

**Municipality/Organization:** City of Cambridge

**EPA NPDES Permit Number:** MAR041076

**MaDEP Transmittal Number:** W-040464

**Annual Report Number**

**& Reporting Period:** No. 6: March 08-March 09

## **NPDES PII Small MS4 General Permit Annual Report**

### **Part I. General Information**

**Contact Person:** Lisa Peterson


**Title:** Commissioner, Dept. of Public Works

**Telephone #:** (617) 349-4802

**Email:** lisap@cambridgema.gov

### **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:** Robert W. Healy

**Title:** City Manager

**Date:** July 29, 2009

## **Part II. Self-Assessment**

The City of Cambridge has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions.

### Part III. Summary of Minimum Control Measures (MCM)

#### MCM #1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
1.a  Revised	Develop Educational and Outreach Material for Residents and Businesses	Commissioner/ DPW	(i )Develop 3 brochures or fact sheets <b>(completed under year 1 activities)</b> - Continue the development of relevant materials. <b>Expanded BMP element in Year 3</b>	Resources and information on Rain Gardens were compiled in an information sheet. This information together with our other stormwater related information was distributed during public meetings, at household hazardous waste events, clean up events, and during rain barrel deliveries. In addition, the Community Development Department developed a brochure entitled “ <i>Be a Climate Hero</i> ” in March 2009 which includes information on reducing automobile trips, water conservation, rain barrels, composting, and recycling. Copies of these items are provided in Appendix 1. The DPW also distributes flyers to residents near and adjacent to upcoming and active construction sites regarding the scope and purpose of these construction activities. Examples of projects that have a stormwater benefit are included in Appendix 1. These notices are also posted on the DPW website and distributed through e-mail.	Continue to develop relevant information on stormwater management for residents and businesses.
		Commissioner/ DPW	(ii) Post information on the web	A Stormwater Management web page was developed as part of the DPW web site during program year 1. It can be viewed at <a href="http://www.cambridgema.gov/~TheWorks/stormwater/index.html">http://www.cambridgema.gov/~TheWorks/stormwater/index.html</a> . A copy of Year 5 annual report, annual meeting presentation, new Land Disturbance and Wastewater and Stormwater Drainage Use Regulations and Ordinance, and information on rain gardens and the Alewife Brook CSO control program were posted (see Appendix 1 for information on the Alewife Brook CSO notice). During Year 5 a new page was created that is devoted to the Federal Emergency Management proposed changes to the flood insurance rate maps (flood plain in Alewife). During Year 6 this information was updated to reflect FEMA review and implementation schedules, meetings and technical information. Additional information on water quality and activities are posted	Continue to update and expand information on our web site that is relevant to the implementation of our stormwater management program. DPW will work on implementing a new web page

1.a (ii) Cont.				through the DPW homepage, Engineering homepage, Sewer homepage and City of Cambridge homepage throughout the year and included PSA's on the start and purpose of street sweeping (see Appendix 1). DPW began work with a web designer to make information on the DPW website easier to find and to better promote the department's mission. The stormwater Management page and information will be easier to find and search in the new web design format.	design and format for all of DPW programs making information easier to find.
Revised		Commissioner/ DPW	(iii) Distribute materials  <b>Expanded BMP element in Year 3</b>	<u>Be Clean and Green During Spring Cleaning Projects</u> was published in the Spring/Summer 2008 edition of <i>CityView</i> . <i>CityView</i> is a publication of the City of Cambridge which is mailed to every household in Cambridge actively receiving mail. In addition, copies of <i>CityView</i> are available at various municipal buildings. A copy is provided in Appendix 1. <u>Fresh Pond Springs to Life</u> was published in <i>The Cambridge Life</i> Spring/Summer 2008 edition. <i>The Cambridge Life</i> is another publication of the City of Cambridge. This free magazine is distributed throughout Cambridge through 5 news boxes located in the major squares, and racks within City Hall and other municipal offices, and placed with other groups such as realtors, senior centers, university offices and others. A copy is provided in Appendix I.	Distribute information on Stormwater /Watersheds to every household actively receiving mail in Cambridge.
Revised		Commissioner/ DPW	(iv) Assess local/regional mass media marketing campaigns  <b>Revised in Year 3– new BMP element</b>	DPW and Massachusetts Bays Estuary Association (Think Blue MA Coalition) jointly sponsored an interactive display and demonstration on watersheds and stormwater pollution and prevention during the 2 <sup>nd</sup> Annual Cambridge Science Festival on April 26 2008. The Science festival is a multi day public celebration offering a wide range of science and technology related activities including tours, displays, and hands-on experiments – including watershed models. The DPW and Mass Bays display included a watershed model, Think Again video, Stormwater booklet giveaway, Think Blue yellow duck key chain, Think Blue tattoos, and Stormy the Think Blue 18' yellow duck. Copies of the Stormwater booklet, Think Blue tattoo, Science Festival program book, and pictures from the Think Blue exhibit are included in Appendix I. In addition, Cambridge's local cable station CITY TV-8 continues to periodically air the Think Again Think Blue PSA which began running the week of February 19, 2007. This same PSA is also available through DPW's Stormwater Management webpage as mentioned in BMP 1.a (ii) above.	Participate in the 2009 Cambridge Science Festival or other public event.

<b>1.b</b> Revised	Develop Outreach Materials/Activities for Children	Commissioner/ DPW	Include school children in stormwater outreach activities  <b>Revised in Year 5 – [formerly 1.b (i) and (ii)]</b>	This activity was completed in Year 2. Outreach activities to children continue in general including the demonstration at the Science Festival discussed in 1.a.(iv) above and during the DPW Vehicle Road Show held on May 20, 2008 which featured activities explaining how DPW keeps Cambridge Clean. Handouts were given to the children which includes DPW stickers and coloring book. Copies of the Road Show flyer and examples of the stickers are attached in Appendix 1. DPW also worked with two separate youth programs during the summer of 2008, Team GreenSense and FAR Ecology Camp. Campers were taught about sustainability issues relative to many environmental issues including stormwater management. Information about these programs is also attached in Appendix 1. The Cambridge Water Department sponsor weeklong activities that highlight watershed protection, water treatment and other water related activities. A copy of the Water Week Celebration 2008 flyer is attached in Appendix 1.	Schoolchildren will be included in stormwater outreach activities in general.
<b>1.c</b>	Develop a Stormwater Web Page	Commissioner/ DPW	(i) Develop a stormwater web page	A stormwater web page was developed during Year 1 and can be viewed at <a href="http://www.cambridgema.gov/~TheWorks/stormwater/index.html">http://www.cambridgema.gov/~TheWorks/stormwater/index.html</a> Also refer to 1.a (ii) above.	Completed
		Commissioner/ DPW	(ii) Update stormwater web page	See 1.a. (ii) above.	This site will continue to be updated and expanded
<b>1.d</b>	Create a Catch Basin Curb Marker Program	Commissioner/ DPW	(i) Install catch basin curb marker/plaques	DPW installed catch basin curb markers during sidewalk reconstruction projects and our remedial reconstruction projects. A total of 127 have been installed: 102 in the Charles (C) and 25 in the Alewife (A) watersheds under the following contracts: FY07 Misc Sidewalk: C (6) A (2) FY 08 Remedial: C (7) A (1) FY09 Remedial: C (2) A (0) Vassar St: C (30) MIT/Albany St: C (10) Blanchard Road: A (9) Harvard Square: C (2) Chapter 90 Contract 9: A (13) Chapter 90 Contract 10: C (23) JLL/North Point: C (22)	Continue to install catch basin curb markers during construction projects.

1.e	Reduce Stormwater Pollution from Automobiles	Assistant City Manager for Community Development/CDD	(i) Sponsor an event to promote alternative forms of transportation	The Community Development Department sponsored and participated in many activities promoting alternative forms of transportation during the May 2008 Go Green Month events. Activities included events for alternative forms of transportation, informational tables at all major squares in Cambridge, giveaways to cyclists and pedestrians, participation in local bike week events/tours. A listing of Go Green Month events is provided in Appendix I.	Alternative forms of transportation will be promoted through activities and events.
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### MCM #1. Additional Information

- ❑ Cambridge CDD monitors 30 currently active PTDM projects, 28 submitted complete monitoring reports in 2008, or 93%. 2008 monitoring reflects:
  - More than 7.8 million square feet of commercial development is subject to annual PTDM monitoring.
  - A total of 17,192 parking spaces come under the Ordinance, with facility sizes ranging between 3 and 4576 parking spaces.
  - Approximately 28,556 employees and 12,548 graduate students are covered by PTDM plans in Cambridge.
  - Nineteen of the 28 projects, or 68%, that completed monitoring in 2008 met or surpassed their mode split.
  - Twenty-seven of the projects, or 96%, submitting reports had a response rate of greater than 60%, giving results a very high degree of reliability.
- ❑ The City continues to provide a comprehensive City Employee Commuter Benefits to all of its employees. These benefits include subsidized T passes, a free shuttle service, and an internal car pool matching service. The City also supports bicycle use and walking through the respective city programs and provides an internal web site that provides information on other regional ride matching and sharing programs. A copy of the City Employee Commuter Benefits is attached in Appendix 1.
- ❑ DPW also sponsored two rain barrel events during Year 6: May 13<sup>th</sup> and June 17<sup>th</sup>. Both events combined surpassed previous rain barrel sales. Cambridge received a DEP grant to help subsidize the cost of 30 rain barrels, reducing the cost by \$10/barrel. A total of 140 barrels were sold through these events. Stormwater management information on Healthy Household Habits, rain gardens, House Hold Hazardous Waste, etc was distributed with each rain barrel purchased.
- ❑ DPW participated in a rain barrel demonstration and discussion was held with the Cambridge Conservation & Gardening Club on March 9, 2009.
- ❑ DPW also received 200 water conservation hose nozzles and rain gages that were distributed to residents at public events together with Stormwater management information on Healthy Household Habits, rain gardens, House Hold Hazardous Waste, etc.

- The Federal Emergency Management Agency is proposing new revisions to the city's 1982 flood plain maps. During Year 6 DPW provided residents and businesses with updated information as the proposed Flood Insurance Rate Maps were reviewed by the public. DPW acted as the point of contact for questions and co-sponsored a public meeting with the Cambridge Chamber of Commerce for local insurance and real estate agents regarding the proposed changes, schedule and how they can reach out to their clients. Schedules, maps, general flood information and insurance information are posted on a DPW web page specific to these proposed map revisions. A copy of the agenda and sign-in sheet is provided in Appendix 1. A copy of the presentation can be viewed at: <http://www.cambridgema.gov/TheWorks/stormwater/fema.html>
- DPW participated in the Home & Energy Fair on May 17, 2008 and displayed information on rain barrels, Healthy Household Habits, rain gardens and other stormwater management materials. The water conservation garden nozzles and water gages were distributed together with information on best practices.

## MCM #2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
2.a	Participate in Public Meetings on Water Quality and Quantity	Commissioner/ DPW	(i) Participate in/sponsor a public meeting on water quality/quantity and/or the stormwater management plan	A public meeting to discuss the accomplishments of Year 6 and to discuss potential issues/projects for Year 7 was held on March 31, 2009. A copy of the presentation and sign-in sheet is provided in Appendix 2. DPW also presented informational sessions on the pending revisions to the FEMA flood plain maps to the staff at Community Development Department (04/24/08), and public meetings at the Planning Board (05/06/08) and the Conservation Commission (05/12/08).	Public meeting will be hosted by DPW regarding the status of the stormwater management program and/or stormwater issues.
		Commissioner/ DPW	(ii) Advertise meeting through various sources	The above meeting was advertised on the city's web site on the citywide calendar and DPW homepage. In addition the NPDES meeting was posted in the Cambridge Chronicle and at the City Clerk's office. A copy of the meeting notice is provided in Appendix 2	Meeting will be publicly advertised in local newspapers, through the web site and/or other means.
2.b	Support Volunteer Efforts	Commissioner/ DPW	(i) Provide clean-up assistance for one event annually	The City provided support to the Friends of Alewife Reservation for a large clean up at Alewife on May 17, 2008 as part of Park Serve Day. DPW provided supplies and stormwater brochures for distribution.	Support/assistance will be provided for one clean-up event.



2.b cont.		Commissioner/ DPW	(ii) Support educational efforts of local watershed groups as opportunities arise through talks and /or support of grant applications	<p>The DPW participated in the Friends of Alewife Reservation's (FAR) Summer Ecology Camp (see 1.b above). DPW supported the Charles River Watershed Association's (CRWWA) application to the Jessie B. Cox Charitable Lead Trust for their Building Blue Project (a copy of the letter is attached in Appendix 2). The Cambridge Water Department supported the efforts of the Friends of Fresh Pond Reservation in their stewardship and educational projects. A copy of their "The Year in Review" for 2008 is attached in Appendix 2 and details the various activities supported by the Water Dept. The Cambridge Water Dept. sponsors many educational activities at Fresh Pond Reservation including:</p> <ul style="list-style-type: none"> <li>• Lusitania Meadow Tour on wetland restoration</li> <li>• Volunteer Programs – Reservation Stewardship and Pond Partners Programs</li> <li>• Urban Scientists – investigation of water quality at Black's Nook</li> <li>• Fresh Pond Day and water week</li> <li>• Northeast Sector Walkabouts</li> </ul>	The City will continue to provide support to local watershed associations as opportunities permit.
		Commissioner/ DPW	(iii) Seek permission to post links to local watershed groups' web sites	No new links were listed this year on the stormwater web page.	As the stormwater management web page is expanded and updated additional links and resources will be added
2.c	Sponsor Recycling of Hazardous and Solid Waste	Commissioner/ DPW	(i) Hold 4 Household Hazardous Waste Collection (HHW) days annually		

2.c cont.  Revised		Commissioner/ DPW	Hold 3 Household Hazardous Waste Collection days annually <b>(Revised in Year 1)</b>	Three Household Hazardous Waste collection days were held this permit year on April 26, June 21 and October 25, 2008. See Appendix 2 for a summary of recycling tonnage from Drop-off center, curbside and HHW collections. Approximately 13, 155 tons of materials have been recycled.	HHW collection will be held on April 25, June 20, and October 3, 2009.
		Commissioner/ DPW	(ii) Accept recycling materials at a drop off center on a regular basis	During 2008 DPW operated a recycling drop-off center at the DPW yard on Tuesdays and Thursdays from 4 – 7:30 p.m. and Saturdays from 9 a.m. – 4 p.m. Materials accepted include: books, clothing, electronic media (CD's, floppy disks, VHS tapes), plastic bags, cartridges, electronics, packing peanuts, non-alkaline batteries (NiMH, NiCd, Hg, Li Ion, Pb Acid, AgO2), fluorescent bulbs, mercury containing devices (thermometers, thermostats, etc.), motor oil, cell phones, and scrap metal. The City began a residential food compost recycling pilot program in February 2008 and has since implemented this as a permanent program and expanded it to included curbside service for businesses. A summary of all of the recycling programs can be found at:  <a href="http://www.cambridgema.gov/TheWorks/departments/recycle/index.html">http://www.cambridgema.gov/TheWorks/departments/recycle/index.html</a>	DPW will continue to operate a recycling drop-off center.

2.c cont.		Commissioner/ DPW	(iii) Beginning in yr 2 provide information on illicit discharges and reporting	A pamphlet was developed in Year 2 and continues to be revised and distributed at the Household Hazardous Waste collection events. This pamphlet discussed illegal dumping into catch basins and the importance of proper disposal of wastes. A copy is provided in Appendix 2. Information on proper disposal of household hazardous waste and reporting illicit discharge/dumping is provided in the Recycling and Trash Guidelines for Residents. These are mailed to every household annually. A copy is attached in Appendix 2.	DPW will continue to provide information on illicit discharges and reporting at Household Hazardous Waste events and/or in its meetings and through print materials.
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**The following BMP was relocated from BMP 5.b and further revised in Year 3.**

2.d	Participate in Watershed and Planning Efforts	Assistant City Manager for Community Development/CDD and Commissioner/DPW	(i) Complete Phase I of Concord-Alewif study	Not applicable in Year 6, completed in Year 1. Information from this process can be viewed at <a href="http://www.cambridgema.gov/~CDD/commplan/zoning/concalew/index.html">http://www.cambridgema.gov/~CDD/commplan/zoning/concalew/index.html</a>	Completed.
		Assistant City Manager for Community Development/CDD and Commissioner/DPW	(ii) Complete Phase II if authorized	Not applicable in Year 6, completed in Year 3.	Completed.
		Assistant City Manager for Community Development/CDD and Commissioner/DPW	(iii) Forward study recommendations to the City Manager for consideration	Not applicable in Year 6, completed in Year 4. The Planning Board submitted the Concord-Alewif rezoning petition to the City Council on April 25, 2005. This petition was based on the zoning recommendations of the Concord-Alewif Planning Study Committee. The petition was refilled by the City Council on February 21, 2006. The Concord-Alewif Rezoning ( <a href="http://www.cambridgema.gov/CDD/cp/zng/concalew/concale_ord.pdf">http://www.cambridgema.gov/CDD/cp/zng/concalew/concale_ord.pdf</a> ) and Design Guidelines were adopted by the City Council on June 26, 2006. The changes have been incorporated into the Cambridge Zoning Ordinance and Zoning Map.	Completed

2.d cont.		Commissioner/ DPW	(iv) Discuss Concord-Alewife Stormwater Management strategies at a public meeting	Not applicable in Year 6, completed in Year 4. DPW participated in a City Council Ordinance Committee meeting on environmental and infrastructure issues with regard to the Concord/Alewife proposed zoning amendment on June 13, 2006. Issues on water quality/quantity in the Concord-Alewife area were discussed.	Completed.
		Commissioner/ DPW	(v) Publish LID guidelines	Not applicable in Year 6, completed in Year 4. DPW published the Concord-Alewife Stormwater Management Guidelines in May 2006. A copy can be found at: <a href="http://www.cambridgema.gov/TheWorks/stormwater/pdffiles/ConcordAlewifeStormwaterManagement.pdf">http://www.cambridgema.gov/TheWorks/stormwater/pdffiles/ConcordAlewifeStormwaterManagement.pdf</a>	Completed.
		Commissioner/ DPW	(vi) Place LID document on the Stormwater web site	Not applicable in Year 6, completed in Year 4 (see BMP 2.d.(v) above).	Completed
		Commissioner/ DPW	(vii) Execute the Environmental Joint Powers Agreement (EJPA)		
revised			Work with EOEa to advance the EJPA to a final document <b>(Revised in Year 1)</b>	The final EJPA was fully executed on March 4, 2005 and forwarded to EOEa. Completed.	Completed.
		Commissioner/ DPW	(viii) ABC Flooding Board to meet 4 times annually	The ABC Flooding Board met approximately 6 times during Year 6 on April 8, June 10, July 10, September 9, November 18, 2008, and January 13 and March 10, 2009. Discussion topics included Alewife channel maintenance, proposed hydraulic changes in the upper watershed by the Town of Winchester and continue support of USGS Alewife gauge contract by each of the 3 communities.	The ABC Flooding Board will meet 4 times.
revised			<b>Schedule Revised in Year 1</b>		
		Commissioner/ DPW	(ix) Finalize Tri-Community Working Group's <u>Progress Report</u>	Not applicable in Year 6, this report was finalized in Year 3	Completed.
revised					

2.d cont.		Commissioner/ DPW	(x) Place Tri- Community Working Group's <u>Progress Report</u> on web site	Not applicable in Year 6. This report was placed on the web site in Year 4 see: <a href="http://www.cambridgema.gov/TheWorks/departments/engnr/pdfs/Tri-CommunityWorkingGroupReport.pdf">http://www.cambridgema.gov/TheWorks/departments/engnr/pdfs/Tri-CommunityWorkingGroupReport.pdf</a>	Completed.
revised					

## MCM #2. Additional Information

- ❑ The Cambridge Arts Council funded several Water Dance events in early 2009. These dances are public celebrations of the spirit of water and give thanks to the fresh waters of Cambridge. Water Dances 2009 also serve as a gesture of appreciation to local citizens and advocacy groups for their work to protect these waters. See events summary in Appendix 2.
- ❑ The City of Cambridge recognizes businesses and organization that are taking environmental action through the GoGreen Awards. This year the City included a new category for Stormwater Management in order to recognize local property owners that are undertaking important stormwater management elements in their redevelopment projects and/or property maintenance practices. Other award categories include waste reduction, transportation, energy, climate leader, and community sustainability. The first Stormwater Management awards will be given out during Year 7. A copy of the 2009 GoGreen Awards nomination form is provided in Appendix 2.
- ❑ DPW working with the staff, students and custodians at the King Open School began a new composting program. This program separates out food solid and liquid wastes. In the past disposal of liquids in the trash has contributed to leaky dumpsters, but due to the separation of liquids from solid food waste this program has been successful in addressing this problem. The kids play a significant part in this programs success and have composted a significant volume of food waste during their first year.
- ❑ DPW representatives attended EPA meetings regarding Mystic River Watershed Initiative on April 10 and December 3, 2008 and January 28 and February 11, 2009. In April 2008 EPA held a Mystic River Summit to generate ideas, develop goals, and map a strategy to restore the Mystic River Watershed. As a follow-up to the Summit, EPA worked in collaboration with state, local, and municipal organizations to facilitate efforts to improve the Mystic River Watershed.
- ❑ The tri-community working group worked with the USGS on a cooperative watershed effort to install a flow gage along the Alewife Brook to obtain and share important hydraulic information. The gage became functional in August 2005. Arlington, Belmont and Cambridge are continuing to participate on an equal financial and resource basis for the gauging station's installation and maintenance. Te real time flow measurements can be observed at <http://waterdata.usgs.gov/ma/nwis/uv?01103025>.

### MCM #3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
3.a	Update Stormwater Drainage System, Outfalls and Receiving Waters in GIS	Commissioner/ DPW	(i) Map Fresh Pond outfalls	The Water Department is using a new program entitled LandLogic to track and manage the new improvements for the Northeast Sector and Little Fresh Pond Projects. The new treatment systems and plantings will be tracked in this new system. The Northeast Sector project is not yet closed out and Little Fresh pond was completed in February 2009. As built information for both projects was received in January 2009. Improvements have not yet been included in GIS.	Include new as-built information for Little Fresh Pond and the Northeast Sector in the GIS system.
		Commissioner/ DPW	(ii) Migrate existing GIS database to a new format	Completed in Year 3.	DPW staff will primarily be responsible to maintain the GIS database. As-built information will be added to keep the system up to date.
		Commissioner/ DPW	(iii) Track private structural controls in a database	Private structural controls are tracked in a database. Approximately 76 projects underwent DPW site plan review (see Appendix 3). DPW reviewed 6 projects under our new Land Disturbance Regulations	We will continue to track private structural controls through our site plan review process. The new Land Disturbance Regulations require the submittal of Operations & Maintenance plans for regulated project sites.
		Commissioner/ DPW	(iv) Catalogue record drawings	Cataloguing of record drawings was not necessary. The contract to update the GIS database included scanning record drawings and has been completed in Year 3. A catalogue of updated information is available to query.	Record drawings and as-built information will continue to be added on an ongoing basis.
		Commissioner/ DPW	(v) Train engineering staff on new GIS software	Not applicable in Year 6 this was completed in Year 3.	Completed.

3.a cont.		Commissioner/ DPW	(vi) Begin updating GIS information with as-built/record drawings	DPW staff has been trained to edit the GIS database. As-built and record drawings are being updated on an ongoing basis.	Record drawings will be linked as they become available.
3.b	Detect and Eliminate Illicit Discharges	Commissioner/ DPW	(i) Perform routine water quality sampling	In the Charles River watershed twenty-three (23) outfalls were checked/ sampled for Dry weather flow: eight (8) were sampled once, thirteen (13) were sampled twice, and one (1) was sampled three times. One (1) outfall at River Street could not be sampled due to the lack of dry weather flow. In the Alewife Brook watershed ten (10) outfalls were sampled: one (1) was sampled once, one (1) was sampled three times, and eight (8) were samples four times. See Appendix 3 and Part IV of this report for sampling locations.	Water quality samples will continue in each watershed for all known City of Cambridge outfalls.
			<b>Revised in Year 3 to include all Cambridge owned outfalls</b>		
Revised		Commissioner/ DPW	(ii) Test one location in each watershed for oil and grease annually	.	One location in each watershed will be tested for oil and grease.
			<b>(Revised for Year 2 only)</b>	Two (2) oil & grease samples were done during Year 6: one (1) sample in the Charles and one (1) in Alewife (see Alewife Dry Weather sampling report referenced above for May – August 2008 and the Charles River (North Point) wet weather sample referenced in 3.b (x) below for information).	
		Commissioner/ DPW	(iii) Perform additional water quality testing and field investigations as necessary	Additional water quality testing was performed to isolate the location of illicit discharges and to confirm their successful removal.	We will perform additional water quality testing and field investigations as necessary.

3.b cont.  Revised			<b>Revised in Year 3</b> Expand Water Quality testing in both watersheds	See 3.b (i) above	All known Cambridge Outfalls will be sampled in the Charles and Alewife watersheds.
		Commissioner/ DPW	(iv) Identify and remove illicit discharges	<p>Illicit discharges/connections were discovered/removed as follows::</p> <ul style="list-style-type: none"> <li>• 857 Mass Ave (Clinton St) – removed March 20, 2009</li> <li>• 20 Gray Gardens West – removed May 6, 2008</li> <li>• 295 Huron Ave – removed May 28, 2008</li> <li>• 44 Kirkland Road – identified, and removed on September 25, 2008</li> <li>• Higham Street – identified, scheduled to be removed in early 2009</li> </ul> <p>A section of the City's Annual Status Report to DEP for Implementation of Administrative Consent Order ACOP-NE-96-1004 includes a section on Illicit Connection Removal Program. This section of the report is included in Appendix 3).</p>	We will continue to monitor for and remove illicit discharges.
		Commissioner/ DPW	(v) Perform water quality sampling at a Fresh Pond outfall annually	One (1) water quality samples was taken at three ponds that surround Fresh pond including: Little Fresh Pond, Black's Nook, and North Pond (see Appendix 3).	Water quality sample will be taken at Fresh Pond Reservation annually.
		Commissioner/ DPW	(vi) Purchase sampling equipment as recommended by EPA's Lower Charles IDDE Protocol	Not applicable in Year 6. Sampling equipment was purchased in Year 4.	Supplies will be purchased as needed.



3.b cont.		Commissioner/ DPW	(vii) Investigate Sparks Street drainage area	Investigation of the Sparks Street drainage area using the Charles River IDDE Protocol began in the Summer of 2006. Approximately 85% of this investigation is complete. A few pipes were found to be in disrepair and required rehabilitation before additional testing could resume in this area due to the influence these pipe have on the downstream system. Several illicit connections were identified, refer to MCM 3. b. (iv) above. In addition two (2) common manholes were discovered in a sewer easement on private property between Fernald Drive and Linnaean Street within the catchment. A summary of this investigation is provided in the Appendix 3 item referenced in MCM 3.b (iv).	Investigation into the Sparks Street drainage area will continue following the repair of cracked pipes in this system.
		Commissioner/ DPW	(viii) Investigate Lechmere Canal drainage area.	Investigation of the Lechmere Canal drainage area using the Charles River IDDE Protocol was begun in Year 5. Approximately 50% of the manholes have been checked. The remaining manholes are influenced by back flow from the Charles River and are extremely difficult to isolate. A summary of this investigation is provided in the Appendix 3 item referenced in MCM 3.b (iv).	Investigation into the Lechmere Canal drainage area will continue in areas where pipe sections can be isolated..
		Commissioner/ DPW	(ix) Separate Common Manholes (CMH).	Sixteen (16) CMHs were separated during Year 6. Thirteen (13) under Common Manhole Contract 4A and three (3) under the Remedial Construction Contract. See “Additional Information” following this section below for additional information.	The number of Common Manholes separated in separated drainage areas will be counted.

3.b cont.		Commissioner/ DPW	<b>(X) Perform wet weather water quality sampling at 2 outfalls annually</b>	Cambridge began a wet weather sampling program in Year 5 by sampling 2 outfalls in catchment areas not influenced by common manholes, one catchment in the Alewife watershed (Normandy Terrace) and one in the Charles River watershed (Sparks Street). These same locations were not done during Year 6 although a wet weather sample was taken from a new outfall in North Point. These results are provided in Appendix 3. In addition, wet weather sampling of hot spot areas in the Mystic watershed is conducted by the Mystic River Watershed Association (MyRWA) and is shared with various agencies including Cambridge. MyRWA sampling in and around the Alewife Brook was conducted on 5/23/08, 7/23/08 and 7/24/08.	Cambridge will continue to take wet weather samples at the same 2 outfalls (Sparks Street and Normandy Terrace) and monitor sampling results. During Year 7 only Cambridge will take two samples in each watershed.
3.c	Conduct Illicit Discharge Education Program	Commissioner/ DPW	(i) Advertise illicit discharge hotline number and information on illicit discharges	Hotline information was included in the <i>Recycling and Trash Guidelines for Residents</i> updated Fall 2008 and in the annually revised Household Hazardous Waste Collection Days brochure (see Appendix 2 for copies of these materials). The recycling guidelines are distributed annually by mail to every household receiving mail in the city, are posted on the DPW website and are available in Spanish, Portuguese, Creole and Chinese.	The Stormwater Hotline number for illicit discharges will be incorporated in additional public information.
3.d	Develop Regulations Prohibiting Illegal Dumping of Non-Stormwater into the MS4	Commissioner/ DPW	(i) Develop a working draft	Not applicable in Year 6, completed in Year 1.	Complete.
		Commissioner/ DPW	(ii) Provide opportunity for peer and legal review of draft	Not applicable in Year 6, completed.	Completed.

3.d cont.		Commissioner/ DPW	(iii) Revise draft as necessary	Not applicable in Year 6, completed in Year 5.	Completed.
		Commissioner/ DPW	(iv) Present regulations/ordinance to City Council for consideration for adoption	Not applicable in Year 6, completed in Year 5. A copy of the Wastewater and Stormwater Drainage System ordinance can be viewed on line at DPW stormwater website.	Completed.

### MCM #3. Additional Information

- During Year 5 Cambridge completed the design of the bid package for common manhole #6 (CMH) contract to separate 13 CMHs in the Alewife watershed. This contract was hoped to be bid during Year 5 and 6, but was delayed. It is expected to go to bid and begin construction in 2009. Common manholes contract #4A was designed and readied for bid during Year 5 and included the separation of approximately 23 CMHs. CMH #4A began construction during Year 6 and completed the separation of thirteen (13) CMHs as follows:
  - Site 2 – Mass Ave. near Sellers St.
  - Site 3 – Mass Ave. at Pleasant St.
  - Site 4 – Mass Ave. opposite Temple St.
  - Site 6 – Mass Ave. at Pearl St.
  - Site 11 - Mass Ave. at Lafayette Square
  - Site 12 – Bishop Allen Dr. at Douglas St.
  - Site 13 – Norfolk St. between Bishop Allen and Washington St.
  - Site 14 – Norfolk St. at Suffolk St.
  - Site 15 - Norfolk St. near Harvard St.
  - Site 17 – Essex St. near Harvard At.
  - Site 18 – Bishop Allen Dr. at Austin Park
  - Site 19 – Bishop Allen Dr. at Vail Ct.
  - Site 20 – Austin park

- Cambridge issues an annual Remedial Construction Contract to address immediate infrastructure needs and illicit connection removals. During Year 6 the Remedial Construction Contract removed three (3) CMHs as follows:
  - Kirkland Road
  - Madison Street
  - Columbus Avenue at Harrison
- CMHs are underground structures that allow people to access both sewer and storm drainpipes through a single structure. Typically, the drainage system runs above the sanitary system, separated by a steel plate. Over time the steel plate deteriorates causing sewerage to mix with stormwater. This can lead to two problems during storm events. First it can cause stormwater to enter and overwhelm the sanitary system causing sewerage to overflow and back-up on to the street or into basements. Second, untreated sewerage can enter the storm drain system and be released into either the Charles River or Alewife Brook. See Appendix 3 for a map of the common manholes that have been separated throughout Cambridge. Approximately 234 common manholes have been separated through March 31, 2009.
- Additional Sampling by others: The MyRWA performs hot spot dry and wet weather monitoring in the Mystic River watershed which includes the Wellington Brook and Alewife Brook. The MyRWA shares this data with the associated municipalities, DEP and EPA. Cambridge reviews the report results and discusses exceedances with the MyRWA. Copies of the MyRWA reports are attached in Appendix 3.

#### MCM #4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
4.a	Develop Program for Construction Site Runoff Control	Commissioner/ DPW	(i) Review existing planning and construction procedures	Not applicable in Year 6, completed.	Complete
		Commissioner/ DPW	(ii) Clarify needed regulatory mechanism	Not applicable in Year 6, completed.	Complete
		Commissioner/ DPW	(iii) Develop draft regulatory mechanism, procedures and guidelines	Not applicable in Year 6, completed during Year 5. Land Disturbance Regulations were finalized following the adoption of the revisions to Cambridge Municipal Code Chapter 13.16 Wastewater and Stormwater Drainage System.	Completed.
		Commissioner/ DPW	(iv) Present draft to City Manager, City Council and the community for review	Not applicable in Year 6. On October 29, 2007 the City Manager submitted a comprehensive revision to Chapter 13.16 of the Cambridge Municipal Code “Sewer System Regulations” to ensure this ordinance fully complies with the NPDES Phase II requirements for stormwater management as it relates to construction site runoff. On January 28, 2008 the City Council ordained the Wastewater and Stormwater Drainage System ordinance by a vote of 9-0-0. This ordinance authorized the Commissioner of DPW to promulgate regulations to enforce the ordinance. A copy is posted on the DPW stormwater website.	Completed.

4.a Cont.		Commissioner/ DPW	(v) Amend draft as necessary and submit for consideration for adoption	Not applicable in Year 6, completed in Year 5.	Completed.
		Commissioner/ DPW	(vi) Record number of required Stormwater Management Permits submitted	Six (6) land Disturbance applications were submitted for the following projects: <ul style="list-style-type: none"> <li>• 1066 Cambridge Street</li> <li>• 221-321 Alewife Brook Parkway</li> <li>• 50 Rogers Street</li> <li>• 112 Mount Auburn Street</li> <li>• 1663 Massachusetts Avenue</li> <li>• 30 Jay Street</li> </ul>	The number of Land Disturbance applications will be tracked.
		Commissioner/ DPW	(vii) Provide stormwater management guidance materials or references	The last revisions to our erosion control section in our Guidance document were drafted in March 2008. No further revisions have since been made to these drafts. Materials are made available to contractors on our web site and at meetings. See Appendix 4 for examples of information available as "Resources for Contractors" on our website.	Revise and continue to work on finalizing guidelines document.
		Commissioner/ DPW	(viii) Adopt procedures for inspections during construction activities.	A peer review of inspection was completed. Inspection procedures are incorporated into the Land Disturbance Regulations (Article VII) and will be further clarified in the guidance documents. This work is still in progress.	Incorporate inspection procedure information in the guidance document.
		Commissioner/ DPW	(ix) Adopt procedures for enforcement and penalties for violations.	Compliance and enforcement procedures are included in the Land Disturbance Regulations (Article X).	Complete.

4.a cont.		Commissioner/ DPW	(x) Record the number of enforcement actions taken and reported	We had 2 construction projects reported to be potentially contributing to poor water quality. These projects were investigated and no formal enforcement actions were necessary. When DPW finds a site without proper erosion control in place we work with them to bring it into compliance. To date we have not had a need for enforcement action. The DPW is in the process of hiring a Stormwater Compliance Officer whose job responsibilities include construction inspections. See job posting in Appendix 4.	The number of enforcement action taken and reported will be tracked.
4.b	Educate Contractors and Residents about the Construction Site Runoff Control Program	Commissioner/ DPW	(i) Make materials available on erosion and sediment control practices available through city web site and/or other means	Guidance material is still being developed for erosion and sediment control practices.	The guidance document and information for residents and contractors regarding erosion and sediment control practices will be placed on the DPW web site.
		Commissioner/ DPW	(ii) Discuss erosion and sediment control practices and problems at 3 construction coordination meetings annually	DPW holds weekly meetings with large contractors during April – November. Erosion and sediment control practices and problems with permitted contractors working in the City are discussed during these meetings. Erosion and sedimentation control was discussed during at least 3 of these meetings including: April 2 <sup>nd</sup> , June 11 <sup>th</sup> , and Oct 29 <sup>th</sup> . Copies of the sign-in sheets are provided in Appendix 4.	The City Engineer will discuss erosion and sediment control practices and problems with contractors at 3 construction coordination meetings.
New		Commissioner/ DPW	(iii) Record the number of guidance materials or reference materials provided.	Guidance material is still being developed for erosion and sediment control practices. Our draft BMPs for construction controls were last updated in March 2008. Additional material is posted on our website under Resources for Contractors (see MCM 4.a.(vii) above).	Develop and revise specification and fact sheets for erosion and sedimentation control.

4.b cont.		DPW	(iv) Create a list of resources, which provides BMP suggestions for the targeted pollutants of concern.	The construction BMPs are being developed in the form of fact sheets. Each fact sheet contains information on the ability of the BMP to address each of the Pollutants of Concern. These fact sheets were last updated in March 2008. Additional revisions were not made	Revise and finalize BMP fact sheets.
		Commissioner/ DPW	(v) Record the number of workshops or meetings with City departments to discuss implementation of plan requirements	A meeting was held with the Commissioner of Public Works and members of the Inspectional Services Department to discuss the new regulations and need for coordination. A workshop was held at City Hall including staff from Law Department, Inspectional Services, Water Department, DPW and our consultants, Malcolm Pirnie, Inc. A copy of the attendance sheet and presentation is provided in Appendix 4.	Meetings will be held to discuss new ordinances and regulations as necessary.

#### MCM #4. Additional Information

- 3 presentations were given on Permits and Works Zones for small, short-term excavations. 2 meetings (March 4 and 11, 2009) were geared toward contractors and 1 meeting (February 23, 2009) was for city staff including Community Development, Water Department, DPW, Traffic Parking & Transportation and Inspectional Services. A copy of the sign-in sheets and presentation for the contractor's meetings is provided in Appendix 4. These presentations included information on the protection of stormwater drains and catch basins. Approximately 80 people attended the 3 sessions.
- A construction coordination meeting was held on March 30, 2009 with representatives from private utility companies, large contractors, MIT, Harvard, and city departments (Water Dept., Police, DPW, and Traffic Parking & Transportation) to discuss priorities for construction (including stormwater management) for the upcoming construction season. A copy of the invitation letter and sign-in sheet is provided in Appendix 4.



## MCM #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 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
5.a	Revise Sewer Use Regulations and Guidance	Commissioner/ DPW	(i) Complete a working draft	Not applicable in Year 6, this activity was completed in Year 4.	Completed.
Revised	Develop Program for Post Construction Site Runoff Control		(Revised in Year 3)		
		Commissioner/ DPW	(ii) Undertake and complete peer review and legal review of draft	Not applicable in Year 6, completed in Year 5. The Regulations and Ordinance can also be viewed on-line at: <a href="http://www.cambridgema.gov/TheWorks/stormwater/index.html">http://www.cambridgema.gov/TheWorks/stormwater/index.html</a>	Completed.
		Commissioner/ DPW	(iii) Develop draft guidelines on BMPs	DPW has been working on our Wastewater and Stormwater Management Guidance document with our consultant, Malcolm Pirnie, Inc. We continued to make revisions through May 30, 2008 when we temporarily discontinued efforts due to the pending adoption of new DEP Stormwater regulations and guidance for impervious areas. We wanted to ensure our document was consistent with these new regulations and requirements. Sections updated in Year 6 include Section 1 – 5, Appendix A (Section 6 – 10), and Appendix G (Checklists). Copies of the revised sections are provided in Appendix 5.	Stormwater management guidance will continue to be refvised.

5.a cont.		Commissioner/ DPW	(iv) Discuss final draft and guidance with City Manager, City Council and the community	Not applicable in Year 6, complete in Year 5. On October 29, 2007 the City Manager submitted a comprehensive revision to Chapter 13.16 of the Cambridge Municipal Code "Sewer System Regulations" to ensure this ordinance fully complies with the NPDES Phase II requirements for stormwater management as it relates to construction site runoff. On January 28, 2008 the City Council ordained the Wastewater and Stormwater Drainage System ordinance by a vote of 9-0-0. This ordinance authorized the Commissioner of DPW to promulgate regulations and guidance documents to enforce the ordinance. A copy of the Ordinance and Regulations can be viewed on the DPW Stormwater website (see MCM 5.a (ii) above).	Completed.
		Commissioner/ DPW	(v) Present final regulation, guidance and monitoring program for consideration and adoption	<p>Not applicable in Year 6, completed in Year 5. The Commissioner of Public Works promulgated Land Disturbance Regulations and Wastewater and Stormwater Drainage Use Regulations.</p> <ul style="list-style-type: none"> <li>❑ The Wastewater and Stormwater Drainage Use Regulations are intended to protect the public health, safety and welfare and the environment and to ensure proper and safe operation of the City's Sanitary Sewers, Combined Sewers and Stormwater Drains by regulating the direct and indirect discharge of Waste, stormwater and pollutants to the City's Wastewater and Stormwater Drainage system. These Regulations are also intended to prohibit and remove illicit connections and unauthorized discharges to the City's Stormwater Drainage system. This includes the legal authority to carry out all inspection, surveillance and monitoring procedures necessary to comply with this Regulation.</li> <li>❑ The Land Disturbance Regulations are intended to reduce pollutants in stormwater runoff from construction activities and to address post construction stormwater runoff from new development and redevelopment projects. These Regulations include procedures for inspection and enforcement.</li> </ul> <p>A copy of the Ordinance and Regulations can be viewed on the DPW Stormwater website (see MCM 5.a (ii) above).</p>	Guidance documents will continue to be revised..

5.a cont.		Commissioner/ DPW	(vi) Record the number of meetings held by the City for the regulatory process	The City has held <b>9 staff meetings</b> to review permit revisions 1-16-09, 1-21-09, 1-29-09, 2-05-09, 2-12-09, 2-26-09, 3-03-09, 3-12-09, and 3-18-09. DPW is working to streamline our permit process and allow on-line filing of applications. Some of the permits outlined in our Regulations will be consolidated and revised. In addition the regulations and guidance documents were discussed at <b>7 meetings with our consultants</b> Malcolm Pirnie on 4/07/08, 4/18/08, 4/29/08, 5/08/09, 10/09/08, 10/16/08, and 2/26/09. The <b>annual community meeting</b> held on 3-31-09 discussed work progress and the revised ordinance and regulations.	Continue to record the number of meetings held to discuss regulations and permits.
		Commissioner/ DPW	(vii) Administer stormwater management permit requirements	Two new permit processes were established in Year 5: the new Stormwater and Wastewater Infrastructure Permit and the Land Disturbance Permit. Draft guidance and checklists developed during Year 5 and revised in Year 6 were developed for these permits. The Operation and Maintenance Plan required as part of the Land Disturbance Permit is specific to Post-Construction requirements. Draft Appendix G of the guidance document contains revised checklists for the various permits and plans required. A copy of the revised Appendix G is provided in Appendix 5. During Year 6 DPW began a review of all DPW permits to streamline our permits and make them more user-friendly and to allow on-line filing. Permits required under the Wastewater and Stormwater Drainage Regulations are being revised as part of this process (see MCM 5.a (vi) above.	Continue work on revising permits, guidance documents and check lists.
		Commissioner/ DPW	(viii) Administer procedures for enforcement and penalties for violations	Not applicable in Year 6, completed in Year 6.	Completed.
		Commissioner/ DPW	(ix) Adopt procedures for post construction inspections	Procedures for Post-Construction inspections are incorporated in the Draft guidance documents and were included in the Land Disturbance Regulations in Year 5. The City advertised for a full time position for a Wastewater (Stormwater) Compliance Officer whose job responsibilities will be to perform post-construction inspections (refer to job posting discussed in MCM 4.a (x) above.	Continue to revise procedures in guidance document.

5.a cont.		Commissioner/ DPW	(x) Discuss alternatives to ensure adequate long-term operation and maintenance of BMPs	<p>Owner's are required to perform long-term operation and maintenance of BMPs as follows:</p> <ul style="list-style-type: none"> <li>• Owner is responsible for ongoing maintenance, inspections, recordkeeping and reporting.</li> <li>• Owner is required to maintain log and update plan. New owner must submit a new plan.</li> <li>• Applicant is responsible for adhering to design standards. Plan requirements and guidance will be provided in the guidance documents</li> <li>• The Plan and Logs are required to be made available for inspection upon request by any public entity with administrative, health, environmental, or safety authority over the site.</li> </ul> <p>It is expected that the Wastewater Compliance Officer will work with property owners to ensure that their BMPs are being maintained.</p>	Continue to refine process and requirements and include in guidance document.
		Commissioner/ DPW	(xi) Provide legal mechanism to require annual compliance for the operation and maintenance of BMPs	Not applicable in Year 6, completed in Year 5. The Land Disturbance Regulations provide for Post-Construction inspection and enforcement of provisions in the Regulations.	Completed.
5.b	Undertake Tree Protection Activities	Commissioner/ DPW	(i) Provide one community outreach and education activity annually on the care, importance and protection of trees and their role in climate protection	<p>The City Arborist participated in outreach and education activities during Arbor day events. The arborist also works closely with the Public Planting Committee and administers Tree hearings for the removal of trees from the public way.</p> <p>The City Arborist also participated in three (3) construction seminars held by DPW before the construction season began to discuss protection of trees during construction. Refer to MCM #4 Additional Information above for more information.</p>	DPW will continue outreach efforts on the importance and protection of trees.

## MCM #5. Additional Information

- ❑ DPW has monthly meetings with the Committee on Public Planting regarding the benefits of green space and trees.
- ❑ 2008 marked the 16<sup>th</sup> year that Cambridge received the "Tree City USA" award from the Massachusetts Department of Conservation and Recreation, which recognizes municipalities for their efforts to maintain the urban forest.

- The Municipal Tree Protection Ordinance reinforces the City Councils finding that the preservation of existing trees and the promotion of new tree planting is a public purpose that protects the public health, welfare, environment and aesthetics of the City of Cambridge and its citizens. The Urban forest serves a wide variety of functions, which promote the health, safety and welfare of residents. To date trees have been replaced to maintain/exceed the total significant tree diameter inches on all project sites. Where this can not be met project proponents have contributed into a municipal tree fund for tree plantings in other areas. One project at 50 Rogers Street was reviewed under the Cambridge Tree Ordinance.

## MCM #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 6 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 7
6.a	Educate Municipal Employees about Pollution Prevention	Commissioner/ DPW	(i) Provide stormwater training for municipal employees annually	No formal training was held during Year 6. A new Wastewater Compliance Officer will be hired to assist facility personnel with good housekeeping inspections (see MCM 4.a (x) above).	Conduct training annually.
		Commissioner/ DPW	(ii) Work with managers to identify operations personnel with stormwater responsibilities	A list of responsible operations personnel with stormwater responsibilities was maintained. No formal training was held during Year 6.	Continue to record names and keep running count of City employees who receive training.
		Commissioner/ DPW	(iii) Develop and implement training protocols that are applicable to operations	Not applicable in Year 6, completed in Year 5.	Completed.
		Commissioner/ DPW	(iv) Record number of facility personnel who complete inspections on an annual basis	99 facility inspections were completed.	Number of good housekeeping inspections completed by facility personnel on an annual basis.

6.a cont.		Commissioner/ DPW	(v) Record number of facilities that have initial good housekeeping inspections conducted	Approximately 10 facilities had initial inspections.	Record additional facilities inspected.
		Commissioner/ DPW	(vi) Record the number of municipal facility site plans updated, including structural controls based upon initial site visits.	GIS updates are performed as information is obtained.	Municipal facility site plans will be updated based upon revised information from the initial site inspections.
6.b	Maintain Strong Operations & Maintenance Program to Reduce Pollutants from Operations	Commissioner/ DPW	(i) Review operations and maintenance programs	There were no new activities identified at the inspected facilities.	Record new activities at facilities should be noted and applicable BMPs implemented.
		Commissioner/ DPW	(ii) Identify municipal facilities in separated areas and identify structural controls	Maps were created for all municipal parks and municipal parking facilities.	Incorporate facility inspection drainage findings into the City's GIS system. Continue to develop updated facility maps as necessary for staff (refer to 6.a. (vi) above.
		Commissioner/ DPW	(iii) Document inspections procedures and maintenance schedules in a procedures manual	Not applicable in Year 6, Good Housekeeping Inspection Manuals were developed for municipal facilities.	Completed.
		Commissioner/ DPW	(iv) Develop inspections procedures and maintenance schedules for long term structural controls	Over 3,200 work orders were tracked for catch basin and drainage system inspection, repairs, maintenance, clean, clear in the Cambridge Request System. A summary of all work orders submitted relative to the stormwater drainage system is in Appendix 6.	The DPW will keep track of the number and type of drainage system work orders completed, as recorded in the Cambridge Request System.

6.b cont.		Commissioner/ DPW	(v) Record percentage of City catch basins cleaned	2,555 catch basins cleaned [approximately 66% (3,900 total)]	Keep record of City catch basins cleaned annually.
		Commissioner/ DPW	(vi) Record tons of street sweepings collected	4,209 tons	Keep record of tons of street sweepings collected annually.
		Commissioner/ DPW	(vii) Record tons of waste/recycling collected	13,155 tons	Keep record of tons of waste and recycling collected annually.
		Commissioner/ DPW	(viii) Record number of new trees planted	Over 300 trees were planted by the forestry division.	Keep record of new trees planted. Begin a system to map locations of new trees.
		Commissioner/ DPW	(ix) Record number of public structural controls constructed/repaired.	Refer to information provided below under "Additional Information"	Keep record of public structural controls constructed or repaired.

#### **MCM #6. Additional information**

- The Street Cleaning Division is responsible for maintaining clean public ways through a contractual street sweeping operation, which runs from April through December each year. Two contract sweepers are used to clean both residential streets and major City squares. The City squares are cleaned very early in the morning (between 4:00 AM and 8:00 AM) 7 days per week. Residential streets are swept city wide on a monthly basis, resulting in approximately 11,000 street miles being cleaned each year.

Additionally, beginning in 2006 the city started a pilot program which utilized two vacuum sweepers to supplement the mechanical sweepers during the months of April and November. Through these months the two vacuum sweepers were sent out behind the mechanical sweepers on a daily basis in an effort to further remove fine material that was being left on the roadway after mechanical sweepers had made a first pass. Because of the success of this pilot, the city has continued using these two additional sweepers twice a year as part of our standard operations.

DPW met with EPA, DEP and USGS to discuss a collaborative project/study that would measure the total amounts of phosphorous, metals and polycyclic aromatic hydrocarbons (PAHs) that are removed by two types of street sweeping technologies from a well-defined urban area representing a single land-use category during monthly street sweeping periods. DPW will continue to work with EPA, DEP and USGS to pursue mechanisms to fund this study.



- In public construction projects the following stormwater best management practices (BMPs) were constructed:
  - number of new catch basins with 6' deep sumps and hoods installed = 35 [(2) FY08 Miscellaneous Sidewalks, (3) Chapter 90, Contract 9, (9) MIT/West Vassar, (3) MIT/Albany, (18) Chapter 90, Contract 10]
  - number of deep sump drainage manholes = 29 [(3) MIT/West Vassar, (26) JLL/North Point]
  - number of remodeled catch basins = 78 [(14) FY08 Remedial, (32) FY09 Remedial, (10) Blanchard Road, (12) MIT/Albany]
  - number of green roofs – 1 (Robert W. Healy Public Safety Facility)
  - number of infiltration trenches = 1 (Fresh Pond Drainage & Habitat Improvement Project – Contract 2)
  - number of grit chambers = 1 (JLL/North Point)
  - number of drainage swales = 1 (Stream C renovation – Fresh Pond Drainage & Habitat Improvement Project – Contract 2)
  - number of surcharge relief structures and flood management berm = 1 (Fresh Pond Drainage & Habitat Improvement Project – Contract 2)
  
- Additional maintenance activities were performed on stormwater drainage systems including:
  - Pump Inspections & Maintenance = 118 (FY08 and FY09 Pump Inspections Maintenance)
  - Storm drain cleaned and televised = 39,115 LF [(35,115) FY08 and FY09 TV & Cleaning, and (4,000) Fresh pond Drainage & Habitat Improvement Project – Contract 2]

#### **Part IV. Summary of Information Collected and Analyzed**

- See Appendix 3 for the results of water quality sampling at Alewife Brook, Charles River and Fresh Pond from April 2008 through March 2009 and their associated summary of results.
  - ❑ Alewife Brook samples from May, 2008, August, 2008, November, 2008 and March, 2009.
  - ❑ Alewife Brook wet weather sample (none this year).
  - ❑ Charles River dry weather samples from July, 2008, August, 2008, November 2008 and March 2009.
  - ❑ Charles River wet weather sample from April 28, 2008.
  - ❑ Little Fresh Pond, North Pond and Black's Nook samples from July 2008.
  - ❑ Alewife Brook Oil and Grease sample from May 7, 2008.
  - ❑ Charles River Oil and Grease sample from April 28, 2008.
  - ❑ MyRWA dry weather samples from December 10, 2008
  - ❑ MyRWA wet weather samples from May 23, 2008, July 23, 2008 and July 24, 2008.

**Part V. Program Outputs & Accomplishments (OPTIONAL)**

(Since beginning of permit coverage unless specified otherwise by a \*\*, which indicates response is for period covering April 1, 2008 through March 31, 2009)

**Programmatic**

	(Preferred Units)	Response
Stormwater management position created/staffed	(y/n)	Y
Annual program budget/expenditures **	(\$)	
Total program expenditures since beginning of permit coverage	(\$)	
Funding mechanism(s) (General Fund, Enterprise, Utility, etc)		

**Education, Involvement, and Training**

Estimated number of property owners reached by education program(s)	(# or %)	100% residents
Stormwater management committee established	(y/n)	N
Stream teams established or supported	(# or y/n)	1
Shoreline clean-up participation or quantity of shoreline miles cleaned **	(y/n or mi.)	Y
Shoreline cleaned since beginning of permit coverage	(mi.)	
Household Hazardous Waste Collection Days		
▪ days sponsored **	(#)	3
▪ community participation **	(# or %)	755 vehicles
▪ material collected **	(tons or gal)	34.55 tons
School curricula implemented	(y/n)	

## Legal/Regulatory

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

## Mapping and Illicit Discharges

	(Preferred Units)	Response
Outfall mapping complete	(%)	100%
Estimated or actual number of outfalls	(#)	33
System-Wide mapping complete (complete storm sewer infrastructure)	(%)	99%
Mapping method(s)		
▪ Paper/Mylar	(%)	
▪ CADD	(%)	100%
▪ GIS	(%)	100%
Outfalls inspected/screened **	(# or %)	100%
Outfalls inspected/screened (Since beginning of permit coverage)	(# or %)	100%
Illicit discharges identified **	(#)	2
Illicit discharges identified (Since beginning of permit coverage)	(#)	19
Illicit connections removed **	(# ); and (est. gpd)	4
Illicit connections removed (Since beginning of permit coverage)	(#); and (est. gpd)	18
% of population on sewer	(%)	99.9%
% of population on septic systems	(%)	.1%

## Construction

	(Preferred Units)	Response
Number of construction starts (>1-acre) **	(#)	4*
Estimated percentage of construction starts adequately regulated for erosion and sediment control **	(%)	100%
Site inspections completed **	(# or %)	100%
Tickets/Stop work orders issued **	(# or %)	0
Fines collected **	(# and \$)	0
Complaints/concerns received from public **	(#)	0

\* CRLS 459 Broadway, 220 Alewife Brook Parkway, 211 Alewife Brook Parkway, Church of Jesus Christ of Later Day Saints 50 Rogers Street

## Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	100%
Site inspections (for proper BMP installation & operation) completed **	(# or %)	100%
BMP maintenance required through covenants, escrow, deed restrictions, etc.	(y/n)	Y
Low-impact development (LID) practices permitted and encouraged	(y/n)	Y

## Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets) **	(times/yr)	
Average frequency of catch basin cleaning (commercial/arterial or other critical streets) **	(times/yr)	
Qty of structures cleaned **	(#)	2,555
Qty. of storm drain cleaned **	(%, LF or mi.)	35,115 LF
Qty. of screenings/debris removed from storm sewer infrastructure **	(lbs. or tons)	
Disposal or use of screenings (landfill, POTW, compost, beneficial use, etc.) **	(location)	Landfill
Basin Cleaning Costs		
• Annual budget/expenditure (labor & equipment)**	(\$)	\$250,000
• Hourly or per basin contract rate **	(\$/hr or \$ per basin)	\$124/basin
• Disposal cost**	(\$)	\$64/ton

Cleaning Equipment		
• Clam shell truck(s) owned/leased	(#)	2
• Vacuum truck(s) owned/leased	(#)	2
• Vacuum trucks specified in contracts (Stormdrain pipe maintenance)	(y/n)	Y
• % Structures cleaned with clam shells **	(%)	95%
• % Structures cleaned with vactor **	(%)	5%

	(Preferred Units)	Response
Average frequency of street sweeping (non-commercial/non-arterial streets) **	(times/yr)	10 times/yr
Average frequency of street sweeping (commercial/arterial or other critical streets) **	(times/yr)	Approximately daily
Qty. of sand/debris collected by sweeping **	(lbs. or tons)	4,209 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) **	(location)	landfill
Annual Sweeping Costs		
• Annual budget/expenditure (labor & equipment)**	(\$)	\$293,000 (contract only)
• Hourly or lane mile contract rate **	(\$/hr. or ln mi.)	\$90/hour/sweeper
• Disposal cost**	(\$)	\$17/ton
Sweeping Equipment		
• Rotary brush street sweepers owned/leased	(#)	2
• Vacuum street sweepers owned/leased	(#)	2
• Vacuum street sweepers specified in contracts	(y/n)	Y (for 2x/yr)
• % Roads swept with rotary brush sweepers **	%	100
• % Roads swept with vacuum sweepers **	%	100

Reduction (since beginning of permit coverage) in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	(lbs. or %)	IPM followed – only organic fertilizers used
▪ Herbicides	(lbs. or %)	NA
▪ Pesticides	(lbs. or %)	NA
Integrated Pest Management (IPM) Practices Implemented	(y/n)	Y

	(Preferred Units)	Response
Average Ratio of Anti-/De-Icing products used **  (also identify chemicals and ratios used in specific areas, e.g., water supply protection areas)	% NaCl % CaCl <sub>2</sub> % MgCl <sub>2</sub> % CMA % Kac % KCl % Sand	80% 20% 0 0 0 0 0
Pre-wetting techniques utilized **	(y/n or %)	Y
Manual control spreaders used **	(y/n or %)	Y (100%)
Zero-velocity spreaders used **	(y/n or %)	N
Estimated net reduction or increase in typical year salt/chemical application rate	(±lbs/l <sub>n</sub> mi. or %)	N/A
Estimated net reduction or increase in typical year sand application rate **	(±lbs/l <sub>n</sub> mi. or %)	100% reduction
% of salt/chemical pile(s) covered in storage shed(s)	(%)	100%
Storage shed(s) in design or under construction	(y/n or #)	N
100% of salt/chemical pile(s) covered in storage shed(s) by May 2008	(y/n)	Y

### Water Supply Protection

Storm water outfalls to public water supplies eliminated or relocated	# or y/n	0
Installed or planned treatment BMPs for public drinking water supplies and their protection areas	# or y/n	Y
• Treatment units induce infiltration within 500-feet of a wellhead protection area	# or y/n	

# List of Appendices

## Appendix 1 - Public Education and Outreach

- Rain Garden information sheet, January 2009
- Be a Climate Hero, Climate Tips from the City of Cambridge
- Construction Notice examples:
  - Ellery Street public meeting, project information and update flyer
  - Kirkland Road Common Manhole Separation
  - Common Manholes in Central Square
  - CAM 400 - Common Manhole Separation meeting and survey
- Joint Public Notice: Alewife Brook Combined Sewer Overflows Progress Update, April 2008
- Public Service Announcement: Street Sweeping Starts April 1<sup>st</sup>
- *CityView* - Spring/Summer 2008, Be Clean and Green, page 3,
- *The Cambridge Life* - Spring/Summer 2008, Fresh Pond Moving Forward, page 12
- Science Festival information April 26 - May 4, 2008
- DPW Vehicle Road Show 2008 flyer and stickers
- Team GreenSense 2008 - Program Narrative, schedule and photos
- FAR Ecology Camp - Press release and calendar of events
- Water Week Celebration 2008 flyer
- GoGreen Month, May 2008
- City Employee Commuter Benefits
- FEMA Insurance meeting info and sign in sheet

## Appendix 2 - Public Involvement and Participation

- NPDES Phase II public meeting information. Presentation and sign-in sheet (March 31, 2009)
- Public Meeting Notice and Citywide calendar posting
- Support letter for Charles River watershed Association's Building Blue proposal to the Jessie B. Cox Charitable Lead Trust
- Friends of Fresh Pond *The Year in Review* 2008
- Recycling and Household Hazardous Waste collection summaries
- Household Hazardous Waste Collection Days 2008 brochure
- Recycling and Trash Guidelines for Residents (updated fall 2008)
- Artforce - Water Dances 2009
- 2009 GoGreen Awards - Nomination Form

## Appendix 3 - Illicit Discharge Detection and Elimination

- Site Plan Review Listing
- Water Quality Samples, Reports and Maps
  - Alewife Brook Dry Weather Sampling (May - August '08; August - November '08; November '08 - March '09)
  - Charles River Dry Weather Sampling (Feb - Aug '08; July '08 - November '08; August '08 - March '09)
- Illicit Connection Removal Program from Section 2 of the City of Cambridge Annual Status Report on the Implementation of Administrative Consent Order ACOP -NE-96-1004 and Notice of Non Compliance and Determination of Significant Contributor of Pollution to the Waters of the Commonwealth NON-NE-00-1004, March 1, 2009 (includes summaries of Sparks Street and Lechmere Canal drainage area investigations using Charles River IDDE protocol)
- Fresh Pond Reservation Water Quality Samples (7/29/08) for Black's Nook, Little Fresh Pond and North Pond
- Charles River (North Point) wet weather sample, April 29, 2008
- Map of Separated Common Manhole through March 31, 2009 (map dated July 2009)
- MyRWA Bacterial Assessment: Wellington Brook, December 10, 2008 (dry weather sampling report, dated April 3, 2009)



- MyRWA Bacterial Assessment: Mystic River, Alewife Brook, Sandy Beach, May 28, July 23 and 24, 2008 (wet weather sampling report dated October 2, 2008)

#### Appendix 4 - Construction Site Stormwater Runoff Control

- Resources for Contractors
- Wastewater Compliance Officer - job posting
- Construction Meeting Sign-In Sheets
- Wastewater and Stormwater Drainage System Ordinance and Regulations - Overview Workshop, presentation and sign-in sheet
- Contractor Guide to Permits & Work Zones (Contractor letter, Presentation and sign-in sheets)
- Construction Coordination Meeting - letter and sign-in sheet.

#### Appendix 5 - Post-Construction Stormwater Management in New Development and Redevelopment

- Wastewater and Stormwater Management Guidance, May 2008 (includes section updated during Year 6 only)
  - Section 1: Introduction
  - Section 2: Cambridge Hydrology
  - Section 3: Land Disturbance Regulations and Stormwater Control Requirements
  - Section 4: Plan Requirements, Inspection Procedures & Fee Schedule
  - Section 5: Wastewater and Stormwater Drainage Use Regulations
  - Section 6: Conveyance Controls
  - Section 7: Other Controls
  - Section 8: Low Impact Development
  - Section 9: Plant Lists
  - Section 10: BMP Reference Guide
  - Appendix G:
    - Land Disturbance Permit Checklist
    - Stormwater Management Plan Checklist
    - Erosion and Sediment Control Plan Checklist
    - Project Permits Checklist

#### Appendix 6 - Pollution Prevention and Good Housekeeping in Municipal Operations

- Stormwater Work Order Requests - Summary Report