance.	BMP completed. Continue existing program.

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 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
5-1	Continue to implement City's Planning Board Rules and Subdivision Regulations	Engineering Department	Continue enforcement of existing regulations throughout permit term. Number of subdivisions reviewed each year.	The City has enforced Planning Board Rules and Regulations for all projects that have come under its review. The City reviewed 8 site and subdivision plans during Permit Year 13.	BMP completed. Continue existing program.
5-2	Maintain Policy Ensuring Long-term Maintenance of Private Structural BMPs	Engineering Department	Maintain existing policy throughout permit term. Number of private structural BMP O&M plans submitted by developers each year.	There were 6 projects reviewed during Permit Year 13 that required private structural BMPs with long-term operation and maintenance. Site plans include specific stormwater maintenance requirements for most projects. Separate "Stormwater O&M Plans" are generally required for larger projects. The Conservation Commission requires the submittal of an annual report as a standard condition.	BMP completed. Maintain existing policy.
5-3	Adopt Massachusetts Stormwater Policy Standards #,2, 3, 4, 7, and 9 in City ordinances	Engineering Department	Draft amendment to regulations by May 1, 2005	The City adopted Title 13 <i>Public Services</i> , Section IV <i>Stormwater, Illicit Discharge/Connection and Construction Site Management</i> , which regulates post-construction stormwater management in new development and redevelopment that disturbs 20,000 square feet or more of land. The ordinance defines performance standards (Massachusetts Stormwater Management Standards) and the enforcement authority (Building Commissioner and Police Department). In addition, the City regulates post-construction stormwater runoff from new and re-development through its	BMP completed. Continue existing program. According to the compliance schedule in the final General Permit, the City will determine if City Code will need to be modified or Regulations adopted to meet requirements for post-construction stormwater management.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				Wetlands Ordinance and its Subdivision Rules & Regulations. The Board of Health, Conservation Commission, Engineering Department, and Planning Board review components of proposed development/redevelopment projects and, as applicable, perform inspections after construction to assure that stormwater systems are functioning as designed.	

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 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6-1	Continue Street Sweeping Program	Dept. of Public Works	Sweep all streets in the City twice annually	All City streets are swept twice each year, and the sweeper is in use constantly during the summer.	BMP completed. Continue existing program.
6-2	Continue Catch Basin Cleaning Program	Dept. of Public Works	Clean 75% of catch basins in City each year. All CBs cleaned on a three year rotating schedule.	1,878 of the approximately 3,550 municipally owned/operated catch basins were cleaned by the City from April 2015 through December 2015. DPW uses an iPad to record key data at each catch basin when cleaned (e.g., evidence of an illicit discharge, % full, and maintenance needs). The volume of the material removed from the catch basins is recorded and disposed of at a MassDEP-approved solid waste facility. Since the inception of the stormwater program, the City has cleaned and CCTV inspected miles of drain pipe.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
				During the three-year Main Street rehabilitation project expected to finish late in 2016, DPW cleaned and TV'd the entire drain line (10,000+ linear feet) on Main Street (Route 38) and made repairs and drainage improvements prior to repaving. This year the city put out to bid drain line cleaning and CCTV inspection on Main St (from Kilby St to the rotary) and Pleasant St (from Common St to Ellis St). The City properly disposed of the material removed from the drain pipes during cleaning. The City has constructed a Vector Truck discharge station at a location separate from the DPW yard (adjacent to the former landfill in North Woburn) that will feature a paved area and runoff controls. This will eliminate any potential discharges from the discharging process into Town Meadow Brook. The Vector truck residuals are temporarily stored in a lined container until removed for final disposal at MassDEP-approved solid waste facility.	
6-3	Continue Salting/ Snow Removal Practices	Dept. of Public Works	Continue existing practices throughout permit term.	In 2009, the DPW constructed a covered storage shed that houses road salt. Spreaders were calibrated as needed to limit salt dispersion into the environment. Records of the amount of deicer use are kept by the DPW. Alternative deicing methods were used where practical and near sensitive receptors to reduce salt.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6-4	Hazardous Waste Response Program	Dept. of Public Works	Continue existing program throughout permit term	The City maintained spill kits during Permit Year 13 and continued to follow its established Spill Prevention Control and Countermeasure (SPCC) Plan. When DPW personnel perform stream maintenance, City equipment is supplied with spill kits.	BMP completed. Continue existing program.
6-5	Continue Vehicle Washing Practices	Dept. of Public Works	Continue existing practices throughout permit term	As part of the DPW Facility (North Warren Street) improvements completed in 2014, a number of water quality inlets and oil-absorbent pillows (all MassDEP approved) were installed throughout the site to reduce pollutants discharged to the MS4. Engineering and DPW are working together to address “vehicle washing” according to EPA requirements and MassDEP policy. The City is reviewing whether it is possible to create a truck wash station connected to the sanitary sewer system. No detergents are used when rinsing salt, sand, and debris off City trucks and equipment.	BMP completed. Continue existing program.
6-6	Continue Vehicle Maintenance Practices	Dept. of Public Works	Continue existing practices throughout permit term	Municipal vehicle maintenance, including police vehicles, was performed in a garage that has oil and grease traps and an oil/water separator.	BMP completed. Continue existing program.
6-7	Park and Landscape Maintenance	Dept. of Public Works	Continue existing practices throughout permit term	The City does not use fertilizers near Horn Pond or the Aberjona River, which are sensitive receptors within the City.	BMP completed. Continue existing program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6-8	Develop/Implement Employee Education/Training Program	Dept. of Public Works	Stormwater related training during permit term for each appropriate employee	DPW supervisors and employees are up to date on all training, including illicit discharges and pollution prevention in municipal operations. Public Works and Highway personnel attend various seminars each year sponsored by APWA (such as the North American Snow Conference), Baystate Roads, and other regional organizations. The City developed posters presenting efforts by DPW and the City on the stormwater program that are on display in the DPW lobby. These posters are used to increase awareness of stormwater issues for all DPW employees. The City Engineer is an active member of the Mystic River Watershed Initiative Municipal Subcommittee and has participated in many multi-community events and cooperative efforts. In October 2015, Engineering staff participated in the Illicit Discharge Detection and Elimination Program Workshop.	The City will continue training employees on stormwater impacts during the next permit year.

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA)

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any)	Planned Activities
	Not Applicable				
Revised					

Part IV. Summary of Information Collected and Analyzed

The following summarized Woburn's outfall inventory, dry weather screening, and follow up activities completed and planned under the City's Illicit Discharge Detection and Elimination Program. More detailed summary reports and laboratory data are available at the Engineering Department.

- A comprehensive field program was undertaken in Fall/Winter 2003 to walk along the banks of all water bodies (Horn pond and other ponds) and rivers and streams (Aberjona River, Middlesex Canal, Shaker Glen Brook, etc.) to locate and inspect stormwater outfalls. This field program consisted of a substantial effort to locate the outfalls and was required because the city had limited mapping of the existing outfalls. As a result, over 600 outfalls were located and the physical features and status of each was recorded on a field inspection sheet. Each outfall was photographed and the data was summarized in two large binders and an electronic database. Approximately 1/3 of the outfalls are actually outfalls from private property and are not owned by the City.
- Follow-up field inspections of the outfalls were performed between 2004 and fall 2009 to identify any outfalls with dry weather flow. To-date, each city owned outfall has been inspected at least twice during the permit period.
- Approximately forty-five (45) outfalls have had dry weather flow during the comprehensive dry weather outfall screening program conducted by the City. Most of the outfalls that have had dry weather flow during these inspections have been sampled at least three times over the last 4 years. Laboratory analysis of the flow has shown that most of the outfalls have no evidence of contamination from illicit sewer connections. At many of the outfalls, the existence of dry weather flow from the outfall is not consistent from inspection to inspection and laboratory sampling indicates no presence of any significant bacteria. Thus, these outfalls have been eliminated from further study.
- There are ten (10) outfalls with consistent dry weather flow during most of the inspection periods and laboratory analyses results that indicated the presence of some level of bacterial contamination. However, based on repeated testing results of these outfalls coupled with the lack of other illicit discharge indicators (i.e., surfactants, odors, floatables, etc.) and field inspections, the City has concluded that (with one exception) the presence of coliform in the dry weather flow from these outfalls is probably caused by background contamination from the watershed related to animal feces and is not evidence of bacteriological contamination from a potential illicit sewer connection. Some of the background animal contamination has been confirmed by TV inspections of the pipe and visual observations of animal feces around catch basins that contribute to the outfalls.
 - OF-028 was found to have a raccoon inhabiting it. A screen was placed over the outfall to prevent the raccoon or other animals from re-inhabiting the outfall. This outfall was tested again in the Spring of 2016 and had no significant levels of bacterial concentrations or other illicit discharge indicators (i.e. surfactants, odors, etc.).
 - OF-029 on Morrow Drive had animal waste in the catch basins leading to the outfall, which indicated that a resident had been disposing of their pet waste in the catch basin. This practice has since stopped. This outfall was tested again in the Spring of 2016 and had no significant levels of bacterial concentrations or other illicit discharge indicators (i.e. surfactants, odors, etc.).
 - The remaining outfalls are still being monitored but have low bacterial levels, surfactants, ammonia, etc. The one dry weather flow that was associated with an illicit sewer connection was found and removed from #385 Main Street as described below.
- One outfall has had consistent dry-weather flow and consistently high bacteria concentrations and is suspected to have an illicit connection. The City repaired the failing sewer adjacent to this drain line. Outfall sampling in the Fall of 2008 indicate a presence of bacterial contamination, however there are no signs of an illicit connection (i.e., odor, solids, floatables, surfactants, etc.). During the Main Street

drain cleaning and TV inspections (see BMP 6-2) the City identified a possible cross-connection from a private property. A sewer service was found connected to a drain manhole in front of #385 Main Street. This service connection to the drain has been removed.

- Ongoing efforts are being made by the Department of Public Works, working with Weston & Sampson, Inc. to identify and remove illicit connections that may be impacting outfalls OF-119, OF-118 and OF-120. Major sewer system improvements are also being performed within these tributary areas for infiltration/inflow reduction which could have a beneficial impact on the water quality of these outfalls.
 - An illicit connection was discovered at Lannan Chevrolet on Winn Street during the construction of a building addition. The sewer service connection for the building was found to be connected to an onsite catch basin which discharged to OF-118. During the Fall of 2015 after this connection was removed, this outfall was retested and indicator parameter concentrations were not high. This indicates that the illicit connection found was the major source of contamination at this outfall.
 - OF-119 had high E. coli counts during one wet weather flow in the Spring of 2016. A drain manhole (DMH) was opened upstream of this outfall and there were visual indications of an illicit connection. Further testing is being done on this outfall and DMH, and the surrounding homeowners have been contacted requesting permission for the City to perform dye testing.
- In the Summer of 2015, a partnership developed between the City of Woburn and the University of Massachusetts-Lowell to assist the City in meeting aspects of the General Permit. Beginning the Fall of 2015, student volunteers have field tested and sampled at outfalls and assisted in completing the drainage system map, as well as delineating tributary areas.
 - The City hired two UMass Lowell intern project managers who have overseen 8 student volunteers during the Fall 2105 semester and 6 volunteers during the Spring 2016 semester.
 - To date, the student volunteers have tested 12 outfalls, 3 drain manholes and 1 catch basin. 41 samples have been collected, 27 of which were during dry weather flows and 14 during wet weather flows.
- Ongoing efforts will be made throughout the summer of 2016 with the goal of collecting one dry weather sample from each outfall and to update and field check the drainage system map.