

Part II. Self-Assessment

During this reporting period, the Town of Lexington continued to make clear and identifiable improvements to its stormwater management program.

Stream sampling efforts were expanded through the addition of 24 engineering students from UMass Lowell. The students were trained in sampling techniques, organized into teams and sent into the field to sample surface waters.

Because the students are trained, when they go into the field, they can approach interested abutting residents and explain the system. These people are, in turn, stream observers.

The sampling teams collected numerous stream samples and are analyzing data from certified lab results. The data is added to the IDDE program data base.

Six stormwater workshops were held with elementary school students.

At Lexington Discovery Day a stormwater volunteer meet the public and explained stormwater. At that event, residents added 87 push pins to a system map to identify where they live, work or play. Those people and more learned about stormwater and stream impacts.

IDDE efforts included sewer inspection, cleaning and lining by a consulting engineer and a pipeline contractor. Plans and specifications were drawn up for 1,900 lf of lining along Mill Brook.

A rigorous stream study of Lexington tributaries to the Mystic River was completed.

Town wide BMP inventory team was created. The team is made up of Town staff from DPW operations, Engineering Division, Planning and Conservation. Two meetings have been held to begin inventory of town wide BMP's.

Town highway maintenance crews and maintenance supervisors were given training in good housekeeping for pollution prevention. The lesson plan was developed and presented by contract with the town by a proven qualified engineering consultant. Training sessions were given to public facility employees on pollution prevention and good housekeeping. Training was presented to employees that are in supervisory roles as maintenance or custodial personnel at town owned facilities.

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 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
1A	Classroom Education	Conservation/ E. Schadler Engineering / D. Pavlik	Design and present elementary-school level session explaining stormwater system	Six workshops were given to elementary age students. - April 29, 2013 and May 1, 2013: workshops were offered to 3rd grade students in Lexington. The two workshops were given at the Old Reservoir, a local pond in the Shawsheen River Watershed. The workshops covered storm water quality and its relationships to wildlife habitat - Two workshops were one in the spring one in the fall given at Parker Meadow. The workshops covered water quality and its relationships to the stormwater that flows to Parker Meadow. - January 31, 2014 and March 20, 2014: two separate stormwater workshop were given to a 4th grade Girl Scout troop and a 2nd grade Boy Scout troop at the DPW facility. The tour and workshop covered green infrastructure and stormwater BMPs.	Continue education efforts by offering educational programs to students or other groups of young people. Partner with elementary school science coordinator to integrate water quality project into existing educational program.

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1A CONT.	Classroom Education	Conservation/ E. Schadler	Design and present elementary-school level session explaining stormwater system	“The Water Cycle” is part of the 3 rd grade curriculum in the Lexington public elementary schools. This is a teachers’ guide developed by Town Conservation and School staff.	Support use of the curriculum and keep it current.
1A CONT.	Classroom Education	Engineering/ Engineering / J. Livsey, D. Pavlik and T. Malatesta	Design and present elementary-school level session explaining stormwater system	May 23, 2013 - Presented stormwater demonstration using Enviroscope® to elementary school students during DPW open house.	Present stormwater demonstration to elementary school students at open house. Continue stormwater education during DPW classroom tours of stormwater BMP’s installed at LEED certified facility.
1B	Create and Maintain Stormwater Web Site	Engineering/ Dave Pavlik	Maintain and update stormwater web page.	Posted stormwater updates on engineering and stormwater web page during permit year. January 30, 2014: posted final Stream Study for Mystic River watershed. Received emails from stakeholders pertaining to stormwater.	Continue to maintain the engineering and stormwater web page during the year. Post Mystic River Watershed stream study on stormwater web page when study is completed.
1C	Household hazardous waste collection days	DPW/ R. Beaudoin	Publish brochure with Recycling and Disposal Guidelines describing hazardous household waste products and hazardous waste drop dates and times	Completed 8 drop collection days at DPW Recycling Facility.	Continue program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
1D	Education Pamphlets	Engineering / D. Pavlik Conservation/ E. Schadler Engineering / J. Livsey	Offer pamphlets at DPW/Engineering kiosks. Distribute educational material regarding storm water features during DPW facility tour. Send informational storm water mailings to specific neighborhoods.	Pamphlets offered at kiosks in Town buildings: - EPA – “Protecting Water Quality from Urban Runoff” - Stormwater Matters “Stormwater where does it go?” Distributed EPA’s handout “Thirstin’s Water Cycle Adventure” during DPW facility tour and open house.	Place and maintain leaflets in public kiosks. Continue to offer handouts during DPW facility tours and at national public works week DPW open house.
1E	Make use of available media to disseminate information on stormwater	Engineering/ D. Pavlik Conservation/ E. Schadler	Place posters for public display in town buildings. Post video storm water information to LexMedia. Use social media and electronic news outlets.	January 30, 2014 - Updated user account on Lexington Patch. Storm water workshop published on Lexington Patch. Had stormwater workshop announcement posted in Lexington Minuteman newspaper.	Place posters in public buildings to announce storm water volunteer events or workshops. Submit articles to local news source to publicize storm water events and storm drain marker installation. Place posters in public buildings to announce storm water volunteer events or workshops. Partner with LexMedia (local cable network) for the presentation of public service announcement on IDDE. Work with Mystic River Watershed on public outreach efforts.
1F	Newsletter for watershed stewards program	Conservation/ E. Schadler	Publish newsletter.	Newsletter was not published in this permit year.	Continue to publish articles to stimulate involvement and education.

1G	Stream Neighbor Notices	Conservation/ Schadler Engineering/ D. Pavlik	E.	Inform outfall abutters of water quality and outfall inventory program.	Interns communicated with abutters during outfall inventory and water quality sampling. A letter from the Engineering division is part of the volunteer package that is presented to abutters. This letter details the objective and purpose of the work.	Continue to communicate with stream abutters about water quality and outfall inventory efforts.
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2 Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
2A	Citizen volunteers notify Town staff of poor stream health and stream blockage issues. <i>Replaced Stream Cleanup Day</i>	Conservation/ E. Schadler Engineering/ J. Livsey Highway Dept./ M. Valenti	Maintain stream health and flow by maintaining streams regularly.	Watershed Stewards continually monitored various streams for trash and stream blockage and notify town employees as needed. Notification is by email or phone to Conservation or DPW staff. Currently working on stream blockage and trash clearing with Conservation staff as funded by Town Meeting as part of Highway Operations using hand tools. During this permit year sections of Vine Brook and Clematis Brook were cleared of several stream blockages of woody debris and trash.	Watershed Stewards continue to monitor various streams for trash and stream blockage and notify town employees as needed.
2B	Volunteer Water Quality Monitoring Program	Engineering/ D. Pavlik Conservation/ E. Schadler	Maintain watershed volunteer program for program sustainability.	Engineering staff expanded the volunteer monitoring program using civil engineering students. The students are from the UMASS Lowell Francis College of engineering. Four teams of 4 students engaged in field work which included outfall observations and taking grab samples for laboratory testing. The outfall observations were recorded on data sheets. The stormwater samples are tested at an EPA approved lab. 42 lab samples have been collected to date. The samples have been tested for E. coli, surfactants and ammonia concentrations. Data is being analyzed and added to the IDDE program database.	Continue to support the water quality volunteer monitoring program into the next phase.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
2C	Storm Drain Markers Installation done with public involvement.	Conservation/ E. Schadler Engineering/ D. Pavlik	Volunteers install storm drain markers at catch basins that drain to town streams.	March 20, 2014 – 100 Storm Drain markers were purchased for installation along Massachusetts Avenue for a volunteer project. This phase of the storm drain marker program will be completed as part of an Eagle Scout project.	Undertake additional volunteer storm drain marker installation.
2D	Direct Mailings done with public involvement.	Conservation/ E. Schadler Engineering/ D. Pavlik	Use volunteers as part of direct mailings for public outreach.	No direct mailings were done this permit year. This measure was supplemented by volunteer involvement of Discovery Day in Lexington. June 1, 2013 – a stormwater volunteer presented the Town's 3 watershed map prepared by Town staff at Discovery Day. 87 push pins were used for public involvement for residents to select the area of Town in which they live. They were then told about which watershed they live and which river their stormwater flows.	Continue program.
2E	Stream Neighbor Notices	Conservation/ E. Schadler Engineering/ D. Pavlik	Inform outfall abutters of water quality and outfall inventory program.	UMASS Lowell interns communicate with abutters during outfall inventory and water quality sampling. A letter from the Engineering division is part of the volunteer package that is presented to abutters. This letter details the objective and purpose of the work.	Continue to communicate with stream abutters about water quality and outfall inventory efforts.

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
3A	Mapping of storm water outfalls and catchment areas. Mapping sanitary sewer under drain system.	Engineering/ D. Pavlik	Maintain data base for GIS mapping of Town's outfalls. Developed GIS layer of town's sanitary under drain system	Improved and update outfall maps using field investigations work. Work was done by town engineering and highway staff, volunteers and consultant. Drainage maps were revised to reflect findings in the field during the permit year.	Continue to integrate information from field work currently focused on the Mystic river watershed. Review and revise sub-catchment map as needed and integrate into storm water quality program.
3B	DPW Employee Education	Engineering/ D. Pavlik J. Livsey	Education of Town staff on development of Illicit Discharge Detection and Elimination program. Obtained information education guidance manual.	May 2, 2013 DPW Director, Highway Superintendent and Engineering Assistant attend Stormwater Management seminar given by the Massachusetts Highway Association October 15, 2013 Town Engineer, Engineering Assistant, Highway Superintendent, Forman and Crew Chief attended Municipal Stormwater Management Training Session presented by the Essex County Highway Association. Town staff received and reviewed EPA's NPDES emails during the permit year.	Utilize and distribute EPA's NPDES email and other communication. Continue to meet with local watershed associations and attend EPA trainings

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
3C	Stormwater Bylaw	Conservation/ K. Mullins Engineering/ J. Livsey	Implement stormwater bylaw.	Bylaw was passed by Town Meeting in 2008. Bylaw prohibits non-stormwater discharges and pollutants into the MS4 or watercourses in the town and it includes enforcement methods. Comments on the pending stormwater regulations have been received from Conservation Commission members. The engineering division is compiling comments for the final regulation.	Work with Town staff and user groups to continue administration of the bylaw.
3D	Illicit Discharge Recording System	Engineering/ M. Flamang	Record known points of illicit discharge	Maintain data base of points of illicit discharge and sample locations used to investigate.	Maintain the database and add points of discharge, sample locations and sample results.
3E	Locate and remediate potential sources of pollution	Engineering/ J Livsey	Direct the work of staff and engineering consultants to repair sanitary sewers.	Weston and Sampson Engineers has been working continuously since 2009 at a high level to clean, survey and repair sewers to stop exfiltration and prevent overflows of sewage into streams. Engineering division and contractors have sealed sections of sanitary sewer to remedy infiltration and exfiltration. Preliminary results of stream sampling show improvement in stream quality.	Continue work on program of comprehensive sanitary sewer repair and renewal.
3E	Locate and remediate potential sources of pollution	Engineering/ M. Flamang	Locate and remove illicit connections to storm drains for approximately 10% of town.	Began construction to improve town drainage in one neighborhood with excessive basement water problems. Survey of approximately 25% of town is complete.	Continue work on program of sanitary sewer repair and sump pump disconnection.
3E	Locate and remediate potential sources of pollution	Engineering/ M. Flamang D. Pavlik	Line aging sanitary sewers to prevent exfiltration of sewage into sewer underdrains that flow to streams.	Sewer lining of sewers in Mill Brook vicinity is under contract.	Continue to test outfalls in area of relining project.

3E CONT.	Locate and remediate potential sources of pollution	Engineering/ M. Flamang and D. Pavlik	Purchased additional supplies for water quality testing equipment for IDDE sampling. Continued use of environmental services company to provide laboratory testing on as needed schedule. Expanded volunteer water quality monitoring program to use of environmental engineering students from UMASS Lowell. Updated the "how to guide" for watershed volunteers to use in field for sampling and outfall inventory. Purchased additional equipment for volunteer program.	May 2013 to March 2014 – Town Staff continued water quality sampling of known hot spot for illicit connections. Grab samples were taken from outfalls for laboratory testing of <i>E. Coli</i> (MPN/100ml), <i>surfactants</i>(mg/l) and <i>ammonia</i> (mg/l) concentrations. 42 samples were taken on over a 10 month period. November 2013 to March 2014 - Expanded volunteer water quality sampling using engineering students from UMASS Lowell. Sampling team members monitor specific outfalls weekly and share observations to locate sources of pollution and eliminate them. Two training and education sessions were given to a total of 24 students. Four teams of 4 students engaged in field work which included outfall observations and taking grab samples for laboratory testing. The outfall observations were recorded on data sheets. The stormwater samples are tested at an EPA approved lab. 42 lab samples have been collected to date. The samples have been tested for <i>Ecoli</i>, surfactants and ammonia concentrations. Additional teams will be handle data input and analysis for the IDDE program.	Manage volunteer and staff effort to expand stream and outfall sampling. Expand sample data base to focus investigations on sources of pollution. Remediate sources when found.
3E	Locate and remediate potential sources of pollution	Engineering/ J Livsey and Recreation/ K.Simmons	Improve stormwater system in vicinity of Old Res to reduce wet weather contamination.	Construction of water quality improvement project at the Old Res facility was completed in 2013.	Maintain the new BMP and monitor results.

3F.	Illicit Discharge Detection and Elimination	Engineering/ J. Livsey, M. Flamang and D. Pavlik.	Completion of IDDE plan.	November 7, 2011 – Town of Lexington IDDE plan completed and submitted to EPA.	Work according to the IDDE plan for the year.
MOVED FROM 2C					
3G	Water quality monitoring Old Res <i>Moved from control measure 2c. Renamed and placed in appropriate control measure.</i>	Recreation Dept/ Karen Simmons	Sample and analyze drain outlets into Old Res Recreation Area.	In summer the Old Res is a public swimming pond. This water body is tested weekly in season for bacteria by the Recreation Department.	Continue sampling and reporting.
3H	Septic Systems Tracking Management <i>Moved from control measure 2D. Renamed and placed in appropriate control measure</i>	Health Dept/ K. Fox	Transfer data to electronic media, maintain and upgrade data	Maintained database and created GIS layer to record locations of active septic systems in Town.	Maintain the database.
MOVED FROM 2D					

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
4A	Runoff Control	Conservation/ K. Mullins Engineering/ J. Livsey	Implement stormwater bylaw	Working with town staff and public to implement the bylaw. The bylaw prohibits non-stormwater discharges and pollutants into the MS4 or watercourses in the town and it includes enforcement methods.	Continue to work with town staff and user groups to implement the bylaw.
4A	Runoff Control	Engineering/ J Livsey	Implement stormwater bylaw	Consolidated DPW inspection administration in Engineering Division to insure that all sites are inspected. Procurement and implementation of an electronic building permitting system is underway. Shared electronic building and stormwater permits will facilitate site inspection and runoff control.	Manage inspection program to assure complete coverage.
4A	Runoff Control	DPW/M. Valenti	Issue notices for construction runoff remediation	Highway superintendent and staff have increased monitoring of construction sites and are issuing notices	Continue to monitor and issue notices.
4B	Inspection Staff Training	Building Department/ Engineering/ J Livsey	Train inspection staff to look for and respond to risky construction site practices	Held joint meetings with engineering, public works and building inspection staff to improve communication between departments with respect to construction site runoff	Continue to hold joint meetings to improve interdepartmental communication.
4B CONT.	Inspection Staff Training	Building Department/ Engineering/ J Livsey	Train inspection staff to look for and respond to risky construction site practices	Inspection staffs of community development and engineering division have been trained and look for construction site erosion.	Update and deliver training to reflect complete stormwater bylaw and regulations.
4C	Inspection and reporting	Engineering/ M. Flamang Conservation/ K. Mullins	Design and distribute handout for permits	During this year, the town staff consistently referred contractors to the EPA construction permit program. Engineering permits have been annotated to require as-builts of privately owned treatment facilities.	Continue to refer applicants for Building Permits to EPA permit 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 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
5A	Inventory Construction Violations	Engineering/ J Livsey	Inspect all construction sites and record findings	Improved communication with Building Department. Inspected construction projects and shared information with Streets Superintendent and Building Commissioner.	Continue to share information on construction sites with other departments.
5B	Develop BMP's list	Engineering/ M. Flamang	Develop list of BMP's that are appropriate for Lexington public and private projects	January to March 2014 Town wide BMP inventory team was created. The team is made up of Town staff from DPW operations, Engineering Division, Planning and Conservation. Two meetings have been held to begin inventory of town wide BMP's.	Continue to review plans utilizing MA Stormwater Handbook. Continue development of BMP team.
5C	Post Construction Runoff Control	DPW/M Valenti	Issue notices verbal and in writing for runoff remediation.	Highway superintendent and staff have increased monitoring of sites where construction is complete and are issuing notices	Continue to monitor and issue notices
5D	Runoff Operation and Maintenance Plan	Conservation/ K. Mullins Engineering/ M. Flamang	Require in-house reviewers to screen permit applications for O&M plans	Staff screens permit applications for O&M plans.	Continue to require O&M Plans

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 11 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 12
6A	Employee training	Public Works/ D. Pavlik & D. Pinsonneault	Employee training for stormwater pollution prevention.	October 7, 2013 – 1 hour Training session presented to public facility employees on Pollution Prevention and Good Housekeeping. Training was presented to 15 employees that were in the supervisory roles as maintain or custodian personal at Town owned facilities. Quizzes were given to all attendees prior to and after the training session. Topics such as proper snow and ice removal were covered. Along with education of proper disposal of cleaning products and how to protect the Town's storm water system. Quizzes were given to all attendees prior to and after the training session. The quiz scores improved on average from 66% correct before the training to 76% following the training.	Continue program
				October 7, 2013 1 training session presented to public works employees on Pollution Prevention and Good Housekeeping. Training was presented to 17 employees that were in supervisory roles. They were from the highway, parks and water & sewer divisions. Topics such as proper snow and ice removal were covered. Education topics included proper vehicle washing; material storage	

6A Cont.	Employee training	Public Works/ D. Pavlik & D. Pinsonneault	Employee training for stormwater pollution prevention.	and how to detect an illicit connect. Quizzes were given to all attendees prior to and after the training session. The quiz scores improved on average from 76% correct before the training to 89% following the training. October 29, 2013 – Town Engineer and engineering assistant attend seminar for Improving Stream Crossing presented by Bay State Roads.	Continue program.
6B	Municipal pollution prevention	Public Works/ D. Pinsonneault	Street sweeping and catch basin cleaning.	All town roads were swept at least twice during the year. The center business district is swept three times per week. All town-owned catch basins were cleaned once during the year with a clam shell truck. A Vactor ® truck was used in addition on catch basins that required heavy cleaning.	Continue program
6B	Municipal pollution prevention	Engineering/ John Livsey	Facility maintenance for pollution prevention	Completed an environmental compliance assessment of the public services building.	Bring recommendations to responsible supervisors in the town government organization.
6C	Vehicle washing	Public Works/ D. Pinsonneault	Wash indoors to keep solids from stream	Continued DPW vehicle washing program. All vehicles are washed indoors in a facility that recycles wash water.	Continue program
6D	Used oil recycling	Public Works Operations/ D. Pinsonneault Public Works Solid Waste/ R.Beaudoin	Collect used oil at PW maintenance garage and make used oil recycling available at Town Recycling facility.	Contracted for maintenance garage recycling and offered household waste recycling townwide eight times per year.	Continue program

6E	Stream Cleaning	Public Works Operations/ M. Valenti	Remove debris from stream channel and banks.	February & March 2012 - Work crews removed debris from the main channels of the North and South branches of the Vine Brook, over a 20 day period. Contracted for maintenance garage recycling and offered household waste recycling townwide eight times per year.	Continue program.
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7. Best Management Practices for Meeting total Maximum Daily Load (TMDL) Waste Load Allocations (WLA)

7A	Pet Waste Pollution Prevention	Conservation/ E Schadler Town Clerk/ D Hooper	Inform the public on the impact of pet waste on the environment	Distributed leaflet to dog owners when owners purchased dog license. Leaflet seeks to inform owners of the effects of improper waste disposal.	Continue program
7A Cont.	Pet Waste Pollution Prevention	Conservation/ E Schadler Town Clerk/ D Hooper	Engage the public to participate in proper disposal of pet waste	Continued "Lexington Green Paw" program. Informs dog owners of proper waste disposal methods and issues a stylish Green Paw tag to dogs when owner commits to dispose of waste properly.	Continue program
7B	Locate and remediate potential sources of pollution	Engineering/ M. Flamang D. Pavlik	Line aging sanitary sewers to prevent exfiltration of sewage into sewer underdrains that flow to streams.	Completed lining project for Vine Brook vicinity in 2012.	Continue stream sampling in area of lining contract.
7B	Stream Restoration	Engineering and Conservation/ J. Livsey and K. Mullins	Develop and Implement a Program of Waterway Maintenance and Restoration	Town has funded for a Stream Restoration Program which includes a study, permitting and program execution.	The effort this year will be to quantify the length and numbers of streams needing restoration and to develop scope for contractors to implement restoration in compliance with applicable regulations.

Part IV. Summary of Information Collected and Analyzed

The Town of Lexington received a final report on the condition of streams and culverts in the Mystic River basin in Lexington. Recommendations will be screened and incorporated into the town's Capital Improvement Plan.

Volunteers monitored 12 outfalls. Coliform and elevated ammonia levels were present in the samples but in no consistent pattern. The town will continue to sample and screen results with the goal of locating and eliminating sources of contaminants in the Lexington's streams.

Town staff sampled an additional 7 outfalls including an underdrain outfall in the Vine Brook culvert.

Because of the level of activity, the town assembled and stocked extra sampling kits. The extra kits were put into use, improving the effectiveness of volunteers working on outfall monitoring and screening.

In response to guidance received from EPA Region I, sampling efforts concentrated on the Mill Brook drainage area. Within the drainage area, several days of field investigation have been done. One buried structure has been found and uncovered. This buried catch basin is connected to a sanitary underdrain. The sanitary sewer that is connected to the underdrain is in one of the oldest sections of sewer line in town. Two days of video inspection of the sanitary line has shown the line to be in fairly good condition. During this period we have also had the Town's consultant sampling at the downstream outfall at the Mill Brook.