THE WORKS
CAMBRIDGE DEPARTMENT OF PUBLIC

Lisa Peterson
Commissioner

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May 2, 2006

U.S. Environmental Protection Agency, Region 1
Attn: Ann Herrick -Water Technical Unit
CIP
1 Congress Street
Boston, MA 02114

and

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, MA 01608

Subject: NPDES Phase II Small MS4 General Permit (MAR041076)
Year 3 (2005 - 2006) Annual Report
Cambridge, Massachusetts

To whom it may concern:

On behalf of the City of Cambridge and its Department of Public Works (DPW), attached please find an annual report outlining the City's progress toward implementation of its Stormwater Management Program outlined in the above referenced permit. This report includes updates and revisions to Cambridge's Stormwater Management Plan (SWMP) and addresses items outlined in the January 20, 2006 letter from EPA addressing EPA's comments on our NPDES Phase II Small MS4 General Permit and comments received from the public. Also included is our response to EPA's letter of January 20th; Second DRAFT of our Stormwater Management Plan, dated April 2006; and, Illicit Discharge Detection and Elimination (IDDE) in Cambridge, Summary Report, dated April 2006.

Cambridge had been very active in its efforts to improve its stormwater discharges. The attached information provides an overview of these efforts in accordance with the six Minimum Control Measures.

Please contact me at 617.349.4802 or Owen O'Riordan, Assistant Commissioner for Engineering/City Engineer at 617.349.4845.

Very truly yours,

Lisa Peterson

Lisa Peterson
Commissioner

Attachments (4)

cc: Robert W. Healy, City Manager
Owen O'Riordan, Assistant Commissioner for Engineering, DPW
Catherine Daly Woodbury, Engineering Project Coordinator, DPW

Municipality/Organization: **City of Cambridge**

EPA NPDES Permit Number: **MAR041076**

MaDEP Transmittal Number: **W-040464**

Annual Report Number & Reporting Period: **No. 3: March 05-March 06**

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: Robert W. Healy

Printed Name: Robert W. Healy

Title: City Manager

Date: May 2, 2005

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 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
1.a Revised	Develop Educational and Outreach Material for Residents and Businesses	Commissioner/DPW	(i)Develop 3 brochures or fact sheets **(completed under year 1 activities)** - Continue the development of relevant materials. **Expanded BMP element in Year 3**	Three public service announcements (PSAs) were released: (1) *Street Cleaning Starts March 31st*, which discussed the value of keeping trash, debris and pollutants out of catch basins that lead to the Charles River and Alewife Brook, (2) Household Hazardous Waste collection days, and (3) Guide to Moving & Renovating in Cambridge contains information on proper disposal of wastes including hazardous waste, recycling information and non-toxic products. Copies and examples are attached in Appendix 1. In addition, DPW developed a revised brochure on Recycling & Trash Guidelines in the top 5 languages spoken in households in the City, including: English, Spanish, Haitian/Creole, Chinese and Portuguese. This brochure included information on household hazardous waste and the proper disposal of waste. Articles on the City's Urban Forestry Program and Street Cleaning Reminder were published in the Spring/Summer 2005 edition of *CityView*.	Develop a fact sheet on Healthy Household Habits and translate it into the top 5 languages spoken in Cambridge households. Develop a fact sheet/brochure on lawn care and affects of fertilizer on water quality.
		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 http://www.cambridgema.gov/~TheWorks/stormwater/index.html. This site has been updated to provide links to information in the Alewife subwatershed and to provide updates to the public on important stormwater management construction projects and BMPs being undertaken throughout the city. Summaries of these pages are provided in Appendix I. Additional water quality information and activities are posted through the DPW homepage, Engineering homepage, Sewer homepage and City of Cambridge homepage. Information on watersheds and specific BMPs was not added this year.	This site will be updated and expanded to include information on watersheds and best management practices

Revised		Commissioner/DPW	(iii) Distribute materials **Expanded BMP element in Year 3**	The PSAs were broadcast on local cable, posted in local newspapers, posted on the City's web site. Brochures are also distributed at various public meetings and at DPW sponsored events (clean-up events, fairs/workshops). *CityVIew* and the Recycling Guidelines were mailed to every household in Cambridge actively receiving mail. In addition the Recycling brochures were distributed to the service agencies that work with the target language populations and the schools.	Distribute information on Healthy Household Habits to every household actively receiving mail in Cambridge.
Revised		Commissioner/DPW	(iv) Assess local/regional mass media marketing campaigns **Revised in Year 3– new BMP element**	Not applicable in Year 3 – new BMP element.	Review existing local/regional mass media efforts to determine relevance to Cambridge educational needs and goals.
1.b	Develop Outreach Materials/Activities for Children	Commissioner/DPW	(i) Begin school outreach in Cambridgeport	Not required in Year 3. School outreach activities were undertaken in Cambridgeport in Year 2. No additional school programs were conducted in Cambridgeport during Year 3.	Additional outreach activities to schoolchildren in the Charles watershed will be explored.
		Commissioner/DPW	(ii) Begin School Outreach in Alewife	Not required in Year 3.	Not required in Year 4. School programs will be developed as construction projects get underway. Construction has been delayed due to permitting issues and is hoped to begin in 2007.

1.c	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 http://www.cambridgema.gov/~TheWorks/stormwater/index.html	This site will continue to be updated and expanded
		Commissioner/DPW	(ii) Update stormwater web page	See 1.a. (ii) above.	See 1.c. (i) above.
1.d	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 65 have been installed: 57 in the Charles and 8 in the Alewife watersheds (see Appendix 1). In addition, a local Boy Scout stenciled catch basins in a residential area in the Alewife watershed. This was a continuation of his "Eagle Scout" project begun in Year 2 and was hand stenciled with paint, stencils and other supplies provided by the DPW.	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 2005 Go Green Month events. Activities included alternative forms of transportation information 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.

MCM #1. Additional Information

- DPW experimented with a 4" diameter plastic storm drain marker decal that was affixed to a curb with epoxy. In many cases these curb markers have been found to fail after only a single winter. DPW will continue to install the cast iron markers embedded in the sidewalk whenever infrastructure construction involves reconstruction of sidewalks.

- Cambridge CDD has monitored 29 entities under the Parking and Transportation Demand Management (PTDM) Ordinance to reduce motor vehicle trips associated with increased parking and 3 new PTDM plans were approved..

- The City provides 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.

- The City produces biannually a publication entitled "*CityView*" and distributes it to every household in the City (over 48,000). The Spring/Summer 2005 issue included several sections highlighting the City's efforts to educate residents on the importance of Urban Forestry and the Street Cleaning Programs. A copy of City View is available in Appendix 1.

- The Cambridge Public Health Department (CPHD) launched a new program for small businesses in Cambridge an effort to improve compliance with hazardous waste removal laws and practices in Year 2. CDPH has enrolled the Cambridge Public School Department in this program during Year 3 and will be working very closely with them to develop multi-site pick-ups and a chemical hygiene plan for the schools.

MCM #2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
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	DPW participated in public meetings on water quality/quantity issues in the Concord-Alewife area. A public meeting was held by the City Council's Health and Environment Committee to discuss transportation and stormwater issues in the Concord-Alewife area on October 19, 2005. A copy of the committee's report is attached in Appendix 2	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 and on cable television.	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 participated in Earth Day at Alewife on April 30, 2005. The City also worked with the Central Square Business Association on its 1st Annual Central Square Spruce Up. A copy of the flyer is attached in Appendix 2.	Support/assistance will be provided for one clean-up event.
		Commissioner/DPW	(ii) Support educational efforts of local watershed groups as opportunities arise through talks and /or support of grant applications	The City supported the efforts of the Friends of Alewife Reservation (FAR) and the Mystic River Watershed Association (MyRWA): In particular Cambridge shared its Public Service Announcement information with the CRWA. No grant application assistance was requested this year.	DPW 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	Links were posted to MyRWA and CRWA during Year 1. No new watershed links have been added this year.	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		
Revised		Commissioner/DPW	Hold 3 Household Hazardous Waste Collection days annually **(Revised in Year 1)**	Three Household Hazardous Waste collection days were held this permit year on April 23rd, June 25th and October 22nd. DPW has determined that the reduction in the amount of collection days has not resulted in a reduction in the amount of materials collected. See Appendix 2 for a summary of recycling tonnage from Drop-off center, curbside and HHW collections.	HHW collection will be held on April 22, June 24 and October 21, 2006.
		Commissioner/DPW	(ii) Accept recycling materials at a drop off center on a regular basis	During 2005 DPW operated a recycling drop-off center at the DPW yard on Tuesdays and Thursdays from 4 – 7:30 p.m. and Saturdays form 9 a.m. – 4 p.m. Materials accepted include: books, clothing, electronic media (CD's, floppy disks, VHS tapes), plastic bags and unmarked stiff plastic containers, Styrofoam, non-alkaline batteries (NiMH, NiCd, Hg, Li Ion, Pb Acid, AgO2), fluorescent bulbs, mercury containing devices (thermometers, thermostats, etc.), and motor oil.	DPW will continue to operate a drop-off center for recycling materials by residents, small businesses and non-profit organizations with 50 employees or less

		Commissioner/DPW	(iii) Beginning in yr 2 provide information on illicit discharges and reporting	A pamphlet was developed in Year 2 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 (see Appendix 2). Information was provided on the stormwater management homepage and "Information and Hotlines" link from the DPW web site regarding a stormwater hotline to report suspicious or illicit discharges.	DPW will provide information on illicit discharges and reporting at Household Hazardous Waste events.

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-Alewife study	Phase I was completed during Year 1. Information from this process can be viewed at http://www.cambridgema.gov/~CDD/commplan/zoning/concalew/index.html Phase II discussion of zoning recommendations began.	Not applicable in Year 3, Phase I completed. See MCM #5.b (ii) below.
		Assistant City Manager for Community Development/CDD and Commissioner/ DPW	(ii) Complete Phase II if authorized	The Concord-Alewife Plan, the report of the Concord-Alewife Planning Study was released in November 2005 and is attached in Appendix 2.	Not applicable in Year 4. Phase II is completed.
		Assistant City Manager for Community Development/CDD and Commissioner/ DPW	(iii) Forward study recommendations to the City Manager for consideration	The Planning Board submitted the Concord-Alewife rezoning petition to the City Council on April 25, 2005. This petition is based on the zoning recommendations of the Concord-Alewife Planning Study Committee. The petition was refilled by the City Council on February 21, 2006 and is currently under consideration. A copy of the petition is attached in Appendix 2.	The rezoning petition will be considered by the City Council in Year 4.

New		Commissioner/DPW	(iv) Discuss Concord-Alewife Stormwater Management strategies at a public meeting	Not applicable in Year 3, but DPW attended a public meeting before the City Council's Health and Environment Committee on October 19, 2005 to discuss Stormwater flooding in the Concord-Alewife area.	DPW will discuss stormwater management strategies for Concord-Alewife at a public meeting in Year 4.
New		Commissioner/DPW	(v) Publish LID guidelines	Not applicable in Year 3.	DPW will issue a copy of the Low Impact Development Guidelines for the Concord-Alewife area.
New		Commissioner/DPW	(vi) Place LID document on the Stormwater web site	Not applicable in Year 3.	Not applicable in Year 4, scheduled for Year 5.
		Commissioner/DPW	(vii) Execute the Environmental Joint Powers Agreement (EJPA)		
revised			Work with EOEA to advance the EJPA to a final document **(Revised in Year 1)**	The final EJPA was fully executed on March 4, 2005 and forwarded to EOEA. Completed.	This activity has been completed.
		Commissioner/DPW	(viii) ABC Flooding Board to meet 4 times annually	The ABC Flooding Board met approximately 11 times during Year 3. The Board met with representatives from the DCR, MWRA, and Arlington, Belmont and Cambridge engineering departments to discuss their respective continued efforts and commitments to long term maintenance and improvements in the Alewife area. The draft Progress Report of the *Tri-Community Working Group* was finalized.	The ABC Flooding Board will meet 4 times.
revised			**Schedule Revised in Year 1**		

MCM #2. Additional Information

- DPW hosts an annual Vehicle Road Show. This year's event was held on May 17, 2005. The focus of the event was education of children and adults about the steps the City has taken to implement environmentally friendly practices including recycling, street sweeping, park/tree maintenance, drain cleaning, alternative fuel vehicles. Over 300 children and adults attended the event. (See Appendix 2)

MCM #3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
3.a	Update Stormwater Drainage System, Outfalls and Receiving Waters in GIS	Commissioner/DPW	(i) Map Fresh Pond outfalls	Completed.	None required – there are no other known outfalls at Fresh Pond.
		Commissioner/DPW	(ii) Migrate existing GIS database to a new format	The City hired a consultant, CDM, to migrate the existing GIS data into the ArcInfo 8.3 geodatabse format. CDM has completed the migration of this information. Their contract included field verification of various public BMPs and QA/QC checks.	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 (see Appendix 3). Approximately 104 projects underwent DPW site plan review.	We will continue to track private structural controls through our site plan review process.
		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. Over 3000 record drawing have been scanned and spatially linked to the database. A catalogue of updated information is available to query.	Record drawings and as-built information will be added on an ongoing basis.
		Commissioner/DPW	(v) Train engineering staff on new GIS software	DPW engineering and sewer division staff was trained on new ArcView database	Completed.

		Commissioner/DPW	(vi) Begin updating GIS information with as-built/record drawings	3 DPW staff people have 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	Two (2) Water quality samples were taken at 13 outfalls on the Charles, two (2) samples at 8 outfalls on the Alewife. See Appendix 3 and Part IV of this report.	Water quality samples will continue in each watershed.
		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.
Revised			**(Revised for Year 2 only)**	Two (2) oil & grease samples were done during Year 3: 1 samples in the Charles and 1 in Alewife (see Appendix 3)	
		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.
Revised			**Revised in Year 3** Expand Water Quality testing in both watersheds	Not applicable in Year 3.	Outfalls at Lechmere Canal, South Massachusetts Avenue, Amesbury, Pearl and Pleasant Streets and Matignon Road will be added to 21 other outfalls to be sampled.
		Commissioner/DPW	(iv) Identify and remove illicit discharges	Illicit discharges/connections were removed at: • 351 Vassar Street • 109 Ellery Street Removal was done through the FY05 Remedial Contract	We will continue to monitor for and remove illicit discharges.

		Commissioner/DPW	(v) Perform water quality sampling at a Fresh Pond outfall annually	A water quality sample was taken at Little Fresh Pond (see Appendix 3 and Part IV of this report).	A water quality sample will be taken at Fresh Pond
New		Commissioner/DPW	(vi) Purchase sampling equipment as recommended by EPA's Lower Charles IDDE Protocol	Not applicable in Year 3	Purchase sampling equipment for IDDE Protocol sampling
New		Commissioner/DPW	(vii) Investigate Sparks Street drainage area	Not applicable in Year 3	Investigate Sparks Street drainage area using the EPA IDDE Protocol measures
New		Commissioner/DPW	(viii) Investigate Lechmere Canal drainage area.	Not applicable in Year 3	Not applicable in Year 4, scheduled for Year 5.
New		Commissioner/DPW	(ix) Separate Common Manholes.	Not applicable in Year 3. The next contract for common manhole separation was substantially designed during Year 3.	The number of Common Manholes separated in separated drainage areas will be counted.
3.c	Conduct Illicit Discharge Education Program	Commissioner/DPW	(i) Advertise illicit discharge hotline number and information on illicit discharges	The Stormwater Hotline number for illicit discharges was published in 1 brochure: *Household Hazardous Waste* Collection Days (see MCM 2.c. (iii) above). Also refer to MCM #1 and 2 above and #6 below for additional information.	The Stormwater Hotline number for illicit discharges will be incorporated in additional public information. Also refer to MCM #1 and 2 above and #6 below for additional information.
3.d	Develop Regulations Prohibiting Illegal Dumping of Non-Stormwater into the MS4	Commissioner/DPW	(i) Develop a working draft	Completed in Year 1.	Complete (refer to MCMs #3.d (ii) and (iii) below for more information)

		Commissioner/DPW	(ii) Provide opportunity for peer and legal review of draft	The draft Sewer and Stormwater Use Regulations developed above in 3.d(i) was revised based on peer review of cities and states with established illicit discharge regulations	Draft Regulations will be revised based on Law Department's comments.
		Commissioner/DPW	(iii) Revise draft as necessary	Not applicable in Year 3.	Draft Regulations will be presented to the City Manager, City Council and the community for comment. The number of public meetings will be recorded.
		Commissioner/DPW	(iv) Present regulations/ordinance to City Council for consideration for adoption	Not applicable in Year 3.	Not applicable in Year 4, scheduled for Year 5.

MCM #3. Additional Information

- Cambridge DPW supports the volunteer efforts of private individuals and groups undertaking water quality monitoring. During 1 occasion. DPW facilitated the stormwater sampling from manholes in Cambridge by Roger Frymire. Mr. Frymire's sampling results from January 18, 2006 are included in Appendix #3. Also included are sampling results from the Mystic Monitoring Network "Hot Spot" monitoring for September 27, 2005. DPW appreciates and will continue to work with these organizations as they bring potential problem discharges to our attention.

- During this program year Cambridge did not separated any common manhole structures. Instead it completed construction on the Common Manhole removal contracts from Year 2 and began design on the separation of another 16 common manholes. This next contract should be ready for construction start during Year 4. Common manholes 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.

MCM #4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
4.a	Develop Program for Construction Site Runoff Control	Commissioner/DPW	(i) Review existing planning and construction procedures	The City's draft Sewer and Stormwater Drainage Use Regulations and existing permit requirements related to construction activities were reviewed.	Complete (refer to MCM #4.a (iii) below for the development of the draft regulatory mechanism).
		Commissioner/DPW	(ii) Clarify needed regulatory mechanism	An ordinance and separate regulations were proposed to develop a construction site runoff control program. The proposed ordinance and regulations require a Stormwater Management Permit and applicable plans as discussed in MCM #4.a (iii) below.	Complete (refer to MCM #4.a (iii) below for the development of the draft regulatory mechanism).

		Commissioner/DPW	(iii) Develop draft regulatory mechanism, procedures and guidelines	A draft ordinance was developed based on a peer review of cities and states with established regulatory and guidance standards. The draft ordinance was presented to the City's Law Department for review. Four (4) meetings have been held with the Law Department for review 11-14-05, 11-30-05, 1-06-06, and 2-06-06.	Continue to record the number of City inter-departmental meetings held. The draft ordinance will be revised based on the Law Department's Comments. The ordinance will be split into two documents—an ordinance and applicable regulations. The stormwater regulations will be developed that will include requirements for the Stormwater Management Permit and plans.
		Commissioner/DPW	(iv) Present draft to the community for review	Not applicable in Year 3	A draft ordinance and regulations will be presented to the City Manager, City Council, and the community for comment. The number of public meetings will be recorded.
		Commissioner/DPW	(v) Amend draft as necessary and submit for consideration for adoption	Not applicable in Year 3. This MCM is based on the completion of MCM #4.a (iv).	Not applicable in Year 4 (scheduled for Year 5)
New		Commissioner/DPW	(vi) Record number of required Stormwater Management Permits submitted	Not applicable in Year 3	Not applicable in Year 4 (scheduled for the next permit period).
New		Commissioner/DPW	(vii) Provide stormwater management guidance materials or references	Not applicable in Year 3	Not applicable in Year 4, scheduled for Year 5.

New		Commissioner/DPW	(viii) Adopt procedures for inspections during construction activities.	Not applicable in Year 3.	Conduct peer review of inspection procedures in neighboring states.
New		Commissioner/DPW	(ix) Adopt procedures for enforcement and penalties for violations.	Not applicable in Year 3. The legal basis of these requirements is currently being worked on in the draft ordinance.	Conduct peer review of review procedures for enforcement and penalties with the Law Department.
New		Commissioner/DPW	(x) Record the number of enforcement actions taken and reported	Not applicable in Year 3	Not applicable in Year 4 (scheduled for the next permit period).
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	Not applicable in Year 3	Information on erosion and sediment control practices will be developed and made available to the public and contractors through various means including the City's web site.
		Commissioner/DPW	(ii) Discuss erosion and sediment control practices and problems at 3 construction coordination meetings annually	The City Engineer discussed erosion and sediment control practices and problems with permitted contractors working in the City at least 3 construction coordination meetings on April 4th, April 11th and May 9th (see Appendix 4 for sign-in sheets). DPW held staff training for the engineering and sewer division on Soils Handling. A copy of the sign in sheet and presentation is 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.	Not applicable in Year 3	Conduct peer review of applicable BMPs.

New		DPW	(iv) Create a list of resources, which provides BMP suggestions for the targeted pollutants of concern.	Not applicable in Year 3	Work to identify needed BMPs and resources.
New		Commissioner/DPW	(v) Record the number of workshops or meetings with City departments to discuss implementation of plan requirements	Not applicable in Year 3	Meetings will be held to discuss proposed ordinances and regulations.

MCM #4. Additional Information

- The ordinance and applicable regulations shall include requirements for the Construction Site Runoff Control and Post Construction Site Runoff Control Programs as part of MCMs #4 and #5. The Construction Site Runoff Control Program shall include development and adoption of an ordinance and separate regulations as the regulatory mechanisms to address construction activities. The ordinance sets the legal framework for the City to require a Stormwater Management Permit to discharge stormwater from land disturbance activities that are (at a minimum) greater than or equal to one acre. The ordinance and regulations will provide the legal authority for construction site inspections and enforcement. It will include penalties and enforcement of a Stormwater Management Permit. A proposed Stormwater Management Permit will require the submission of plans and details related to construction activities. Specific requirements of this plan will be included in the regulations; guidance with checklists and BMPs to meet the requirements will be included in guidance documents for permittees to use:
    a) The Stormwater Management Plan shall include water quality and quantity strategies to address peak discharges, runoff volumes, and pollutants of concern; BMPs (including water quality and water quantity controls with standards and specifications to address pollutants of concern), and areas of special interest that may include low impact development strategies and stormwater hot spots. Guidance will be provided for preferred structural and non-structural BMPs that include pollutant removal effectiveness.
    b) The Erosion and Sediment Control Plan shall provide site plan requirements and DPW review procedures, construction sequencing/scheduling, best management practices (including vegetative controls, temporary/permanent controls, waste control, and dewatering), and procedures for the receipt of public inquiries, concerns, and information.
    c) The Operation and Maintenance Plan shall provide procedures for the proper maintenance of temporary erosion and sediment control BMPs while construction activities are occurring.

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 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
5.a	Revise Sewer Use Regulations and Guidance	Commissioner/DPW	(i) Complete a working draft	The City's draft Sewer and Stormwater Drainage Use Regulations and existing permit requirements related to construction activities were reviewed. A separate ordinance, regulations, and permit were recommended as part of MCM #5.a (ii) below. The ordinance will include post construction program requirements.	Complete.
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	An ordinance and separate regulations were proposed to develop a post construction site runoff control program sufficient to meet Phase II Final Rule requirements. The draft regulations/ordinance was developed based on a peer review of cities and states with established post construction regulatory and guidance standards.	The draft regulations/ordinance will be revised based on the Law Department's comments.

		Commissioner/DPW	(iii) Develop draft guidelines on BMPs	The City developed a Draft LID Document for Concord-Alewife that includes site specific stormwater quantity and quality criteria for the Concord-Alewife area. Specific criteria include 80% TSS removal and 98% trash and floatables removal. It addresses feasible BMPs for the area and low impact development technologies. Reference to the DEP's Stormwater Management Policy is given. (See Appendix 5)	Stormwater management guidance guidelines and BMPs related to post construction activities will be developed or cited. A peer review to define parameters for tracking methods as part of the development of a BMP tracking system will be conducted.
		Commissioner/DPW	(iv) Discuss final draft and guidance with the community	Not applicable in Year 3	A draft ordinance will be presented to the City Manager, City Council, and community for comment.

		Commissioner/DPW	(v) Present final regulation, guidance and monitoring program for consideration and adoption	Not applicable in Year 3. This MCM is based on the completion of MCM #5.a (iv).	Not applicable in Year 4 (scheduled for Year 5).
New		Commissioner/DPW	(vi) Record the number of meetings held by the City for the regulatory process	The City has held 5 meetings with the DPW and Law Department on 7-28-05, 8-10-05, 10-13-05, 11-2-05 and 3-08-06.	Continue to record the number of meetings held with City departments.
New		Commissioner/DPW	(vii) Administer stormwater management permit requirements	Not applicable in Year 3	Identify permit requirements. Conduct workshop with staff to review implementation.
New		Commissioner/DPW	(viii) Administer procedures for enforcement and penalties for violations	Not applicable in Year 3	Conduct law department review. Conduct meetings to discuss with staff.
New		Commissioner/DPW	(ix) Adopt procedures for post construction inspections	Not applicable in Year 3	Conduct peer review on post construction inspection procedures.

New		Commissioner/DPW	(x) Discuss alternatives to ensure adequate long-term operation and maintenance of BMPs	Not applicable in Year 3	Determine process and requirements for owners to prove that annual maintenance has been performed.
New		Commissioner/DPW	(xi) Provide legal mechanism to require annual compliance for the operation and maintenance of BMPs	Not applicable in Year 3	Draft legal mechanism.
5.c	Undertake Tree Protection Activities	Commissioner/DPW	(i) Provide community outreach and education activities on the care, importance and protection of trees and their role in climate protection	The City Arborist participated in approximately 10 outreach and education activities including school visits, Arbor day events neighborhood tree walks and other volunteer events. The arborist also works closely with the Public Planting Committee and administers Tree hearings for the removal of trees from the public way.	DPW will continue outreach efforts on the importance and protection of trees.

MCM #5. Additional Information

- Cambridge received a score of 110 on its Commonwealth Capital Application through the MA Office of Commonwealth Development. A score of 110 is the sixth highest score in the Commonwealth at the time of this report for FY06. The City's success in this application is attributed to the priority that the City places on environmental sustainability in many of its policies and program. A copy of the application is attached in Appendix 5.

- 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. Each community is participating 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 .

- DPW has monthly meetings with the Committee on Public Planting regarding the benefits of green space and trees.

- DPW received a grant from the MA Department of Conservation and Recreation to undertake a Comprehensive Tree Management Inventory. During Year 3, DPW completed approximately 95% of this inventory and mapped the data onto the City's GIS using Arc Pad technology. The data accumulated will be used to assist the Forestry Division at DPW in its planning and forestry management activities.

- Cambridge received the "Tree City USA" award in 2005 by the National Arbor Day Foundation. This marks the fourteenth year that Cambridge has received this award, which recognizes municipalities for their efforts to maintain the urban forest.

- Adoption of 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 sites except for 1 project, which contributed into the tree fund for planting in other areas.

- The Urban Forest Canopy Assessment was completed in August 2005. It was conducted to develop a baseline estimate of the tree canopy in Cambridge and to estimate the value of environmental benefits provided by the urban forest. Air pollution mitigation, stormwater runoff reduction, uptake and storage of carbon, energy conservation, moderation of the urban heat island effect, and landscape enhancement are all benefits provided by urban forest. A copy of this report is provided in Appendix 5.

- The ordinance and applicable regulations shall include requirements for the Construction Site Runoff Control and Post

Construction Site Runoff Control Programs as part of MCMs #4 and #5. The Post Construction Site Runoff Control Program shall include development and adoption of an ordinance and separate regulations as the regulatory mechanisms to address post construction activities. The ordinance sets the legal framework for the City to require a Stormwater Management Permit to discharge from a site after construction activities have commenced and the site is stabilized. The ordinance and regulations will provide the legal authority for post construction site inspections, documentation, and enforcement. The proposed Stormwater Management Permit will require the submission of plans as describe above in BMP 4.a and MCM #4. Additional Information for construction and will also address the post construction requirements. A plan submittal will be required for long term operation and maintenance of BMPs:

a) The Operation and Maintenance Plan will address maintenance for BMPs and requirements for annual compliance. Specific requirements of this plan will be included in the regulations; specific guidance will be provided in guidance documents as related to specific site BMPs.

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 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
6.a	Educate Municipal Employees about Pollution Prevention	Commissioner/DPW	(i) Provide stormwater training for municipal employees annually	Three good housekeeping workshops for City were conducted on 10-27-05, 11-15-06 and 2-01-06. 69 facility managers and staff attended from 8 City Departments representing over 60 facilities. See Appendix 6 for a copy of the sign-in sheets and a copy the presentation from the 2-01-06 workshop.	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 developed. Personnel included facility managers and personnel involved in the day-to-day operations. All individuals identified were invited to a good housekeeping workshop.	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	A good housekeeping manual was developed for use by personnel involved in the day-to-day operations. The manual identifies that personnel must fill out an annual inspection report. The manual was reviewed during the good housekeeping workshops identified in MCM #6.a (i). A copy of the Table of Contents is provided in Appendix 6.	The Good Housekeeping Manual will be placed on the City's intranet site.
New		Commissioner/DPW	(iv) Record number of facility personnel who complete inspections on an annual basis	Although not required in Year 3, 44 facilities conducted facility inspections.	Number of good housekeeping inspections completed by facility personnel on an annual basis.

New		Commissioner/DPW	(v) Record number of facilities that have initial good housekeeping inspections conducted	Approximately 60 facilities were inspected.	Record additional facilities inspected.
New			(vi) Record the number of municipal facility site plans updated, including structural controls based upon initial site visits.	Not required in Year 3.	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	Good housekeeping inspections at City facilities were conducted to assess the types of activities that occur and potential impacts on stormwater and pollutants of concern. Current BMPs were assessed and recommendations for improvements provided and discussed with personnel at good housekeeping workshops identified in MCM #6.a (i).	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	City facilities in separated and combined areas were identified. Approximately 60 facilities were inspected and structural controls including drainage manholes and catch basins were identified.	Incorporate facility inspection drainage findings into the City's GIS system. Work to provide updated facility maps for staff (refer to 6.a.(vi) above.

		Commissioner/DPW	(iii) Document inspections procedures and maintenance schedules in a procedures manual	As part of MCM#6.a (i), inspection procedures were implemented that include Annual Good Housekeeping Inspection Reports. Schedules for conducting parking lot sweeping and catch basin cleaning were reviewed and included schedules for maintenance, recordkeeping, and coordination with the DPW to have the maintenance operations performed.	The DPW will perform requested parking lot sweeping and catch basin cleaning at City-owned facilities that request maintenance operations.
		Commissioner/DPW	(iv) Develop inspections procedures and maintenance schedules for long term structural controls	Developed inspection procedures and maintenance schedules for long term structural controls.	The DPW will keep track of the number and type of drainage system work orders completed, as recorded in the Cambridge Request System.
New		Commissioner/DPW	(v) Record percentage of City catch basins cleaned	Not applicable in Year 3	Keep record of City catch basins cleaned annually.
New		Commissioner/DPW	(vi) Record tons of street sweepings collected	Not applicable in Year 3	Keep record of tons of street sweepings collected annually.
New		Commissioner/DPW	(vii) Record tons of waste/recycling collected	Not applicable in Year 3. Refer to Appendix 2 for the total tons of recycling collected in Year 3.	Keep record of tons of waste and recycling collected annually.
New		Commissioner/DPW	(viii) Record number of new trees planted	Although not required in Year 3 refer to information provided below.	Keep record of new trees planted.
New		Commissioner/DPW	(ix) Record number of public structural controls constructed/repaired.	Although not required in Year 3 refer to information provided below.	Keep record of public structural controls constructed or repaired.

MCM #6. Additional information

- In public construction projects DPW has constructed the following stormwater best management practices (BMPs)
  - number of illicit connections removed = 2 [351 Vasser Street (FY05 Remedial) and 109 Ellery Street (Fy05 Remedial)]
  - number of new catch basins with 6' deep sumps and hoods installed = 134 [(33) FY05 Remedial, (37) FY06 Remedial, (27) Chapter 90 Contract #4, (15) Chapter 90 Contract #5, (2) Harvard CGIS, (3) Oxford Street, (1) Emergency Contract, (3) Blanchard Road, (12) AAP]
  - number of deep sump drainage manholes = 1 (AAP)
  - number of catch basins retrofitted with a hood = (6) Cambridge Street
  - number of curb markers installed = 68 [(29) Chapter 90 Contract #4, (16) Chapter 90 Contract #5, and (23) FY05 Remedial.
  - number of new grit pits = 4 (AAP)
  - number of new stormwater outfalls (reconstructed) = 2 (AAP at Amesbury and Pearl)
  - number of isolation structures = 2 (AAP at Amesbury and Pearl outfalls)
- The total number of City-owned facilities inspected in Year 3 was 56 (or approximately 60). The facilities were prioritized for inspection (refer to Facility Drainage Locus Maps Index in Appendix 6). Those categorized as a low priority were not inspected; those categorized as a high priority were inspected. Factors considered in categorizing a low or high priority status included facility use and activities conducted at the site and proximity to surface waters or drainage systems.

  Facilities on the low priority list included those with closed/vacant buildings, office use, Youth Centers, Senior Centers, no catch basins on site, and facilities still under construction. Activities that have the potential to affect stormwater quality were not conducted at low priority facilitates. These activities include outside material storage, hazardous material storage, vehicle maintenance, vehicle washing, pesticide and fertilizer use, and spill prevention needs. Snow removal, sanding, catch basin cleaning, and street sweeping activities were not considered since these activities are mainly performed by DPW department and adhere to their procedures that are applicable at all City-owned facilities.
- The good housekeeping manual includes the following: stormwater pollutants and impacts on water quality including pollutants of concern for the City, City policies and protocols including requirements of leases and contracts for City properties, and BMP fact

sheets. Seventeen BMP fact sheets were created for City-wide operations and building/parking lot facilities that include (but not limited to) salting practices, catch basin cleaning, street sweeping, material management, vehicle washing, vehicle maintenance, spill prevention and response, and lawn and grounds maintenance. Each BMP fact sheet includes targeted City facilities and operations and pollutants of concern, suggested BMPs, inspection procedures, and maintenance procedures that are applicable to the City and adhere to DPW policies and procedures. In addition the inspection checklist reminds facility staff to identify if new activities have been implemented at the site in the past year.

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 2005 through March 2006 and their associated summary of results.
  - Alewife Brook samples from December 20, 2005 and March 29, 2006.
  - Charles River samples from August 25, 2005 and March 29, 2006.
  - Little Fresh Pond samples from July 13, 2005.
  - Oil and Grease samples from August 11, 2005
  - Charles River Hot Spot (wet weather) monitoring by Roger Frymire on January 18, 2006 (Provisional results)
  - Mystic Monitoring Network "Hot Spot" Sampling Results for September 27, 2005.