

Ms. Linda Murphy  
Director, Office of Ecosystem Protection  
U.S. Environmental Protection Agency New England  
P.O. Box 8127  
Boston, MA 02114

August 20, 2010

Mr. Glenn Haas  
Director, Division of Watershed Management  
Department of Environmental Protection  
One Winter Street  
Boston, MA 02108

**RE: Massachusetts Water Resources Authority NPDES Permit Number MA0103284 – MWRA  
Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2010**

Dear Ms. Murphy and Mr. Haas:

In compliance with the requirements of MWRA's NPDES Permit MA0103284 - Part I, Item 18.bb (ii) "Infiltration/Inflow" (page 28 of 32), the Authority submits this cover letter and the six Attachments listed below that together comprise the MWRA Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2010.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan  
Attachment 2 – MWRA Regional I/I Reduction Plan – FY10 Progress Update and Detailed  
Implementation Schedule for FY11 Activities  
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY10  
Attachment 4 – Status Update on MWRA's I/I Local Financial Assistance Program  
Attachment 5 – I/I Reduction Status Update for Member Communities  
Attachment 6 – CY09 Community Wastewater Flow Data

Should you require additional information, please contact Carl H. Leone, Senior Program Manager, Community Support Program at (617) 788-4356.

Sincerely,

Michael J. Hornbrook  
Chief Operating Officer

cc: DEP-Regulatory Branch, Boston  
DEP - SERO  
DEP – NERO

Richard Chretien, DEP, Boston  
Grace Bigornia-Vitale, MWRA, NPDES Coordinator  
Carl H. Leone, MWRA, Community Support Program

ATTACHMENT 1  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period – July 2009 Through June 2010

## OVERVIEW OF MWRA REGIONAL I/I REDUCTION PLAN

The MWRA Board of Directors approved the Regional Infiltration/Inflow (I/I) Reduction Plan on May 23, 2001 and authorized staff to submit the Plan to EPA and DEP as required under MWRA's NPDES Permit. The plan was submitted to EPA and DEP in June 2001 and DEP approved the plan in a letter dated November 19, 2002. A full copy of the Regional I/I Reduction Plan (dated September 2002) was included as Attachment 2 to the August 29, 2003 MWRA Annual I/I Reduction Report for FY03. The Regional I/I Reduction Plan is available at <http://www.mwra.com/comsupport/communitysupportmain.html>.

The Regional I/I Reduction Plan combines recommendations from the I/I Task Force Report (March 2001) with ongoing MWRA I/I reduction initiatives. The updated plan replaces the Authority's 1990 I/I Reduction Policy. Implementation of the Regional I/I Reduction Plan focuses on the cooperative efforts of member communities, DEP, EPA and MWRA to develop and implement I/I reduction and sewer system rehabilitation projects.

Under the plan, MWRA has full legal and fiscal responsibility for implementation of operation, maintenance, and I/I reduction programs for the MWRA-owned interceptor system. Each member community retains full legal and fiscal responsibility for implementation of operation, maintenance and I/I reduction programs for community-owned sewers. MWRA will provide technical and financial assistance to member communities and work cooperatively with DEP, EPA and other stakeholders to help solve local and regional sewer problems. MWRA's Regional I/I Reduction Plan is organized into five major goals:

1. MWRA will continue its current operation and maintenance program for the MWRA-owned interceptor system leading to the identification, prioritization and rehabilitation of structural and I/I problems.
2. MWRA will work cooperatively with member communities, DEP and EPA to eliminate sewer system backups into homes and other buildings and to minimize health and environmental impacts of SSOs related to I/I.
3. MWRA will work cooperatively with member communities, DEP and EPA to reduce I/I in the regional collection system with emphasis on the following: (1) inflow reduction in areas tributary to sewer backups and SSOs, (2) private source inflow reduction, (3) infiltration that may impact groundwater or surface water resources, and (4) excessive infiltration as defined in DEP regulations or guidance documents.
4. MWRA will work cooperatively with member communities, DEP and EPA to expand existing efforts to educate and involve the public regarding regional sewer backup, SSO and I/I reduction issues.
5. MWRA will provide technical assistance and work cooperatively with member communities, DEP and EPA regarding guidance on local operation and maintenance and capital improvement programs intended to provide a reasonable level of sewer service to local sewer users/ratepayers.

ATTACHMENT 2  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period – July 2009 Through June 2010

**MWRA REGIONAL I/I REDUCTION PLAN -  
FY10 PROGRESS UPDATE AND DETAILED  
IMPLEMENTATION SCHEDULE FOR FY11 ACTIVITIES**

This document provides a progress update for FY10 accomplishments and a description of the activities to be accomplished during FY11 for each of the I/I reduction strategies in the MWRA Regional I/I Reduction Plan. The update appears in bold type directly below each I/I reduction strategy. This document is intended to satisfy condition 5 of DEP's November 19, 2002 letter approving the MWRA Regional I/I Reduction Plan.

Goal 1 under MWRA's Regional I/I Reduction Plan is:

*MWRA will continue its current operation and maintenance program for the MWRA-owned interceptor system leading to the identification, prioritization, and rehabilitation of structural and I/I problems.*

*Strategy A:* Utilize MWRA's internal TV inspection equipment that currently includes one fully outfitted internal TV inspection vehicles equipped with 6000 feet of multi-conductor cable. MWRA also utilizes an OZ-camera that has a 200X zoom capability. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

*Strategy B:* Utilize MWRA's sonar camera to inspect siphons and force mains. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

*Strategy C:* Physical inspection of collection system manholes and structures by Operations Division field crews. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

**During FY10, MWRA properly operated and maintained the MWRA-owned interceptor system. Annual performance targets and ongoing accomplishments are tracked as part of the Authority's MAXIMO maintenance database and are reported monthly to MWRA senior management. Specific activities undertaken by MWRA for FY10 are detailed in Attachment 3. Additional information on MWRA's FY10 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.**

**During FY11, MWRA will continue to properly operate and maintain the MWRA-owned interceptor system.**

Goal 2 under MWRA's Regional I/I Reduction Plan is:

*MWRA will work cooperatively with member communities, DEP, and EPA to eliminate sewer system backups into homes and other buildings and to minimize health and environmental impacts of SSOs related to I/I.*

*Strategy A:* MWRA will provide technical assistance to DEP to develop a uniform format for use by communities for reporting wastewater backup and sewer system overflow information. A representative group of communities should be consulted for review. MWRA will provide technical assistance to DEP to develop a system to record the information reported by communities into a usable database format. This database may have the capability to be linked to GIS mapping and the information may be made available to communities, MWRA, DEP, EPA, watershed groups, the general public, etc. upon appropriate request. This strategy has an ongoing schedule that should be initiated in the short-term. Completion of this strategy requires a significant resource commitment by DEP. Collection and recording of sewer backup and SSO information from member community sewer systems is the responsibility of DEP. DEP will be responsible for management of collection and distribution of these records. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.1 Strategy A-2 and 5.2 Strategy B-2)

**Work by MWRA under this Strategy is complete.**

**During spring 2001 MWRA provided DEP a draft SSO reporting/record keeping electronic database format that was developed by Malcolm-Pirnie, Inc. under contract to MWRA. This work was completed by MWRA as technical assistance to DEP. A follow-up letter dated June 20, 2001 requested DEP identify the format for finalizing the SSO reporting/record keeping electronic database.**

**During FY04, DEP (in conjunction with staff in the Massachusetts Information Technology Division), developed a new format SSO electronic database package. This project was part of statewide efforts to upgrade computerized resources and electronic access. The new system was demonstrated at an April 8, 2004 DEP/MWRA joint community workshop. Development/implementation by DEP was expected to continue in through FY05. Follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database is pending.**

*Strategy B:* Once a central information database is established (see Strategy A), MWRA will periodically delineate areas which may be "at risk" for backups and SSOs that may be impacted by the MWRA-owned collection system. MWRA will evaluate potential improvements to the MWRA-owned collection system that may reduce the risk of sewer backups and SSOs. This strategy should be completed in the mid to long-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.3 Strategy C-2 and 5.5 Strategy E-2)

**Work by MWRA under this Strategy is complete.**

**MWRA utilizes DEP's Sanitary Sewer Overflow/ Bypass/Backup Notification Form to report SSOs from MWRA's collection system.**

**MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). The one-year, six-hour storm produces approximately 1.72 inches of rainfall in the Boston area. During extreme storm events that exceed the MA DEP recommended design storm, I/I entering the upstream community-owned collection systems may cause an occasional SSO in the MWRA regional interceptor system.**

**During FY10, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY11.**

*Strategy C:* Once a central information database is established (see Strategy A) and member communities have delineated areas which may be “at risk” for backups and SSOs, MWRA - jointly with DEP - will provide technical assistance to member communities to evaluate potential improvements to local infrastructure that may reduce the risk of sewer backups and SSOs. MWRA will assist communities to determine if impacts from the regional collection system are an issue. The schedule for this strategy is dependent on prior actions by DEP and member communities. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.3 Strategy C-1 and 5.5 Strategy E-1)

**MWRA's work on this strategy is on hold awaiting follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database (see Strategy A above). As part of its ongoing program to support member community I/I reduction and sewer system rehabilitation programs, MWRA offers technical assistance to communities to assist in reviewing local I/I reduction plans and regional SSO problems.**

*Strategy D:* For the MWRA-owned interceptor system, MWRA will review and analyze the health and environmental impacts of existing SSO sites. SSO sites will be prioritized based on the frequency and duration of activations and the resulting health and environmental impacts, including: potential for human contact, impact to water supply, impact to shellfish beds or other economic resources, impact to animal or aquatic habitat, etc. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-1)

**Work by MWRA under this Strategy is complete.**

**As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard, additional work under this strategy is not necessary.**

*Strategy E:* Utilizing the priority ranking to be completed in Strategy D above, as well as system hydraulic analyses, MWRA (for the MWRA-owned interceptor system) - in conjunction with DEP and EPA - will evaluate the potential to eliminate each overflow. Appropriate I/I reduction and/or relief sewer projects that may eliminate (or minimize) SSOs from MWRA-owned interceptors will be evaluated. This strategy will be initiated in the short to mid-term; however, implementation of projects developed from the evaluation may span beyond the long-term time frame as defined within the Regional I/I Reduction Plan. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-2)

**Work by MWRA under this Strategy is complete.**

**As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard, additional work under this strategy is not necessary.**

**During FY10, MWRA continued work on projects in the MWRA Capital Improvement Program, as summarized in Attachment 3.**

**During FY10, MWRA continued to coordinate with member communities and provide financial assistance to reduce I/I entering local collection systems to help minimize SSOs that may occur during extreme storm events. Detail is provided in Attachment 4.**

*Strategy F:* For those overflows that are unlikely to be eliminated in the short to mid-term (based on the evaluation from Strategy E, above), MWRA (for the MWRA-owned interceptor system) will consider developing interim measures to relocate or otherwise mitigate the impact of existing overflows on human and natural resources. The priority ranking (from Strategy D, above) will be utilized in development of interim mitigation measures. This strategy has an ongoing schedule that should be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-3)

**As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). The one-year, six-hour storm produces approximately 1.72 inches of rainfall in the Boston area.**

**During FY10, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY11.**

**During extreme storm events that exceed the MA DEP recommended design storm, I/I entering the upstream community-owned collection systems may cause an occasional SSO in the MWRA regional interceptor system. The bullets below provide an update on I/I reduction and/or sewer projects that may eliminate (or minimize) SSOs related to extreme rainfall events and interim measures to relocate or otherwise mitigate the impact of SSOs related to extreme rainfall events.**

- **Continued coordination with member communities to reduce I/I from local collection systems will help to minimize SSOs that may occur during extreme storm events. For MWRA's FY10 Capital Improvement Program, an additional \$40 million in 45% grants and 55% interest-free loans was added to the I/I Local Financial Assistance Program to help fund community I/I reduction projects. MWRA's commitment for the I/I Local Financial Assistance Program totals \$260.75 million.**
- **Ongoing CSO projects in Cambridge and Somerville tributary to the Alewife Brook Conduit and the North Metropolitan Relief Sewer may reduce downstream SSOs that may occur during extreme storm events.**
- **In August 2007, MWRA developed a hydraulic analysis report of major interceptor sewers in the Melrose, Stoneham and Wakefield areas. Preceding extreme storm events, MWRA currently stages a temporary sewer plug/pump operation to divert high flow away from a potential SSO site. If activated during extreme storm conditions, this temporary pumping will minimize the potential impacts. During FY10, MWRA began construction on an 18-inch sewer extension project in the Roosevelt School area of Melrose. This project will minimize the SSO potential at this location and eliminate the need for the temporary plug/pump operation. The \$0.6 million construction is scheduled to be finished in FY11.**
- **If activated during an extreme rainfall event, MWRA's emergency directed discharge (via two gate valves) to the Stony Brook Conduit in Boston/Roslindale is intended to minimize potential SSO impacts within this local low lying area.**
- **MWRA's Capital Improvement Plan includes a long-term Randolph Extension Sewer Relief Study to identify and evaluate potential system improvements.**

*Strategy G:* MWRA will assist DEP, member communities, and other regional stakeholders to inform local plumbing inspectors of the regional priority of eliminating sewer system backups. Plumbing inspectors will be requested to work more closely with local DPW staff to identify sewer system backup problem areas and locations where backflow prevention devices may be required. MWRA expects to meet this strategy by distributing a letter to the plumbing inspector in each member community that discusses sewer backups, potential public health impacts, backflow prevention, and coordination with the local DPW to identify problem areas. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 4.2 Strategy B-4)

**Work by MWRA under this Strategy is complete.**

**On September 26, 2005, MWRA distributed an informational package on Sewer Backups and Sanitary Sewer Overflows to all service area community plumbing inspectors, Health Departments (Boards of Health), DPW Directors, Engineering Departments, and collection system operators. The package included information from**

**fourteen separate sources and provided many web links for additional information. On September 29, 2005, MWRA sent a copy of the informational package to EPA, DEP, all MWRA water-only member communities, and local watershed associations.**

Goal 3 under MWRA's Regional I/I Reduction Plan is:

*MWRA will work cooperatively with member communities, DEP, and EPA to reduce I/I in the regional collection system with emphasis on the following: (1) inflow reduction in areas tributary to sewer backups and SSOs, (2) private source inflow reduction, (3) infiltration that may impact groundwater or surface water resources, and (4) excessive infiltration as defined in DEP regulations or guidance documents.*

*Strategy A:* MWRA will continue to analyze available MWRA wastewater metering data to estimate community infiltration and inflow rates. MWRA will provide this information along with technical assistance to help interpret the information to member communities. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendations 6.1 Strategy A-1, and 7.1 Strategy A-1).

**During FY10, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY09 is included as Attachment 6. These flow data tables are available to all users on MWRA's web site. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis.**

**During FY11, MWRA will continue to estimate community infiltration and inflow rates on a bimonthly basis and make this information available to MWRA member communities. MWRA will provide the information to EPA and DEP as part of the annual summary report on actions taken to reduce I/I (submitted annually by September 1 per the NPDES Permit).**

*Strategy B:* MWRA, in cooperation with member communities, will evaluate the feasibility of developing and operating an expanded emergency notification system (ENS). Currently, the MWRA remotely monitors wastewater flow at key locations within the regional collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels. The Authority and member communities use this information to forecast problem areas, predict potential sewer system overflows and deploy work crews. The MWRA's wastewater metering system will be upgraded over the next few years. This upgrade may impact the ENS. MWRA is also investigating, over the next three to five years, the benefits of adding SCADA-type meters at some key locations in the collection system. After completion of the two ongoing projects, MWRA will evaluate whether an ENS system can be used efficiently to provide information at the local level. This strategy will be completed in the long-term or more extended time frame subject to the schedule of the ongoing projects noted above. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.4 Strategy D-1)

**Work by MWRA under this Strategy is complete.**

**MWRA's Wastewater Meter Replacement project was completed in FY06. The system continues to be used to monitor wastewater flow at key locations within the regional**

**collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels.**

*Strategy C:* MWRA will provide technical assistance to member communities to establish written infiltration and inflow identification and removal programs as outlined in the I/I Task Force Report. This strategy has an ongoing schedule that will be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 6.1 Strategy A-1, and 7.1 Strategy A-1)

**During FY10, MWRA staff continued to meet with community representatives to provide technical assistance and discuss local programs. Communities are often interested in progress reports on what specific actions other communities are pursuing. All member sewer communities are actively participating in MWRA's I/I Local Financial Assistance Program (see Attachment 4). Community I/I reduction programs are generally being conducted by local engineering consultants under contract to the communities. These projects generally utilize standards established in DEP's January 1993 I/I Guidelines. This work will continue in FY11.**

*Strategy D:* MWRA will provide technical assistance to member communities that seek to emphasize infiltration removal that may impact groundwater and surface water resource areas. MWRA will provide GIS mapping information to member communities that identifies water resource areas, provides an overlay of local and regional sewers, and delineates watersheds. The I/I Task Force Report recommends communities target areas where infiltration reduction will provide the most meaningful benefit for aquifer recharge, stream flow, wetlands and water levels in lakes and ponds. The Task Force also recommends communities coordinate their infiltration reduction efforts with appropriate EOEAs Watershed Teams, local watershed groups and the local conservation commission. Distribution of MWRA mapping information is intended to assist member communities in fulfilling this I/I Task Force recommendation. This strategy has an ongoing schedule that will be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 7.1 Strategy A-5)

**Work by MWRA under this Strategy is complete. Additional community technical assistance is provided upon request as noted under Strategy C, above.**

**During FY05, MWRA completed a major upgrade to its electronic sewer database and GIS mapping system. Also during FY05, MWRA completed coordination with local communities to more accurately map connection points of local sewers to the MWRA interceptor system and GPS located all wastewater meter sites located in community-owned sewers. MWRA's new mapping information was rolled-out in FY06. Two community based projects were undertaken to help member communities fully benefit from MWRA GIS mapping upgrades.**

**In March 2006, a project to develop GIS partnership agreements with member communities was initiated. Based on the initial work, many of MWRA's member communities have agreed to GIS partner with MWRA and have signed nondisclosure agreements that detail security protocols necessary to safeguard the data.**

**In July 2006, a second GIS mapping project was completed. MWRA provide GIS maps with detailed water resource information overlaid with the local sewer system to each**

**MWRA member sewer community. In addition, land use mapping was also distributed to the communities. The distribution of this mapping information fulfilled MWRA's work under Strategy D.**

*Strategy E:* MWRA, in coordination with the MWRA Advisory Board, will continue to fund the I/I Local Financial Assistance Program to provide grants and loans to member sewer communities to fund local I/I reduction projects. Through September 2002, MWRA has authorized a total budget of \$140.75 million to fund this program. Financial assistance is provided through 45 percent grants and 55 percent interest-free loans for eligible projects. The MWRA Board of Directors has approved the program through FY2010. The I/I Local Financial Assistance Program is fully detailed in the "Program Guidelines" document available from the MWRA Community Support Program. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendation 10.2 Strategy B-1)

**In June 2004, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$180.75 million and extended program distribution through FY13. The additional \$40 million (phase 5) in financial assistance funds became available to the communities in FY05.**

**In June 2006, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$220.75 million and extended program distributions through FY15. The additional \$40 million (phase 6) in financial assistance funds became available to the communities in FY07.**

**In June 2009, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$260.75 million and extended program distributions through FY18. The additional \$40 million (phase 7) in financial assistance funds became available to the communities in FY10.**

**During FY10, MWRA continued to provide grants and loans to member sewer communities to fund local I/I reduction and sewer system rehabilitation projects. A total of \$13.6 million was distributed during FY10. Since program inception in May 1993, \$195 million has been distributed to fund 391 local projects. The program Guidelines, Financial Assistance Application, and summary of available funds by community are posted on the MWRA Community Support Program web page at <http://www.mwra.com/comsupport/communitysupportmain.html>. A detailed status update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4.**

**During FY11, MWRA will continue to distribute funds and assist communities in the management of projects under the I/I Local Financial Assistance Program. MWRA's remaining financial assistance funds are authorized for distribution through FY18.**

*Strategy F:* MWRA, in coordination with the MWRA Advisory Board, will continue to provide emergency assistance to member communities for sewer services on local collection systems that are routinely performed by MWRA staff for the MWRA-owned interceptor system. Examples of past community assistance provided by MWRA staff include: emergency response assistance, bypass pumping, internal TV inspection, sewer cleaning, flow metering, engineering technical assistance, etc. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendations 9.6 Strategy F-2, and 10.2 Strategy B-2)

**During FY10, MWRA continued to provide emergency assistance to member communities, as requested. These efforts included internal TV inspection of 1.6 miles of local sewers and associated cleaning of local sewers, as well as, other emergency assistance. During FY11, MWRA will continue to provide emergency assistance to member communities.**

Goal 4 under MWRA's Regional I/I Reduction Plan is:

*MWRA will work cooperatively with member communities, DEP, and EPA to expand existing efforts to educate and involve the public regarding regional sewer backup, SSO, and I/I reduction issues.*

*Strategy A:* MWRA will act as a "clearinghouse" to collect and distribute information on I/I and SSO issues. Other groups, agencies, associations, community representatives, and local citizens wishing to disseminate information on I/I and SSO issues within the region can provide a copy to MWRA that will be copied and distributed. MWRA staff will maintain a database of contacts with Federal, State and community officials, as well as, local associations and individuals that wish to stay informed on I/I and SSO issues. Summary mailings will be made periodically. MWRA, in coordination with the MWRA Advisory Board, will also act as a clearinghouse to inform regional stakeholders about the progress of efforts to increase state and federal funding for I/I reduction and SSO projects. Regional stakeholders will be advised on the most appropriate time to provide input and lobbying efforts. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.1 Strategy A-1, 10.4 Strategy C-5, and 10.4 Strategy D-2)

**During FY10, MWRA distributed technical information to member community Public Works Directors, local wastewater/water system operators, and local watershed groups, including:**

- 1. July 10, 2009 announcement letter on Phase 7 funding allocations under the I/I Local Financial Assistance Program.**
- 2. January 22, 2010 I/I Local Financial Assistance Program funding update for local sewer projects and Local Pipeline Assistance Program funding update for local water projects.**
- 3. February 2, 2010 announcement letter on water conservation educational materials and low-flow device retrofit kits available from MWRA at no cost to member communities and local customers.**

4. **May 24, 2010 announcement e-mail on DEP's Annual Water Conservation Grant Program and offer of assistance to communities for help in applying for a local water conservation grant.**
5. **July 15, 2010 announcement e-mail on the \$210 million Local Water System Assistance Program and allocation of funds to each member community.**

**During FY11, MWRA will continue to distribute information on I/I and SSO issues, as appropriate.**

*Strategy B:* MWRA will develop and distribute a summary of previous information/technology distributions regarding I/I reduction and SSOs. The summary will be organized by topic and distributed to all regional stakeholders in MWRA's database of contacts. This summary can be used as a tool to help reference previously distributed information. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.1 Strategy A-2)

**Work by MWRA under this Strategy is complete.**

**On August 8, 2007, MWRA distributed a Technical Transfer Summary package that included lists of previously distributed information under five separate topic headings: (1) Reports, Handbooks, and Guidelines; (2) Sewer Back-ups, SSOs, and Flooding; (3) Public Source I/I Reduction; (4) Private Source I/I Reduction; and (5) Brochures and Bill Stuffers. Additional information/technology distributions will continue under Strategy A, above.**

*Strategy C:* MWRA, jointly with DEP (and possibly other regional organizations), will organize periodic demonstration projects and/or workshops to bring together regulators, community representatives, vendors, environmental groups, consultants, contractors, etc. Workshops may cover topics such as: new or revised regulations, I/I reduction technologies, updates/progress on Task Force Report recommendations, etc. MWRA and DEP conducted a joint workshop on private source inflow reduction during November 2001. Lessons learned from this workshop will help shape future efforts under this strategy. Completion of this strategy requires a significant resource commitment by DEP. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.1 Strategy A-3 and 8.2 Strategy B-6)

**During FY10, DEP and MWRA had no discussions on organizing additional joint workshops. During FY11, MWRA will continue to work cooperatively with DEP on this strategy.**

*Strategy D:* MWRA will develop a summary of available public education material such as local/regional billing inserts, Water Environment Federation (WEF) brochures, "How-To" pamphlets, etc. The summary will provide information on where to obtain the material. A listing of available public education materials will be posted on the MWRA Internet site. MWRA will also make copies of public education material available to communities and local associations. MWRA will pilot this strategy by distributing to member communities sample copies of the "Fat-Free Sewers" brochure developed cooperatively by the Water Environment Federation (WEF) and EPA. MWRA will recommend use of the brochures for public education.

This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.2 Strategy B-1, and 8.2 Strategy B-4)

**MWRA distributed the Fat-Free Sewers brochure to wastewater system operators in July 2003. In conjunction with the Technical Transfer Summary package distributed on August 8, 2007 (see Strategy B, above), MWRA included a separate topic heading for “Brochures and Bill Stuffers” that can be used by local communities as educational materials.**

*Strategy E:* Depending on the outcome of the summary of available information being developed under Strategy D, MWRA (jointly with DEP, and possibly other regional organizations) may develop informational materials that will educate the public on I/I and SSO issues. This effort may include “how-to” pamphlets that detail a step-by-step process for disconnecting private inflow sources or similar information. The development of new materials under this strategy will be targeted to fill gaps that are not covered by existing/available public education material. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-2)

**Work by MWRA under this Strategy is complete.**

**As part of the Technical Transfer Summary package distributed on August 8, 2007 (see Strategy B, above), MWRA included a separate topic heading specifically for “Brochures and Bill Stuffers” that can be used by local communities as educational materials. There are sufficient example brochures available so that no additional work is needed under this strategy. Communities actively involved with private inflow removal programs have generally been using available sample brochures and other public education materials to develop public education information related to their specific project. Information already available via local engineering consultants is also utilized.**

*Strategy F:* Upon request from member communities, MWRA will assist member communities in providing a link from the local DPW or community Internet site to the MWRA Internet site. The possibility of a link or reference to other regional bodies that are involved in sewer system issues (such as DEP, EPA, New England Water Environment Association, New England Interstate Water Pollution Control Commission, watershed associations, etc) will also be investigated. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-3)

**Work by MWRA under this Strategy is complete.**

**Local communities, state agencies, regional associations, etc. all maintain their own web pages with numerous information links. MWRA’s web site contains links to the communities’ web sites and links to other organizations. Based on current broad use of the web, additional work under this strategy is not needed. During FY10, MWRA continued to revise and upgraded its web site [www.mwra.com](http://www.mwra.com).**

*Strategy G:* MWRA will integrate information on I/I and SSO issues into existing MWRA school education materials. MWRA’s School Education staff will identify what types of

materials are appropriate for their programs. This strategy has an ongoing schedule that will be initiated in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.3 Strategy C-1)

**Work by MWRA under this Strategy is complete.**

**The focus of MWRA's School Education Program is to provide a general understanding of water and wastewater transport and treatment systems with emphasis on water conservation and environmental awareness issues. Educational materials are designed for students from elementary to high school levels.**

*Strategy H:* Upon request from DEP, MWRA will provide technical assistance to DEP to develop and issue DEP press releases prior to and during extreme wet weather events to notify the public of possible sewer system backups and overflow problems. The I/I Task Force Report recommends DEP develop a standardized format that includes a request that system users minimize non-essential water consumption activities and includes a standardized high sewer flow warning. Completion of this strategy is dependent on DEP actions. This strategy has an ongoing schedule that should be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.4 Strategy D-2)

**During FY10, no assistance from MWRA was requested by MADEP. Any future action under this strategy will be initiated jointly with MADEP.**

*Strategy I:* Upon request from member communities, MWRA will provide technical assistance to communities to provide residents with information on I/I reduction, SSOs and backups using local cable stations or other media outlets. This strategy has an ongoing schedule that will be initiated in the mid to long-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-7)

**During FY10, no assistance from MWRA was requested under this strategy.**

Goal 5 under MWRA's Regional I/I Reduction Plan is:

*MWRA will provide technical assistance and work cooperatively with member communities, DEP, and EPA regarding guidance on local operation and maintenance and capital improvement programs intended to provide a reasonable level of sewer service to local sewer users/ratepayers.*

*Strategy A:* MWRA will provide all member communities a copy of the I/I Task Force Report (which includes recommendations for sewer system operation and maintenance). MWRA will maintain a supply of I/I Task Force Reports and will provide additional copies to MWRA member communities and regional stakeholders, as requested. This strategy has an ongoing schedule that has been initiated.

**Work by MWRA under this Strategy is complete.**

**MWRA provided all member communities and all interested parties copies of the I/I Task Force Report in April 2001, shortly after the Report was completed. MWRA**

**continues to maintain a supply of I/I Task Force Reports and provides additional copies to MWRA member communities and regional stakeholders, as requested. In July 2003, all member communities were provided a copy of the MWRA Regional I/I Reduction Plan. The Regional I/I Reduction plan is posted on MWRA's web site at: <http://www.mwra.com/comsupport/communitysupportmain.html>.**

*Strategy B:* MWRA will request member communities provide a copy of their existing local Sewer Use Regulations to MWRA, will review those local Regulations that are submitted, and will make recommendations for improvements. MWRA may utilize a committee representing a cross-section of sewer system stakeholders to assist in accomplishing this strategy. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 9.1 Strategy A-2)

**Work by MWRA under this Strategy is complete.**

**MWRA did not proceed with work under this strategy pending issuance of EPA's SSO Rule, including CMOM Regulations, that were likely to impact local sewer use regulations. EPA's draft SSO Rule was not promulgated. During FY04, MADEP distributed a new guideline document – "Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems" dated August 2003. This manual was developed by New England Interstate Water Pollution Control Commission (NEIWPCC) under a grant from EPA. The Guideline Document was written by a committee consisting of NEIWPCC member state environmental agencies, EPA, and wastewater consultants. The manual is available at [www.neiwpcc.org](http://www.neiwpcc.org). Chapter 4 of the manual "Optimizing Legal Authority" includes sections on Sewer Use Ordinances; therefore, additional work by MWRA under this strategy is not necessary.**

*Strategy C:* MWRA will develop a Member Community Collection System Operation and Maintenance Manual Guidance Document and Overflow Response Plan. This guidance document will be provided to all member communities. This strategy will be completed in the short-term.

**Work by MWRA under this Strategy is complete.**

**A Member Community Collection System Operation and Maintenance Manual Guidance Document and Overflow Response Plan was developed and submitted to EPA and MADEP for review in June 2001. This guidance document was made available to member communities. During FY04, MADEP distributed a new guideline document – "Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems" dated August 2003. This manual was developed by New England Interstate Water Pollution Control Commission (NEIWPCC) under a grant from EPA. It was written by a committee consisting of NEIWPCC member state environmental agencies, EPA, and wastewater consultants. The manual is available at [www.neiwpcc.org](http://www.neiwpcc.org). MWRA provided its collection system O&M manual and the community collection system guidance document to the NEIWPCC committee for review. With the publication of the NEIWPCC manual, further efforts on the Member Community Collection System Operation and Maintenance Manual Guidance Document are not required.**

ATTACHMENT 3  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period – July 2009 Through June 2010

## MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY10

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 32.7 miles of Authority-owned interceptors and 1.6 miles of community-owned sewers, internally inspected 49 inverted siphon barrels with sonar inspection equipment, and physically inspected 682 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.) during FY10. During the internal inspection process, problems such as physical defects, infiltration, sediment, grease deposits, etc. are noted and stored in MWRA's electronic maintenance (MAXIMO) database. Maintenance work is then scheduled based on the identified problems. During FY10, maintenance work included hydraulic/mechanical cleaning of 42.9 miles of sewer pipelines and 60 siphon barrels, as well as, replacement of 128 manhole frames and covers. Potential structural problems and infiltration sources identified during the inspection process are referred to engineering staff for follow-up review and analysis of cost-effective repairs.

The MWRA is undertaking a number of significant capital projects to provide additional hydraulic capacity and rehabilitate portions of Authority-owned interceptors. Updates on these projects are included below:

1. During FY10, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. Evaluation and design of interceptor rehabilitation began in FY09. The program includes a series of twelve interceptor renewal projects to be phased over multiple years at a cost of \$80 to \$100 million. Each of these projects will provide structural repairs for existing pipelines and reduce I/I entering the MWRA interceptor system.
2. MWRA's \$87 million East Boston Branch Sewer Relief Project will replace or rehabilitate approximately 25,000 feet of existing sewer in East Boston to provide hydraulic relief and reduce CSO discharges. The project is scheduled for completion in FY11.
3. The first phase of MWRA's West Roxbury Tunnel rehabilitation project, repair/rehabilitation of 1000 feet of Sewer Section 138 and the West Portal Structure, was completed in 2002 at a cost of \$8 million. The second phase of the project is being designed/constructed during FY08 through FY18. An additional \$80 million has been budgeted for design and repair/rehabilitation construction of 12,500 feet of 84-inch tunnel (Sewer Section 137). The existing tunnel has deteriorated due to high levels of hydrogen sulfide and sewer turbulence.
4. During FY10 the design for the rehabilitation of 2000 feet of sewer (Sections 624) in North Weymouth was completed. The \$5 million rehabilitation construction contract was awarded in June 2010 and construction will begin in FY11.

5. MWRA's \$2.6 million Siphon Structure Rehabilitation project is scheduled for FY10 through FY18. This project will provide for rehabilitation and access improvements for the highest priority (first phase) portion of the project.
6. During FY10 the design and construction for the addition of an 18-inch sewer in Melrose was initiated. The new sewer will help minimize SSO events in the area of the Roosevelt School in Melrose. The \$0.6 million construction is scheduled to be finished in FY11.
7. MWRA's \$885 million Combine Sewer Overflows (CSO) Program includes a number of projects that will provide for the separation of sanitary sewer and stormwater flows. These projects will reduce stormwater inflow to the collection system. Details of MWRA's CSO Control Plan are reported under the requirements of NPDES Permit – Part I, Item 19. Long-term CSO Control Plan.

ATTACHMENT 4  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period – July 2009 Through June 2010

**STATUS UPDATE ON MWRA'S  
I/I LOCAL FINANCIAL ASSISTANCE PROGRAM**

Financial Assistance Update

All 43 member sewer communities are participating in MWRA's \$260.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY10, \$195 million has been distributed to fund local I/I reduction and sewer system rehabilitation projects. The program budget of \$260.75 million includes the most recent addition of \$40 million in new Phase 7 funds approved by the MWRA Board of Directors for distribution beginning in FY10. The table on page 2 provides a summary of funding allocations, distributions, and funds remaining for each MWRA sewer community. Distribution of the remaining \$66 million in funds has been approved through FY18. The table on page 3 provides a summary of funding distributions for each quarterly distribution since inception of the Program.

Program Background

MWRA's I/I Local Financial Assistance Program was initiated to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Following recommendations from the MWRA Advisory Board, the MWRA Board of Directors has approved a total program budget of \$260.75 million. The funds have been allocated among the 43 MWRA sewer communities based on respective shares of overall MWRA wholesale sewer charges. Financial assistance for Phases 1 and 2 (total of \$63.75 million) was distributed for approved projects as a 25 percent grant and a 75 percent interest-free loan. The grant/loan split was revised for distribution of the Phase 3, 4, 5, 6, and 7 funds (total of \$197 million) to a 45 percent grant and a 55 percent interest-free loan. The interest-free loan portion is repaid to MWRA over a five-year period beginning one year after the date the funds are distributed.

MWRA funding is provided to a community following execution of a standard agreement that stipulates the project scope, schedule, and loan repayment requirements. Communities are required to provide periodic schedule and expenditure progress reports to MWRA. For planning and design projects, the work products (reports, plans, specifications, and bidding documents) are reviewed and approved by MWRA. During construction, staff perform site visits to document progress.

Program Goals

The I/I Local Financial Assistance Program is a critical component of MWRA's Regional I/I Reduction Plan. Specifically, local sewer system rehabilitation projects are intended to at least offset ongoing collection system deterioration to prevent a net increase in regional I/I. In the long-term, system rehabilitation should result in lower I/I, which will allow for future increases in sanitary (residential, commercial, industrial, and institutional) flow without a net increase in total wastewater flow. A second goal of the program is to assist member communities in implementing effective annual local collection system maintenance programs to assure efficient operation and ongoing repair/replacement of the collection system.

**MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM  
FUNDING SUMMARY AS OF JULY 2010**

Community	Total Allocations (Phases 1/2/3/4/5/6/7)	Total Distributions (Phases 1/2/3/4/5/6/7)	Percent Distributed	Funds Remaining
Arlington	\$4,893,000	\$4,427,400	90%	\$465,600
Ashland	\$1,126,500	\$930,500	83%	\$196,000
Bedford	\$1,999,600	\$1,691,600	85%	\$308,000
Belmont	\$2,992,100	\$1,974,999	66%	\$1,017,101
Boston	\$74,278,200	\$54,399,001	73%	\$19,879,199
Braintree	\$4,581,000	\$2,483,127	54%	\$2,097,873
Brookline	\$7,400,200	\$4,730,200	64%	\$2,670,000
Burlington	\$2,845,800	\$2,389,800	84%	\$456,000
Cambridge	\$13,547,100	\$9,777,055	72%	\$3,770,045
Canton	\$2,353,900	\$1,645,900	70%	\$708,000
Chelsea	\$3,605,100	\$2,878,100	80%	\$727,000
Dedham	\$3,441,000	\$3,441,000	100%	\$0
Everett	\$4,525,500	\$3,141,500	69%	\$1,384,000
Framingham	\$7,015,000	\$4,230,395	60%	\$2,784,605
Hingham	\$885,500	\$589,500	67%	\$296,000
Holbrook	\$920,600	\$496,600	54%	\$424,000
Lexington	\$4,159,300	\$3,343,600	80%	\$815,700
Malden	\$6,725,900	\$4,593,900	68%	\$2,132,000
Medford	\$6,914,600	\$4,794,600	69%	\$2,120,000
Melrose	\$3,385,300	\$2,845,300	84%	\$540,000
Milton	\$3,251,500	\$2,779,500	85%	\$472,000
Natick	\$3,194,600	\$1,912,700	60%	\$1,281,900
Needham	\$3,746,600	\$2,385,600	64%	\$1,361,000
Newton	\$11,925,400	\$10,519,400	88%	\$1,406,000
Norwood	\$3,939,400	\$3,355,399	85%	\$584,001
Quincy	\$11,125,000	\$9,373,000	84%	\$1,752,000
Randolph	\$3,370,800	\$2,810,900	83%	\$559,900
Reading	\$2,520,100	\$2,116,100	84%	\$404,000
Revere	\$5,502,900	\$4,779,200	87%	\$723,700
Somerville	\$8,767,800	\$5,723,790	65%	\$3,044,010
Stoneham	\$2,867,900	\$2,451,900	85%	\$416,000
Stoughton	\$2,696,900	\$2,198,400	82%	\$498,500
Wakefield	\$3,396,900	\$2,545,000	75%	\$851,900
Walpole	\$2,083,000	\$1,759,000	84%	\$324,000
Waltham	\$7,808,400	\$4,762,400	61%	\$3,046,000
Watertown	\$3,653,800	\$2,041,800	56%	\$1,612,000
Wellesley	\$3,275,700	\$2,069,747	63%	\$1,205,953
Westwood	\$1,425,300	\$1,039,300	73%	\$386,000
Weymouth	\$6,505,900	\$4,679,900	72%	\$1,826,000
Wilmington	\$1,388,000	\$1,388,000	100%	\$0
Winchester	\$2,424,000	\$1,731,000	71%	\$693,000
Winthrop	\$1,926,400	\$1,264,800	66%	\$661,600
Woburn	\$6,358,500	\$6,358,500	100%	\$0
<b>Totals</b>	<b>\$260,750,000</b>	<b>\$194,849,413</b>	<b>75%</b>	<b>\$65,900,587</b>

MWRA I/I Local Financial Assistance Program - Fiscal Year Breakdown

FY	Distribution Cycle	Distribution Amount	FY Total						
FY93	Aug 1992	\$0	Nov 1992	\$0	Feb 1993	\$0	May 1993	\$2,714,883	\$2,714,883
FY94	Aug 1993	\$3,096,468	Nov 1993	\$4,096,133	Feb 1994	\$3,191,032	May 1994	\$251,494	\$10,635,127
FY95	Aug 1994	\$354,126	Nov 1994	\$976,700	Feb 1995	\$1,894,030	May 1995	\$6,489,891	\$9,714,747
FY96	Aug 1995	\$0	Nov 1995	\$504,100	Feb 1996	\$2,921,600	May 1996	\$3,902,426	\$7,328,126
FY97	Aug 1996	\$1,682,061	Nov 1996	\$1,581,266	Feb 1997	\$395,100	May 1997	\$3,530,758	\$7,189,185
FY98	Aug 1997	\$1,066,300	Nov 1997	\$1,157,260	Feb 1998	\$909,350	May 1998	\$2,001,608	\$5,134,518
FY99	Aug 1998	\$1,521,100	Nov 1998	\$2,464,263	Feb 1999	\$1,481,700	May 1999	\$5,758,077	\$11,225,140
FY00	Aug 1999	\$1,315,767	Nov 1999	\$1,847,900	Feb 2000	\$1,679,000	May 2000	\$1,070,100	\$5,912,767
FY01	Aug 2000	\$1,148,400	Nov 2000	\$388,000	Feb 2001	\$1,640,931	May 2001	\$804,800	\$3,982,131
FY02	Aug 2001	\$4,480,735	Nov 2001	\$704,040	Feb 2002	\$1,804,200	May 2002	\$5,002,691	\$11,991,666
FY03	Aug 2002	\$1,962,600	Nov 2002	\$4,461,768	Feb 2003	\$7,955,752	May 2003	\$1,836,600	\$16,216,720
FY04	Aug 2003	\$2,021,940	Nov 2003	\$1,306,200	Feb 2004	\$1,770,760	May 2004	\$3,295,400	\$8,394,300
FY05	Aug 2004	\$2,756,659	Nov 2004	\$6,013,436	Feb 2005	\$4,054,060	May 2005	\$2,636,700	\$15,460,855
FY06	Aug 2005	\$5,377,487	Nov 2005	\$4,589,600	Feb 2006	\$1,519,463	May 2006	\$6,489,676	\$17,976,226
FY07	Aug 2006	\$0	Nov 2006	\$4,947,414	Feb 2007	\$8,789,300	May 2007	\$8,121,023	\$21,857,737
FY08	Aug 2007	\$3,915,500	Nov 2007	\$4,355,750	Feb 2008	\$1,392,400	May 2008	\$4,436,600	\$14,100,250
FY09	Aug 2008	\$4,196,399	Nov 2008	\$352,000	Feb 2009	\$1,990,300	May 2009	\$4,872,400	\$11,411,099
FY10	Aug 2009	\$5,462,736	Nov 2009	\$616,600	Feb 2010	\$2,679,600	May 2010	\$4,845,000	\$13,603,936
Total		\$40,358,278		\$40,362,430		\$46,068,578		\$68,060,127	\$194,849,413

## Type of Local Projects Receiving Funding

Funding has been provided to local communities for eligible I/I reduction projects including planning, design, construction, and engineering services during construction. These projects generally take one to three years to complete. Seventy-three percent of funds distributed to date have financed local construction projects. The table below details funds distributed by project phase for both completed and ongoing projects.

<u>PROJECT PHASE</u>	<u>COMPLETE PROJECTS (\$ millions)</u>	<u>ONGOING PROJECTS (\$ millions)</u>	<u>TOTAL (\$ millions)</u>
Planning/Study:	\$ 28.5	\$ 4.5	\$ 33.0 (17%)
Design:	7.4	2.7	10.1 (5%)
Construction:	113.8	27.6	141.4 (73%)
Eng. Services During Const.:	8.4	2.0	10.4 (5%)
<b>TOTAL</b>	<b>\$158.1 (81%)</b>	<b>\$ 36.8 (19%)</b>	<b>\$ 194.9 (100%)</b>

## Program Results

The I/I Local Financial Assistance Program began in May 1993. Through FY10, a total of 391 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's grant/loan program. Cumulative results for the program are summarized below.

Results for all projects (FY94 through FY10) for planning/inspection include the following:

- 1158 miles of sewer TV inspected
- 845 miles of sewer flow isolated
- 957 miles of sewer smoke tested
- 31,500 sewer manholes inspected
- 58,000 buildings inspected

Results for all projects (FY94 through FY10) for projects targeting infiltration reduction include the following:

- 40 miles sewer replaced
- 60 miles sewer CIP lined
- 125 miles sewer tested/chemically sealed
- 1,900 sewer spot repairs
- 6,050 service connection repairs
- 4.7 miles underdrains sealed

Results for all projects (FY94 through FY10) for projects targeting inflow reduction include the following:

- 732 catch basins disconnected
- 34 miles of new or replaced storm drains
- 9,400 manholes rehabilitated/sealed
- 1,450 manhole covers replaced or inflow seals installed
- 414 sump pumps redirected
- 5,100 downspouts/area drains disconnected

## Estimated I/I Removal

The estimated average daily flow reduction associated with completed local I/I reduction projects that have received MWRA financial Assistance is about 81 mgd. This flow reduction “ballpark” figure is based on the communities’ (or their consultants’) peak I/I reduction estimates. MWRA staff have prorated the peak I/I reduction estimates to develop an estimated annual average I/I reduction. The estimated I/I removals noted here represent groundwater and stormwater that no longer enter the collection system at the point of repair. Regional wastewater flow reductions resulting from specific local I/I reduction projects are difficult to substantiate through end-of-the-collection-system meter data, due to factors noted below:

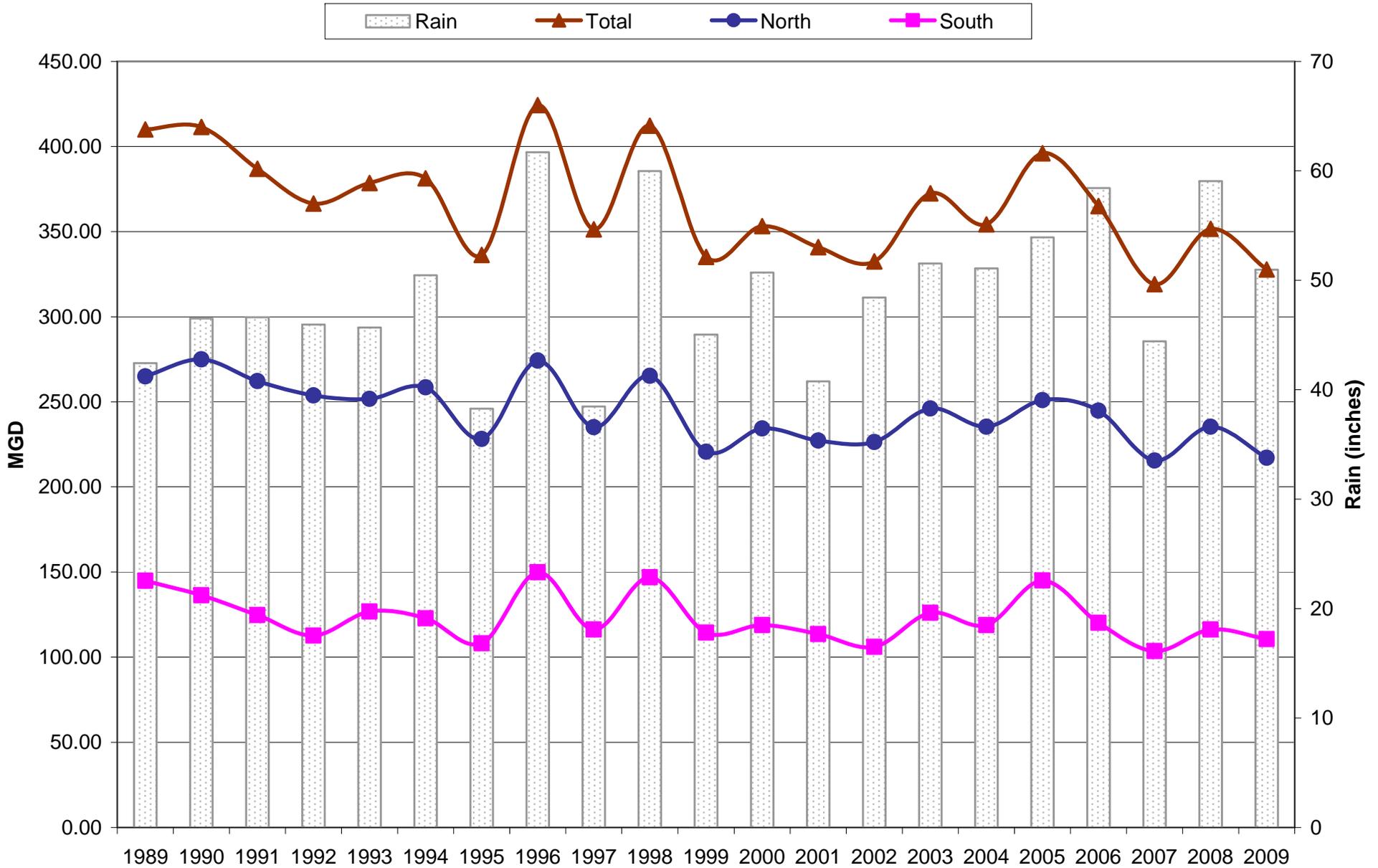
- Wastewater flows within the collection system vary dramatically due to changes in precipitation. For example, annual average daily flow for MWRA’s system varies up to 80 mgd from year to year. Small flow reductions for individual projects (typically less than one mgd) are dwarfed by regional flow fluctuations.
- Sewer capacity gained by elimination of I/I in one subsystem may, in some cases, allow for other I/I to enter the collection system at a different location, resulting in no net flow reduction at the end of the collection system.
- The consequence of ongoing pumping and interceptor upgrades, as well as combined sewer overflow and system optimization projects, is an increase in the capture and treatment of wastewater flow and the reduction of raw sewage discharges. These increased flows to the Deer Island Treatment Plant offset upstream I/I reductions.

Taking these factors into account, long-term metering records will continue to be analyzed to monitor regional wastewater flow trends. Accounting for annual rainfall fluctuations, the regional wastewater flow trend appears to be modestly declining as shown on the graph of MWRA Long-Term (21-years) Regional Flow Data presented on page 6.

## Projects Funded During FY10

Local projects are funded quarterly by MWRA. . Funding summaries for the four quarterly funding distributions during FY10 were submitted as part of the report and are available in hard copy from MWRA, including: August 2009 (five communities funded: Boston, Norwood, Reading, Wilmington, and Woburn), November 2009 (two communities funded: Lexington and Stoughton), February 2010 (six communities funded: Arlington, Needham, Newton, Randolph, Revere, and Winchester), and May 2010 (nine communities funded: Bedford, Dedham, Lexington, Natick, Needham, Watertown, Wellesley, Weymouth, and Winthrop).

### MWRA Long-Term Regional Flow Data NOAA Rainfall Average (Blue Hills, Logan, Reading)



ATTACHMENT 5  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period: July 2009 Through June 2010

**I/I REDUCTION STATUS UPDATE  
FOR MEMBER COMMUNITIES**

The MWRA is working cooperatively with member communities to develop phased I/I reduction programs throughout the service area. The Authority will encourage continuing community efforts in I/I reduction as detailed in the MWRA Regional I/I Reduction Plan. Many community I/I projects are funded through MWRA's I/I Local Financial Assistance Program. This \$260.75 million grant/loan program was established to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Through FY10, MWRA has distributed \$195 million to fund local projects. A detailed update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4 to this report.

The Authority has instituted a computer-based questionnaire format for communities to comply with required annual I/I reduction program status reporting. All 43 member sewer communities have submitted the latest I/I status report; reporting information is summarized below.

**1. ARLINGTON: North System**

Background Information:

- Miles of Sewer: 106
- Sewered Population: 40,583
- Three Year ('07 - '09) Annual Average I/I: 2.53 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Report "Sewer System Investigation Year 4" dated April 2010.

Private Source Inflow Removal Program: East End Sewer Study metering identified areas that will require additional study to identify possible sump pump/drain leader connections to the sewer.

I/I Rehabilitation Projects in Design or Construction: In September 2006, based upon the recommendations of an analysis of the Town's sewer system, the Town initiated a 12-year Sewer System Investigation and Planning Program (SSIPP). The purpose of this program was primarily to reduce I/I and mitigate the potential for sanitary sewer overflows (SSOs). Work would involve sewer system investigation, evaluation, design and construction components in each year of the program. The project areas will contain approximately 47,000 LF of sewer per year.

The Year 2 Sewer Rehabilitation Design was completed in June 2009. Bids for the Construction of the Year 2 Sewer Rehabilitations were accepted in July 2009. This project was substantially complete in Spring 2010 with the warranty inspection and retesting is to be conducted in Spring 2011. Construction of the Sewer and Drain Improvements in the Mystic Bank Area was substantially complete in March 2010.

Reporting Period Activity:

- The Year 3 Sewer System Investigation & Repair Program and Years 1, 2, 3 Area Smoke Testing Final Report (July 2010) was approved by MWRA in September 2009. This Report also included the results and recommendations from the Gould Road and Forest Street Sewer Investigations.
- Design of the Year 3 Sewer Rehabilitations is ongoing with completion of the Contract Documents expected in the Fall 2010
- The Year 4 Sewer System Investigation Draft Report was submitted in April 2010.
- The fieldwork associated with the Year 5 Sewer System Investigation Study was completed in June 2010. Data review and a Draft Report is expected to be completed in Fall 2010
- In February 2010, funds were distributed for the Year 5 Sewer System Investigation Planning Program Study. This study will identify sources of I/I in Sewer Subareas AD, 16, 25, 27, 33, 34, 40, 53 and 55 (MWRA Project No. WRA-P7-01-1-711).

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. Of the \$4,893,000 allotted through the Program's Phases 1-7, the community has \$465,600 remaining in funding assistance.

## **2. ASHLAND: South System**

Background Information:

- Miles of Sewer: 66
- Sewered Population: 11,855
- Three Year ('07 - '09) Annual Average I/I: 0.43 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Investigation/Repair (CY 04/05) - Sub-Basins III / IV  
I/I Investigation/Repair (Summary Report): April 2008  
I/I Investigation/Repair (Summary Report): July 2009

Private Source Inflow Removal Program: House-to-House inspection of all residential/commercial properties (approximately 750 total) in Sub-Basin I began August 2010. Sump pump investigation of residential/commercial properties (349 total) in Sub-Basin III is complete.

I/I Rehabilitation Projects in Design or Construction: Rebuilt sewer manhole on Carriage House Path (4320 gpd of identified peak I/I removed). Rebuilt sewer service installation on Douglas Road (40,000 gpd of identified peak I/I removed). Smoked tested 7000 LF of sewer main within Sub-Basin III (MWRA Project No. WRA-P6-02-3-632). Completed I/I Investigation/Repair Summary Report (July 2009) for Sub-Basins I – IV.

Reporting Period Activity: Replaced 1500 LF of 6-inch force main with 12-inch force main on Brackett Road. West Union Street Transmission Sewer Replacement ongoing. This project will provide additional capacity for proposed development. The Jefferson at Ashland Station Development will add 6670 LF of 6-inch force main and 8-inch gravity sewer.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$1,126,500 allotted through the Program's Phases 1-7, the community has \$196,000 remaining in funding assistance.

### **3. BEDFORD: North System**

Background Information:

- Miles of Sewer: 78
- Sewered Population: 12,732
- Three Year ('07 - '09) Annual Average I/I: 1.52 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: The CY2008 SSES Final Report ("Sewer System Investigation – Phase #2" was submitted to MWRA in July 2010

Private Source Inflow Removal Program: No additional inspections were reported this period.

In March 2010, Town Meeting voted to amend the Town's General Bylaws for Article 52 – Sewer System. Said amendment includes a new Section 52.19 which allows authorized Town personnel to enter private properties to inspect internal plumbing.

Under this aforementioned bylaw amendment, the Town's Sewer System Bylaw now includes a 4:1 Inflow/Infiltration removal requirement for new developments that will generate greater than 50,000 gpd of wastewater.

I/I Rehabilitation Projects in Design or Construction: The Phase II Sewer Rehabilitation Design has been completed. The Draft Contract Documents, dated July 2010, were recently sent to MWRA for review and comment.

#### Reporting Period Activity:

- The CY 2008 SSES Report was completed.
- The Phase II Sewer Rehabilitation Design, which includes the recommended sewer rehabilitations from the CY05 SSES Report, has been completed.
- In May 2010, funds were distributed for the construction of the sewer rehabilitations recommended by the CY2005 SSES Report that were not included in the Phase 1 Sewer Rehabilitation Project and the sewer rehabilitations as recommended by the Sewer System Investigation Final Report – Phase 2 (MWRA Project No. WRA-P7-03-3-722). The estimated peak infiltration to be removed is 0.172 mgd and the estimated peak inflow to be removed is 0.123 mgd.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$1,999,600 allotted through the Program's Phases 1-7, the community has \$308,000 remaining in funding assistance.

#### **4. BELMONT: North System**

##### Background Information:

- Miles of Sewer: 78
- Sewered Population: 22,848
- Three Year ('07 - '09) Annual Average I/I: 1.89 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Final Report on the I/I and Comprehensive Flow Monitoring Project was completed July 2009. The Sewer System Evaluation Survey Final Report was completed in October 2009.

Private Source Inflow Removal Program: The Town continues to work with potential developers in implementing a program that either removes I/I at rate of 5 to 1 or makes a one time payment to the Town to fund community I/I removal work. The Belmont Uplands project is currently in negotiation.

##### I/I Rehabilitation Projects in Design or Construction:

- CWSRF Contract 1 – Sewer and Storm Drain Rehabilitation Wellington Brook Tributary Area was awarded October 2009 and will be completed August 2010. The primary purpose of the project is to eliminate sewage exfiltration from the sanitary sewer into the storm drain. However, the project has the additional benefit of removing approximately 50,000 gpd of infiltration (see SSES Report).

- CWSRF Contract 3 – Winn’s Brook Area Sewer Overflow Mitigation was awarded in January 2010. The project will mitigate periodic sanitary sewer overflows and backups into homes in the Winn’s Brook Area. The project includes removal of all cost effective grouped pipeline and manhole infiltration identified in the SSES Report, totaling 381,300 gpd. Approximately 238,650 gpd of infiltration has been removed through August 2010. The remaining 142,650 gpd will be removed by the end of 2010.
- Additional investigations were conducted to identify illicit connections in areas tributary to storm drain outfalls 1, 2 and 10. Investigations include sampling, house inspections, dyed-water tracing and CCTV inspection. A preliminary design report describing the recommended rehabilitation method and an opinion of probable cost for illicit connection mitigation will be completed by the end of 2010.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority’s funding assistance program. Of the \$2,992,100 allotted through the Program’s Phases 1-7, the community has \$1,017,101 remaining in funding assistance.

## **5. BOSTON: North and South Systems**

Background Information:

- Miles of Sewer: 858
- Sewered Population: 619,914
- Three Year ('07 - '09) Annual Average I/I: 36.17 mgd
- Massachusetts DEP Administrative Order: None (Cooperative agreement exists)

Boston North is one of MWRA’s five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). As part of the MWRA CSO Facilities Upgrade Project, Boston’s flows are being evaluated for volume and discharge locations.

Latest I/I or SSES Reports: Roxbury Canal Sewer Separation Study; Upper Neponset Valley Sewer Inflow Survey; Granite Avenue I/I Survey; Dorchester High Level Sewer I/I Survey; Lower Dorchester Brook Sewer Study; Longwood Medical Area I/I Survey; West Roxbury Low Level Sewer I/I Study

Private Source Inflow Removal Program: Since 1994, the Downspout Disconnection Program has conducted approximately 38,000 building surveys and 10,500 dye water tests. Approximately 23,000 downspouts have been disconnected. During CY05-CY10, a total of seventy-five (75) large impervious areas were surveyed to identify inflow sources. All seventy-five (75) areas have been dye tested.

I/I Rehabilitation Projects in Design or Construction: BWSC has both completed and is currently working on a wide variety of separation and I/I identification/rehabilitation projects. To date, seventy-one (71) projects have received funding through the MWRA I/I Local Financial Assistance Program. During FY07-FY10, BWSC completed the following rehabilitation projects: Albany Street Sewer Separation, Sewer Rehabilitation in Dorchester/Mattapan/West Roxbury/Brighton, Talbot Avenue High Level Sewer Area Sewer Replacement/Manhole Rehabilitation, South End Sewer Rehabilitation, Marginal Street Sewer Separation, St. Botolph Street Sewer Separation, Maverick Street Sewer Separation, West Side Interceptor Lining, Back Street Sewer Separation and Chester Park Area Sewer Separation.

BWSC entered into an I/I reduction agreement with the Massachusetts DEP in January 1986. As provided in the agreement, BWSC has performed a Phase II SSES on separated sewer areas within the City. BWSC also has an ongoing tide gate/regulator inspection and repair program and performs separation projects on pockets of combined sewers tributary to separated sewer areas.

Reporting Period Activity: BWSC is required to report to the EPA on I/I reduction measures under their NPDES permit. This reporting requirement coincides with the MWRA's required submittal dates; therefore, please refer to the BWSC NPDES report for a summary of activities during this period.

MWRA I/I Local Financial Assistance Program: The community has financed seventy-one (71) I/I identification/reduction projects through the Authority's funding assistance program. Of the \$74,278,200 allotted through the Program's Phases 1-7, the community has \$19,879,199 remaining in funding assistance.

## **6. BRAINTREE: South System**

Background Information:

- Miles of Sewer: 140
- Sewered Population: 33,882
- Three Year ('07 - '09) Annual Average I/I: 3.29 mgd
- Massachusetts DEP Administrative Order: No. 546 (Issued April 1, 1985),  
ACO-NE-01-1001 (Signed April 26, 2001)

Latest I/I or SSES Report: Flow Isolation / TV Inspection of Allen St. Interceptor (April 2003)

Private Source Inflow Removal Program: Sump pump removal program is ongoing. Ten (10) private source sump pump removal contracts have redirected 295 sump pumps to date. Developer Flow Reduction Program is now 6 to 1 per DEP ACO.

I/I Rehabilitation Projects in Design or Construction: Mill Lane Infiltration Rehabilitation construction completed (replaced 50 LF of damaged VC sewer pipe with PVC sewer pipe). Bestwick Road Infiltration Rehabilitation construction completed (replaced 300 LF of damaged VC sewer pipe with PVC sewer pipe). Water table above sewer line in this area. Sewer Line abuts Monatiquot River. Contract 06-S1: Howie Road Infiltration Rehabilitation (Sub-Areas L2 through L7) construction completed.

Reporting Period Activity: Jefferson Street Pump Station Rehabilitation completed. Lenox Farms Subdivision (41 buildings) completed.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$4,581,000 allotted through the Program's Phases 1-7, the community has \$2,097,873 remaining in funding assistance.

## **7. BROOKLINE: North and South Systems**

Background Information:

- Miles of Sewer: 111
- Sewered Population: 54,786
- Three Year ('07 - '09) Annual Average I/I: 5.84 mgd
- Massachusetts DEP Administrative Order: None

Brookline is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). As part of the MWRA CSO Facilities Upgrade Project, Brookline's flows are being evaluated for volume and discharge locations.

Latest I/I or SSES Report: Phase II I/I Investigation (April 2002)

Private Source Inflow Removal Program: Town is in the process of developing a Private Flow Source Identification and Removal Program. A 4:1 Flow Reduction is enforced for large residential and commercial projects. The community is continuing its public outreach for private inflow identification/removal.

I/I Rehabilitation Projects in Design or Construction:

- The Town has spent considerable time and resources towards the completion of the \$24 million Brookline Sewer Separation Project in compliance with Schedule Seven of the MWRA Combined Sewer Overflow Control Plan. This project involves sewer separation in the remaining combined sewer area (72 acres) that is tributary to the MWRA Cottage Farm Facility, thus reducing discharges to the Charles River.
- The design of Sewer Rehabilitation Project No. 6 (Contract PW/09-12) was completed November 2008. A contract was awarded March 2009. The completed rehabilitation consisted of 7760 LF of inversion lining of 8 to 18-inch sewers and point repairs to 200 LF of various size sewers.

- Lower Beacon Street Sewer Separation Phase I which was awarded November 2008 and completed May 2010. This project involves the installation of 7000 LF of 12 to 18-inch storm drain, 35 manholes and 10 catch basins. The estimated Inflow removal was 0.64 mgd.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$7,400,200 allotted through the Program's Phases 1-7, the community has \$2,670,000 remaining in funding assistance.

## **8. BURLINGTON: North System**

Background Information:

- Miles of Sewer: 115
- Sewered Population: 24,735
- Three Year ('07 - '09) Annual Average I/I: 1.73 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1004 (7/25/01)

Latest I/I or SSES Report: Easement Pipeline Investigation Report (May 2008)  
Phase 4 Sewer System Infiltration Rehabilitation Project Final Report (June 2010)

Private Source Inflow Removal Program: As part of a new DPW regulation approved by the Board of Selectmen, in order to obtain a final water meter reading from the DPW, required in the process of selling a residence, homes will require illicit sewer connection inspections. Any house identified as having an illegal connection will be required to redirect it prior to obtaining the final water meter reading needed to sell the house. These inspections have already begun and approximately 50 homes have been inspected. Additionally, as part of Phase 4 investigations, 428 homes were inspected by Flow Assessment Services LLC resulting in 28 confirmed connections to the sewer. Another 49 stormwater discharges could be illicitly connected, but the discharge location could not be determined. These connections will require dye-tests to determine if they are positive connections. Two of these illicit connections have been mitigated; one being a yard drain next to a stream that was capped (drainage area not determined yet), and a residential sump pump disconnected before selling the house.

I/I Rehabilitation Projects in Design or Construction: The Phase 3 Sewer System Rehabilitation Project work, which consisted of short liners, joint testing & sealing and manhole lining was completed January 2009 with re-inspection and warranty work being completed July 2009.

Reporting Period Activity: The completed Phase 4 investigation work consisted of TV inspection of easement areas and difficult access areas omitted from previous phases, smoke testing of approximately 150,000 LF of sewer main, and house inspections of approximately 500 homes. Results from the smoke testing identified 14 illicit connections varying in inflow quantity. House inspections identified 56 possible illicit sump pump connections which will require dye-testing. Finally, based on TV inspection work, an estimated 288,000 gallons per day of infiltration was identified by SEA Consultants.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$2,845,800 allotted through the Program's Phases 1-7, the community has \$456,000 remaining in funding assistance.

## **9. CAMBRIDGE: North System**

Background Information:

- Miles of Sewer: 148
- Sewered Population: 105,490
- Three Year ('07 - '09) Annual Average I/I: 9.38 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-96-1004

Cambridge is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). As part of the MWRA CSO Facilities Upgrade Project, Cambridge's flows are being evaluated for volume and discharge locations.

Latest I/I or SSES Report: Phase II: Analysis and Fast Track Design of I/I Rehabilitation Projects (December 2007)

Private Source Inflow Removal Program: Building inspection work completed in the current period included Western Avenue and portions of Brookline Street, Kinnaird Street, Griswold Street and Pearl Street.

I/I Rehabilitation Projects in Design or Construction: The City continues implementation of its Stormwater Management Program. DPW continues to require developers to handle as much stormwater as possible on-site using dry wells and other storm water retention/detention devices.

Reporting Period Activity: Below is a list of ongoing I/I related projects:

- *Broadway Stormwater Management System (CAM 011) Phase VI and Contract 3D.* This project involves the installation of 680 LF of storm drain on Ellery Street, from 15 to 36-inch, that will allow the connection of the Agassiz system into the separated mid-Cambridge system. A stormwater detention tank will be installed along with a number of storm drain manholes, catch basins and two diversion structures. A pump station has already been installed. The tank will retain stormwater runoff from Cambridge Street and Broadway. At the end of the storm, the pump station will pump water from the detention tank to Broadway. Construction on this project has been completed.

- *Common Manhole Removal Contract No. 4A.* This project originally included the separation of eight common manholes located primarily along the south side of Massachusetts Avenue in Central Square. The scope of work was increased by including the separation of fourteen common manholes along the north side of Massachusetts Avenue that were originally part of the Bishop Allen Stormwater Management Project. The common manhole removal contract has been bid and awarded. Construction began August 2008 and was completed March 2010.
- *Common Manhole Removal Contract No 6.* This project will separate thirteen common manholes in the area of Griswold Street, Sunset Road, Loomis Street, South Normandy Avenue, Normandy Avenue and Normandy Terrace. The project has been added via Change Order to the City's existing Remedial Repair Contract. Three common manholes have been separated to date. Construction on this project was completed September 2009.
- *Agassiz Area, Upper Oxford Street Side Streets – Sewer Separation and Stormwater Management* – The purpose of this project is to investigate and design stormwater solutions for five side streets in the upper Oxford Street drainage area, including Forest Street, Frost Street, Prentiss Street, Roseland Street and Newport Road. It will address illicit connections, common manholes, design of new stormwater lines, converting existing combined lines into separate sewer lines, and surface improvements. The engineering contract has been awarded and design work is completed. The first phase of the project on Prentiss Street (Contract #3F) was awarded Fall 2009. Construction is ongoing and is expected to be completed by June 2011. To date, 880 LF of new storm drain has been installed on Prentiss Street that was previously served by combined sewer lines.
- *Bishop Allen Stormwater Management Project: CAM017 Phase III* - This project includes the construction of a stormwater pumping station that will divert stormwater from the MWRA sewer system to the Charles River through the recently constructed south Massachusetts Ave storm drain. The project is designed and is on hold pending resolution of issues related to easements and permits. The fourteen common manholes in the project area have been separated under Common Manhole Removal Contract 4A.
- *Agassiz Area, Upper Oxford Street Side Streets – Sewer Separation and Stormwater Management* – The second phase of this project includes Frost Street and is expected to be advertised for bid in late CY2010.
- *CAM 002/400 Whittemore Area* – This project will result in the removal of twelve common manholes in the CAM 002/400 area on north Massachusetts Avenue. The construction contract for this project has been awarded and work has begun. To date, new storm drains have been installed on Whittemore Avenue and Kassul Park.
- *Erie Street Sewer Separation* – This project will involve sewer separation through the removal of four common manholes on Erie Street. Engineering design has been completed and the construction contract will be bid on August 26, 2010.

- *Cambridge Park Drive Area Drainage Improvements Project* - This project will involve the construction of approximately 3000 LF of 8-ft x 4-ft storm drain box culvert with associated catch basins, manholes, laterals, and special drainage structures. Work also includes the construction of a stormwater wetland treatment area in the Alewife Reservation. The construction contract will be awarded soon with work beginning late Summer CY2010. After the new storm drain is constructed, future projects are planned for sewer separation in several upstream catchments.
- *Agassiz -Magnolia/Myrtle/ Stormwater Improvements Project* - This project consists of sewer separation and storm water management. The project will include a stormwater storage tank with a post event pump station. The project is expected to be advertised for bid in late CY2011.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$13,547,100 allotted through the Program's Phases 1-7, the community has \$3,770,045 remaining in funding assistance.

## **10. CANTON: South System**

Background Information:

- Miles of Sewer: 62
- Sewered Population: 14,552
- Three Year ('07 - '09) Annual Average I/I: 1.29 mgd
- Massachusetts DEP Administrative Order: No. 537 (Issued April 3, 1984)

Latest I/I or SSES Report: Comprehensive Water Resources Management Plan (February 2009)

Private Source Inflow Removal Program: No additional inspections were reported during this period. Town has established an I/I Mitigation Fee for all new connections. Fee is paid based upon DEP flow rates at a 4 to 1 ratio.

I/I Rehabilitation Projects in Design or Construction: Greenlodge Interceptor Replacement Project was bid and awarded in Winter/Spring 2010. Construction is on-going and anticipated to continue for 12-18 months. Flow monitoring of Subsystems 7/9/12/14/16/18/19/24 complete. Subsystem 24 (York Brook / Linden Glen Area) rehabilitation design (cleaning/testing/ sealing of 7000 LF of sewer and rehabilitation of 18 manholes) complete. Subsystem 24 Sewer and Manhole Rehabilitation (Contract 2009-1S) completed March 2010.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$2,353,900 allotted through the Program's Phases 1-7, the community has \$708,000 remaining in funding assistance.

## 11. CHELSEA: North System

### Background Information:

- Miles of Sewer: 41
- Sewered Population: 41,557
- Three Year ('07 - '09) Annual Average I/I: 1.71 mgd
- Massachusetts DEP Administrative Order: None

Chelsea is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). As part of the MWRA CSO Facilities Upgrade Project, Chelsea's flows are being evaluated for volume and discharge locations.

Latest I/I or SSES Report: Inflow Evaluation for area tributary to CSO CHE-007 (March 2003)

Private Source Inflow Removal Program: The City is in the process of implementing a developer-funded sewer bank for I/I removal improvements. The program is expected to be at a one-to-one ratio.

### I/I Rehabilitation Projects in Design or Construction:

- Construction of the Spruce Street Roadway & Utility Project continues to be delayed by third parties. It is unknown at this time when construction on the project will resume.
- Construction of the Crescent Avenue Infrastructure Reconstruction Project (BETA Group) is complete.
- Construction of the Jefferson Avenue Utility Improvement project is complete
- Design of the Washington Ave Utility & Infrastructure Improvements project is 25% complete with completion expected later this year. Construction is not expected to start for several years.
- Design of the Crescent Urban Renewal Area Utility Improvements continues to be delayed by economic downturn with associated third-party re-development; it is unknown at this time when the project will start and when it will be completed.
- Construction of a portion of the Carter Street Sewer Replacement project is complete. The completed portion included replacement and realignment of the existing sewer on Fourth Street to eliminate sanitary sewer overflows at Carter Street, as well as rerouting a catch basin from the sanitary sewer to the existing drain. Construction of the remaining portion of the project is on hold due to funding.
- Design of the Chester Avenue Water, Sewer, and Drain Improvements is complete, and construction is nearing completion. This project consists of full replacement of the stated utilities from Shawmut Street to Highland Street, and also includes rerouting of at least two catch basins from the sewer to the storm drain.

- Design of repairs to the Everett Avenue sewer is planned for Summer 2010 and repairs are expected to be constructed by a 3<sup>rd</sup> party developer by Fall 2010.
- Separation of the combined sewer on Spencer Avenue, between Stockton Street and Webster Avenue, is expected to be constructed by a 3<sup>rd</sup> party developer by Fall 2010.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed nine (9) I/I reduction projects through the Authority's funding assistance program. Of the \$3,605,100 allotted through the Program's Phases 1-7, the community has \$727,000 remaining in funding assistance.

## **12. DEDHAM: South System**

Background Information:

- Miles of Sewer: 89
- Sewered Population: 23,645
- Three Year ('07 - '09) Annual Average I/I: 2.28 mgd
- Massachusetts DEP Administrative Order: No. 547 (Issued October 1, 1985).

Latest I/I or SSES Report: Internal TV Inspection of Sewers (Letter Report - June 2004)

Private Source Inflow Removal Program: The Town adopted a sewer system enterprise fund at the May 2009 Town Meeting.

I/I Rehabilitation Projects in Design or Construction:

The 2008 I/I Infiltration Rehabilitation Project (Contract No. 08-1 / MWRA Project Nos. WRA-P6-12-3-636 / 721) was completed (with the exception of warranty retesting) December 2008 and resulted in elimination of approximately 1.44 MGD of removable infiltration. Warranty retesting work is ongoing. Project work included 48,356 LF of cleaning, TV inspection, joint testing and sealing; 1146 LF of short liners; 21,867 LF of cast-in-place pipe; and 3252 VF of cementitious manhole lining.

The Town also continued its annual sewer system inspection program. Between February 2010 and June 2010, the Town cleaned and inspected 255,000 LF of sewer main and performed 535 top-side manhole inspections. The Town plans to utilize this data to perform additional rehabilitation on the most cost-effective lines/manholes in the Summer/Fall 2010 utilizing an on-call contract.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed thirteen (13) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$3,441,000 allotted through the Program's Phases 1-7.

### **13. EVERETT: North System**

Background Information:

- Miles of Sewer: 57
- Sewered Population: 37,353
- Three Year ('07 - '09) Annual Average I/I: 2.03 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-08-1N006 (July 2008)
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-026

Latest I/I or SSES Report: Sanitary Sewer Overflow Abatement Plan – Behan & Beacham Street Area Final Report (December 2009)  
I/I Investigation (July 2010)

Private Source Inflow Removal Program: No additional inspections were reported during this period.

Developer for the development off Air Force Road is being required to assume the cost of I/I mitigation to offset the proposed wastewater flows associated with the project.

I/I Rehabilitation Projects in Design or Construction:

- The City has started the design of the recommendations of the Sanitary Sewer Overflow Abatement Plan – Behan and Beacham Street Area Final Report which is the replacement of the existing sewer system in Commercial Street, Beacham Street and Behan Street in compliance with Mass DEP Administrative Order NE-08-1N006.
- Replaced an existing corrugated metal sewer pipe segment on Commercial Street with PVC sewer pipe and two manholes.

Reporting Period Activity: The completed Sanitary Sewer Overflow Abatement Plan included an assessment of existing condition of sewers in the areas of Behan Street, Beacham Street and Commercial Street. The sewers (approximately 6000 LF) ultimately discharge to the MWRA sewer interceptor near Second Street at Everett Public Connection No. EV-013-P.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$4,525,500 allotted through the Program's Phases 1-7, the community has \$1,384,000 remaining in funding assistance.

## 14. FRAMINGHAM: South System

### Background Information:

- Miles of Sewer: 275
- Sewered Population: 60,148
- Three Year ('07 - '09) Annual Average I/I: 2.78 mgd
- Massachusetts DEP Administrative Order: ACO-NE-07-1N001 (March 8, 2007)

Latest I/I or SSES Report: Town-Wide I/I Study / SSES Phase 1 / CWMP (Under Final Review)  
SSES Phase 2 (Under Final Review); SSES Phase 3/4 (Ongoing)

Private Source Inflow Removal Program: As part of the SSES Phase 3 (covering Sewer Subareas U / Z), approximately 266 homes and businesses were inspected during Summer 2009. Seven (7) properties were identified with sump pumps discharging to the sanitary sewer. An additional thirty-six (36) properties were identified with potential private inflow sources that will be verified through dye testing. Any confirmed sources will need to be removed per the Town's Sump Pump and Illicit Connection Elimination Plan (June 2007).

As part of the SSES Phase 4 (covering Sewer Subareas T / F / FF / S), approximately 600 homes and businesses are being targeted for inspection during Summer 2010.

I/I Rehabilitation Projects in Design or Construction: The Farm Pond Interceptor Sewer Rehabilitation Project was completed July 2010. The project consisted of lining approximately 2000 LF of 24 to 36-inch sewer. The existing sewer has experienced severe damage due to hydrogen sulfide corrosion.

The Cove Avenue Area Sewer Rehabilitation Project included the rehabilitation of approximately 5500 LF of 8 and 10-inch VC gravity sewer pipe with a cured-in-place liner on Cove Avenue, Lake Street, Dow Street, Winthrop Terrace, Nipmuc Terrace and Nipmuc Road. The gravity sewers in the area are approximately 60-90 years of age, have reached the end of their useful life and require frequent maintenance in order to prevent blockages. The structural defects observed in these sewers have the potential to make significant infiltration contributions to the wastewater system during rain events and periods of high groundwater levels. This project was completed July 2009.

The Central Street Siphon / Sudbury River Interceptor Project consisted of lining approximately 4000 LF of 18-inch sewer in a wetland area of the Sudbury River. Project construction is ongoing and is scheduled for completion May 2011. Replacement of approximately 2300 LF of 10 and 12-inch VC and asbestos cement gravity sewer on Central Street with 15-inch PVC sewer was completed June 2010.

The Sub Area U Sewer Rehabilitation Project consists of lining approximately 8020 LF of 8-inch gravity sewer. This project is currently out for bid and is scheduled to be complete in December 2010.

Along with gravity sewer, sewer force main, and water main replacement, a portion of the East Framingham Sewer Improvement Project consists of lining approximately 1500 LF of 12-inch sewer along the Cochituate Rail Trail and 400 LF of 42-inch sewer at the Arthur Street Pump Station. This project is currently under construction and is scheduled to be complete February 2013.

Reporting Period Activity: The upgrade to the existing Paramount Pumping Station is complete. The upgrade is needed to handle increased flows associated with the expansion of Framingham's Technology Park (in particular, Genzyme's near and long term development).

The Fenwick Pumping Station and Force Main Replacement Project consists of replacing the existing, outdated Fenwick Pumping Station with a new, higher capacity station and replacing the existing 10-inch force main with a 12-inch force main. The project replaced a pumping station that is beyond its useful life and resolved pumping station capacity issues that occur during high wet weather flows. Replacement construction is complete.

The Prospect Street Sewer Replacement Project includes the replacement of approximately 6050 LF of 6 and 8-inch VC gravity sewer pipe in Prospect Street, Lilian Road and Lilian Road Extension with 8-inch PVC gravity sewer pipe. The gravity sewers in the area are approximately 50-70 years of age, have reached the end of their useful life and require frequent maintenance in order to prevent blockages. Infiltration of the sewers in this area contributes to a sanitary sewer overflow (SSO) on Central Street during periods of heavy flow. Project construction was completed May 2010.

The Water Street West Sewer Realignment Project includes the replacement of approximately 460 LF of 8-inch VC gravity sewer pipe with 8-inch PVC gravity sewer pipe in Water Street and Edgell Road. The gravity sewers in the area are approximately 50-70 years of age and have reached the end of their useful life. Construction of this project began June 2010 and is scheduled to be complete September 2010.

The New York Avenue Utility Corridor Project includes the replacement of approximately 2600 LF of 8 to 12-inch VC and asbestos cement gravity sewer on New York and California Avenues with 12 to 18-inch PVC gravity sewer to address hydraulic and structural deficiencies. Construction began in March 2010 and is scheduled to be complete November 2010.

MWRA I/I Local Financial Assistance Program: The community has financed ten (10) I/I reduction projects through the Authority's funding assistance program. Of the \$7,015,000 allotted through the Program's Phases 1-7, the community has \$2,784,605 remaining in funding assistance.

## **15. HINGHAM: South System**

### Background Information:

- Miles of Sewer: 31
- Sewered Population: 6,958
- Three Year ('07 - '09) Annual Average I/I: 0.79 mgd
- Massachusetts DEP Administrative Order: No. 536 (Issued November 15, 1985)

Latest I/I or SSES Report: Comprehensive Wastewater Management Plan (Ongoing);  
I/I Investigation (Ongoing); Manhole Inspection (August 2008)

Private Source Inflow Removal Program: The house-to-house sump pump inspection and roof leader disconnection programs are ongoing. Lateral camera inspections were undertaken within the Bradley Woods area.

I/I Rehabilitation Projects in Design or Construction: The Town will use Developer Flow Reduction Program funds (4 to 1 removal @ \$2.67/gallon) to identify I/I sources in conjunction with the ongoing I/I Investigation and Comprehensive Wastewater Management Study. The Town has completed inspection of 250 manholes. Manhole inspection summary and recommendation report completed August 2008. Manhole rehabilitation performed on Lincoln Street and Downer Avenue.

Reporting Period Activity: A portion of Central Street was sewered between Elm and South Streets. A portion of Thaxter Street was sewered between Kent's Lane and No. 30 Thaxter Street. Approximately 1100 LF of sewer was installed between these two projects and included eleven (11) new sewer connections. Community sewer extensions were undertaken at the Hingham Shipyard/Miles Road.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$885,500 allotted through the Program's Phases 1-7, the community has \$296,000 remaining in funding assistance.

## **16. HOLBROOK: South System**

### Background Information:

- Miles of Sewer: 31
- Sewered Population: 9,237
- Three Year ('07 - '09) Annual Average I/I: 0.36 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-1001  
(Signed January 7, 2005; Amended July 24, 2007)  
(Amended ACO No. 2; Signed May 2008)

Latest I/I or SSES Report: I/I Inspections Report (7/06); DEP ACO Progress Report (6/08)  
CWSRF No. 2919 Contract No. 1 (10/09)

Private Source Inflow Removal Program: House-to-House inspections continue as scheduled. All new home construction inspected by the DPW and Town Plumbing Inspector. During this reporting period, one (1) illicit connection was found and subsequently removed from the system. The State has approved the Town's Sewer Bank Policy.

I/I Rehabilitation Projects in Design or Construction: Smoke testing was conducted on 69,500 LF of sewer in Sub-areas B/H(7)/I and a portion of Sub-area A. Manholes inspections (300 total) were conducted primarily in Sub-areas A/F/G/H(8). TV inspection was conducted on 10,500 LF of sewer in Sub-areas H(7) and H(8).

Reporting Period Activity: The Town has completed its yearly check of all cross-country sewer manholes. Phases 3/4 properties associated with collection system expansion are now being connected at owner's request. Phases 5/6 of collection system expansion remain on hold.

MWRA I/I Local Financial Assistance Program: The community has financed one (1) I/I reduction project through the Authority's funding assistance program. Of the \$920,600 allotted through the Program's Phases 1-7, the community has \$424,000 remaining in funding assistance.

## **17. LEXINGTON: North System**

Background Information:

- Miles of Sewer: 170
- Sewered Population: 29,334
- Three Year ('07 - '09) Annual Average I/I: 3.17 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sewer System Evaluation Survey in Sewer Basins 6, 7 & 10 Final Report (March 2010)

Private Source Inflow Removal Program:

- Town Meeting adopted a Stormwater Bylaw in May 2008. Regulations are being drafted for approval by Board of Selectmen. These regulations will serve as a tool for the Town in removing sump pumps from the sewer system.
- Weston & Sampson has been retained to perform approximately 500 building inspections starting in the Summer 2010.

I/I Rehabilitation Projects in Design or Construction: In July 2008, construction began to excavate and replace approximately 2000 LF of 8-inch VC sewer on School Street. This is an area where regular surcharging has occurred. Camera inspection revealed that the sewer main is cracked and quartered in many areas with significant infiltration occurring. The volume of infiltration being eliminated is estimated at 7000 gpd. Project work has been completed.

#### Reporting Period Activity:

- On June 3, 2010 bids were opened for the Winthrop Road Sewer Upgrades and Infiltration Rehabilitation Project – Sewer Basins 6, 7 and 10, Contract 10-29. On June 4, 2010, Weston and Sampson recommended to the Town to issue a letter of intent to award the contract to NEPCCO in the amount of \$1,001,100 (base bid plus alternate bid 1 & 2). The scope of Work for Contract 10-29 includes: 700 LF of sewer upgrades from 6-inch to 8-inch on Winthrop Road; approximately 43,000 LF of trenchless sewer rehabilitations including cured-in-place manhole to manhole lining, testing and grouting of joints and service connections, short liners, and manhole rehabilitations. The construction will remove an estimated 183,816 gpd of peak infiltration and an additional 217,421 gpd of peak design storm inflow. The contracts have been signed and a notice-to-proceed was issued on July 9, 2010 with an estimated project completion date on February 24, 2011.
- Weston and Sampson assisted the Town in soliciting Green Mountain Pipelining Services, Inc. to perform external manhole riser repairs at three manholes located in the Vine Street sewer easement. Canusa Wrap is a high strength material better applied when exposed to elements outside of a manhole. Canusa Wrap was applied from 6-inches below grade and overlapping the manhole frame. These repairs were necessary to repair structural defects that were allowing a high volume of inflow to enter the sewer system. The repairs will remove an estimated 100,000 gpd of peak design storm inflow from the sanitary sewer.
- In November 2009, funds were distributed for 3 following projects: (1) Planning, design and bidding assistance for additional sewer rehabilitations in Sewer Basins Nos. 6, 7 and 10; (2) Assistance in the development of a private Inflow removal program; and (3) Development of a multi-year town-wide sewer investigation and rehabilitation program (MWRA Project No. WRA-P7-17-2-708).
- In May 2010, funds were distributed for the following three projects: (1) Construction of the sewer rehabilitations in Sewer Basins Nos. 6, 7 & 10 as recommended by the “SSES – Sewer Basins 6, 7 and 10” Final Report of March 2010; (2) Design & construction of approximately 700 LF of sewer replacement on Winthrop Road; and (3) Repairs to exterior manhole risers at three locations in the Vine Street sewer easement. The total estimated annual I/I removal is 0.14 mgd (MWRA Project No. WRA-P7-17-3-718).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority’s funding assistance program. Of the \$4,159,300 allotted through the Program’s Phases 1-7, the community has \$815,700 remaining in funding assistance.

## 18. MALDEN: North System

### Background Information:

- Miles of Sewer: 100
- Sewered Population: 55,541
- Three Year ('07 - '09) Annual Average I/I: 4.39 mgd
- Massachusetts DEP Administrative Order: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-002

Latest I/I or SSES Report: Malden Sewer System Survey (SSES) – Phase III Report (June 2009)

Private Source Inflow Removal Program: No additional inspections were reported.

I/I Rehabilitation Projects in Design or Construction: No sewer rehabilitation projects were designed or constructed during this period.

Reporting Period Activity: The City has continued to be aggressive with further characterizing its wastewater collection system and addressing excessive infiltration and inflow. With Phases 1 and 2 completed, the City is in the midst of a Phase 3 SSES field investigation program. From April 16<sup>th</sup> through June 5<sup>th</sup> 2009, approximately 192,000 LF of sewer pipe was included in the flow isolation program for Areas 3A and 3B. Due to timing of high groundwater conditions, flow isolation for Phase 3 was completed the following spring in Area 3C between April 2010 and June 2010. Area 3C flow isolation work included approximately 54,000 LF of sewer pipe for a total of approximately 246,000 LF in Phase 3. As a result of the flow isolation work, a CCTV program was developed and is currently being performed. Approximately 43,000 LF of sewer is scheduled for CCTV inspection. The CCTV work is anticipated to be completed by Fall 2010. The information collected during the Phase 3 field investigation program will lend itself to a Phase 3 SSES report to be submitted to the MWRA for review and approval. The Phase 3 SSES report will provide recommendations to reduce infiltration and inflow into the City's wastewater collection system. This information will be utilized to prepare a sewer rehabilitation contract that is anticipated to be out for bid in early 2011.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$6,725,900 allotted through the Program's Phases 1-7, the community has \$2,132,000 remaining in funding assistance.

## **19. MEDFORD: North System**

### Background Information:

- Miles of Sewer: 113
- Sewered Population: 55,517
- Three Year ('07 - '09) Annual Average I/I: 4.47 mgd
- Massachusetts DEP Administrative Order: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-027

Latest I/I or SSES Report: I/I Analysis / Limited SSES – Part 2 (October 2002)

Private Source Inflow Removal Program: The City is currently developing a course of action to remove the seven sump pumps discharging to the sewer on Marion Street.

The developer for Station Landing National Development is required by DEP permit to reduce approximately 20,000 gpd of I/I. This reduction cannot be met on site and the City is currently reviewing other areas where flow reduction can be achieved.

I/I Rehabilitation Projects in Design or Construction: The Essex Street Sewer and Water Replacement Project was completed April 2009. A portion of this project involves the installation of a drain connection for the elimination of an estimated 27 sump pumps from the sewer system. As of July 15, 2010 all the sump pumps have been redirected to the storm drain. The Essex Street Sewer and Water Replacement Project also involved the replacement of 750 LF of sewer.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$6,914,600 allotted through the Program's Phases 1-7, the community has \$2,120,000 remaining in funding assistance.

## **20. MELROSE: North System**

### Background Information:

- Miles of Sewer: 74
- Sewered Population: 26,681
- Three Year ('07 - '09) Annual Average I/I: 2.66 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Rehabilitation Project Recommendations (November 2001)

Private Source Inflow Removal Program: No inspections were reported during this period.

I/I Rehabilitation Projects in Design or Construction: Design of the next I/I sewer rehabilitation project (Contract No. 09-2) has been completed and construction has begun. This sewer rehabilitation will be performed in Sewer Subareas Nos. 4, 8, 9, 11, 11A, 12, 14A, 15, 20, 21, 22 and 23. The project work will include: cleaning, TV inspection, joint testing & sealing; chemical root treatment; installation of cured-in-place pipe (CIPP) short liners; installation of manhole-to-manhole CIPP liners; cutting of protruding services connections; internal inspection, testing and grouting of service connections; open cut sewer repairs; and sewer manhole rehabilitations. The estimated peak I/I reduction is 0.30 mgd. This project is expected to be completed August 2010.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$3,385,300 allotted through the Program's Phases 1-7, the community has \$540,000 remaining in funding assistance.

## **21. MILTON: South System (Small Portion Tributary to the North System)**

Background Information:

- Miles of Sewer: 83
- Sewered Population: 24,354
- Three Year ('07 - '09) Annual Average I/I: 2.18 mgd
- Massachusetts DEP Administrative Order: No. 580 (Issued June 13, 1985)

Latest I/I or SSES Report: Town-Wide Sewer System Evaluation - Year 5 (February 2008)  
Re-Prioritization Evaluation Report (March 2009)

Private Source Inflow Removal Program: The Town is continuing to pursue the removal of sump pumps and other private inflow sources identified through a previously completed building inspection program. All new connections to the municipal sanitary sewer system will be charged a one-time I/I mitigation fee. Connection applicants must remove four gallons of I/I from the sewer system for each one gallon of new wastewater flow requested in the connection permit. If there are not sources of I/I that, at the discretion of the DPW Director, are appropriate for removal at the time of the permit, a monetary fee may be required (at a cost of \$3.00 per gallon of flow per day to be removed).

I/I Rehabilitation Projects in Design or Construction: Town-Wide Sewer Evaluation Program – Year 5 planning was completed February 2008. Year 5 I/I Rehabilitation Design was completed May 2009. Year 5 I/I Rehabilitation Construction was completed March 2010 (Milton Contract No. S09-1 / MWRA Project No. WRA-P6-21-3-659). An estimated 0.19 mgd of infiltration was removed. A Re-prioritization Evaluation Report was completed March 2009. This report updated the Town-Wide Sewer Evaluation schedule for the next twelve years.

Reporting Period Activity: Approximately 1700 LF of 8-inch PVC sewer was installed for the development of Fletcher Steele Way from Highland Street, through Fletcher Steele Way, to the intersection of Highland Street and Reed Street.

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. Of the \$3,251,500 allotted through the Program's Phases 1-7, the community has \$472,000 remaining in funding assistance.

## **22. NATICK: South System**

Background Information:

- Miles of Sewer: 124
- Sewered Population: 27,767
- Three Year ('07 - '09) Annual Average I/I: 1.10 mgd
- Massachusetts DEP Administrative Order: No. 593 (Issued November 15, 1985)

Latest I/I or SSES Report: Town-Wide SSES (Ongoing)

Private Source Inflow Removal Program: The SSES (MWRA Project No. WRA-P5-22-1-523) includes a house-to-house inspection component. Home inspections also have been conducted in conjunction with a water meter replacement program. This past year, the Town prepared an informational handout on eliminating sump pump connections to the wastewater system, which was distributed to targeted/suspect areas of the community.

I/I Rehabilitation Projects in Design or Construction: Lined 943 LF of 12-inch sewer on Belmore Road (MWRA Project No. WRA-P7-22-3-724). Project completed June 2010. Estimated peak infiltration removed is 0.01 mgd. Lined 195 LF of 8-inch sewer on Westfield Road (MWRA Project No. WRA-P7-22-3-724). Project completed June 2010. Estimated peak infiltration removed is 0.01 mgd. Lined 1415 LF of 16-inch sewer on Worcester Road (Rte 9). Project completed July 2010. Estimated peak infiltration removed is 0.01 mgd. Inspected 250 sewer manholes in Sewer Subsystems 3/5/6/11/19/20 (MWRA Project No. WRA-P7-22-3-724). Rehabilitated (grout/seal) twenty-three (23) sewer manholes in Sewer Subsystems 3/5/19 (MWRA Project No. WRA-P7-22-3-724). Project completed April 2010. Estimated peak infiltration removed is 0.40 mgd.

Reporting Period Activity: Grants Place (18 condominium connections) sewer extension added 330 LF of 6-inch PVC gravity sewer. Kylie Lane (2 connections) sewer extension added 670 LF of 8-inch PVC gravity sewer. Bacon Street (3 connections) sewer extension added 500 LF of 8-inch PVC gravity sewer. Walnut Hill Drive (5 connections) sewer extension added 375 LF of 8-inch PVC gravity sewer. Heavey Estates (4 connections) sewer extension added 550 LF of 8-inch PVC gravity sewer.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$3,194,600 allotted through the Program's Phases 1-7, the community has \$1,281,900 remaining in funding assistance.

## 23. NEEDHAM: South System

### Background Information:

- Miles of Sewer: 131
- Sewered Population: 27,646
- Three Year ('07 - '09) Annual Average I/I: 2.12 mgd
- Massachusetts DEP Administrative Order: No. 549 (Issued November 21, 1984)
- 

Latest I/I or SSES Report: House-to-House Sump Pump Inspection (November 2007)

Smoke Testing Report (November 2007)

Sewer Infiltration Investigation for Subareas 16 and Lower 22 Report (January 2009).

Sewer Investigation in Richardson Drive, Stonehurst Road and Aldridge Road (October 2009)

Private Source Inflow Removal Program: House-to-House Sump Pump Inspection and Private Inflow Source Removal project (Area 19-1) completed November 2007.

I/I Rehabilitation Projects in Design or Construction: The Richardson Drive I/I Rehabilitation Project (MWRA Project No. WRA-P7-23-3-709 / Needham Contract No. FY 10-41-01) included design and construction of sanitary sewer I/I reduction measures and the demolition and rerouting of the Richardson Drive Pump Station. Project design was based upon findings from the report entitled 'Sewer Investigation in Richardson Drive, Stonehurst Road and Aldridge Road'. Project work included cleaning and TV inspection of 1300 LF of gravity sewer; testing and sealing 1300 LF of gravity sewer; testing and sealing 8 service wyes; chemical root treatment of 130 LF of 8-inch gravity sewer; sealing and coating 60 VF of manholes; and demolition of the Richardson Drive Pump Station and Force Main. Project work was completed August 2010. An estimated 0.10 mgd of peak I/I was removed from the collection system.

The Infiltration Rehabilitation (Subareas 16 / Lower 22) Project (MWRA Project Nos. WRA-P7-23-3-716/723 / Needham Contract No. FY 11-40-01) included design and construction of sanitary sewer infiltration reduction measures. Project work includes chemical root treatment of 13,300 LF of gravity sewer; clean, test and seal 14,300 LF of gravity sewer; grout 17 services at the sewer main; point repair 17 sections of gravity sewer; remove and replace twenty-two 20 foot sections of gravity sewer; remove and replace one 80 foot section of gravity sewer; and clean, seal and coat the interior of 24 sewer manholes. Project work is scheduled for completion March 2011. Upon project completion, an estimated 0.14 mgd of peak infiltration will be removed from the collection system.

Reporting Period Activity: Great Plain Avenue Pumping Station rehabilitation is complete. Reservoir B Pumping Station replacement and Richardson Drive Pumping Station elimination in design phase.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$3,746,600 allotted through the Program's Phases 1-7, the community has \$1,361,000 remaining in funding assistance.

## **24. NEWTON: North and South Systems**

Background Information:

- Miles of Sewer: 271
- Sewered Population: 80,907
- Three Year ('07 - '09) Annual Average I/I: 10.45 mgd
- Massachusetts DEP Administrative Order: ACO-NE-00-1001

Latest I/I or SSES Reports: Walker St & Washington St Areas Sewer Investigation Final Report (July 2009)

Private Source Inflow Removal Program: The City is currently in the process of having all water meters in the city replaced. The City hired Weston & Sampson to inspect water meter installations and to perform building inspections for private sources of inflow, at residential properties throughout the city, during water meter installation. To date, Weston & Sampson has completed approximately 1500 internal building inspections for private inflow. One hundred sixty-eight (168) positive sources have been identified at one hundred thirty-nine (139) locations.

I/I Rehabilitation Projects in Design or Construction:

- Bids were opened for the Bennington Street, Regent Street, and Margaret Road Area Sewer Replacement and California Street Sewer Extension Project on August 6, 2009. The Notice to Proceed was issued on November 9, 2009. The project is substantially completed with the warranty re-inspection scheduled for the Spring 2011. It is estimated that 5472 gpd of peak infiltration will be removed as part of this project.
- Bids were opened for the Area B Sanitary Sewer Rehabilitation Project on December 1, 2009. The Notice to Proceed was issued on April 19, 2010. Completion is expected by December 2010 with the warranty re-inspection scheduled for the Spring 2011. It is estimated that 246,290 gpd of peak infiltration and 69,159 gpd of peak inflow will be removed as part of this project.

Reporting Period Activity:

- The "Walker Street and Washington Street Areas Sewer Investigation" Final Report was submitted to MWRA in July 2009.
- The construction of the Bennington Street, Regent Street, and Margaret Road Area Sewer Replacement and California Street Sewer Extension Project commenced and is substantially completed.

- The construction of the Area B Sanitary Sewer Rehabilitation Project has commenced with completion of construction expected by December 2010
- In February 2010, funds were distributed for those projects funded under MWRA Project No. WRA-P6-24-3-657. Under that funding distribution, the available funds were limited to the remaining Phase 6 Allotment. With the approval of Phase 7 funding, the City requested that a portion of those funds be allocated to original projects (MWRA Project No. WRA-P7-24-3-713).

MWRA I/I Local Financial Assistance Program: The community has financed twenty-three (23) I/I reduction projects through the Authority's funding assistance program. Of the \$11,925,400 allotted through the Program's Phases 1-7, the community has \$1,406,000 remaining in funding assistance.

## **25. NORWOOD: South System**

Background Information:

- Miles of Sewer: 83
- Sewered Population: 27,675
- Three Year ('07 - '09) Annual Average I/I: 2.54 mgd
- Massachusetts DEP Administrative Order: No. 534 (Issued July 25, 1983)

Latest I/I or SSES Report: Hawes Brook Sewer Evaluation (July 2009)  
Washington Street Sewer Evaluation (August 2010)

Private Source Inflow Removal Program: An out-of-community housing development was connected to the Norwood sanitary system in accordance with all applicable permits/legislation. An inflow reduction mitigation plan was approved in conjunction with project. As part of the Meadowbrook Area Sewer Inspection, ten buildings were inspected for illicit connections. Eleven illegal connections removed to date. Within the Hawes Brook sewer tributary area, eight property owners have been notified to redirect sump pumps. A Guild Street apartment building roof drain was disconnected from sanitary system.

I/I Rehabilitation Projects in Design or Construction: Hospital and Florence Avenue Areas Sewer Rehabilitation (SRF Project) approved for bidding. Hawes Brook Sewer Rehabilitation (CIP Liner) design complete August 2009. Rehabilitation construction completed June 2010 (MWRA Project No. WRA-P7-25-3-707). Guild Street Sewer Rehabilitation design complete July 2008. Rehabilitation construction completed September 2009 (Contract No. NPW-09-01 / MWRA Project No. WRA-P6-25-3-646). Jefferson Drive Sewer Rehabilitation construction completed July 2009 (MWRA Project No. WRA-P6-25-3-653).

Reporting Period Activity: Vanderbilt Avenue Pumping Station Rehabilitation in bidding phase.

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. Of the \$3,939,400 allotted through the Program's Phases 1-7, the community has \$584,001 remaining in funding assistance.

## **26. QUINCY: South System**

Background Information:

- Miles of Sewer: 202
- Sewered Population: 92,330
- Three Year ('07 - '09) Annual Average I/I: 6.14 mgd
- Massachusetts DEP Administrative Order: No. 644 (Issued October 23, 1986)

Latest I/I or SSES Report: Squantum Area Flow Monitoring Evaluation Study (May 2008)  
Tidal I/I Source Identification Study (July 2009)  
Coastal Pipeline Inflow Investigation Study (January 2010)

Private Source Inflow Removal Program: Storm Water Discharge Ordinance has been approved. The ordinance forbids non-sanitary connections. Developers contribute one percent of total project value to Sewer Rehabilitation Fund. The City recently purchased a TV sewer inspection vehicle. The vehicle provided significant input towards the development of the Tidal I/I Source Identification Study. Parkhurst area direct inflow removal completed.

I/I Rehabilitation Projects in Design or Construction: It is anticipated that the City will be completing a significant amount of I/I reduction work over the coming year based upon the results of the July 2009 Tidal I/I Source Identification work. The City has been conducting ongoing coastal manhole and pipeline I/I inspections. Coastal Manhole Inspections were completed Summer 2009 with rehabilitation design completed Winter 2010. In March 2010, the City awarded a construction contract to Aqualine Industries to conduct sewer manhole rehabilitation in coastal areas. Coastal Pipeline Investigation is ongoing with rehabilitation design scheduled for completion Fall 2010. Additionally this Fall, the City will be completing a comprehensive community-wide examination for the largest sources of I/I to the collection system using pumping records, flow monitoring and system physical inspection.

Bayside Beach Emergency Repairs included the replacement of 1500 LF of pipe and nine manholes. Estimated 0.5 mgd I/I removal based on pump station flows. Project completed May 2010. Stoughton Street Emergency Repairs included the replacement of 120 LF of 12-inch pipe. Estimated 0.25 mgd I/I removed based on City crew estimates. Project completed June 2010. Identification of West Squantum Street parking garage oil/gas separator tied into sewer. Estimated 0.03 mgd inflow to be removed. Project ongoing. Parkhurst Street sewer spot repair includes the replacement of 20 LF of pipe. Estimated 0.03 mgd I/I to be removed based on observation. Project ongoing. Fenno Street / Division Street Sewer Improvements construction completed August 2009 (MWRA Project No. WRA-P6-26-3-616). Spot Repairs of Direct Inflow Sources of Seawater into Sanitary Sewers project construction completed July 2009.

Reporting Period Activity: Extension of Chubbock Street to accommodate one additional residence is complete.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$11,125,000 allotted through the Program's Phases 1-7, the community has \$1,752,000 remaining in funding assistance.

## **27. RANDOLPH: South System**

Background Information:

- Miles of Sewer: 101
- Sewered Population: 30,032
- Three Year ('07 - '09) Annual Average I/I: 1.68 mgd
- Massachusetts DEP Administrative Order: No. 548 (Issued October 23, 1986)

Latest I/I or SSES Report: Amelian Road SSES (January 2003)  
Internal TV Inspection Report (August 2010)

Private Source Inflow Removal Program: The Town developed a sump pump inspection and amnesty program. As a result of the program, the Town was contacted by two hundred and two (202) homeowners having sump pumps. Internal inspections were completed to determine sump pump locations. One hundred twenty-one homes (121) were determined to have sump pumps connected to the sewer system. Ninety-four (94) of these homes have drainage directly adjacent to the homes. Each of the 94 homes was inspected. Design was completed to redirect these sump pumps to the drainage system. Sump pump redirection construction began October 2008 and will be completed Fall 2010 (Randolph Contract Nos. 08-SP1/2/3 / MWRA Project No. WRA-P6-27-3-655). Total peak flow inflow removed is estimated to be 610,000 gpd.

I/I Rehabilitation Projects in Design or Construction: Root Street Area Sewer System Rehabilitation Project design completed July 2008. Project construction began April 2009 and was completed November 2009 (Randolph Contract No. 08-S1 / MWRA Project No. WRA-P6-27-3-609). Sewer System Rehabilitation Project design complete. Project in bidding phase (MWRA Project No. WRA-P7-27-3-714). The Town, working in conjunction with Avalon Bay, completed a manhole sealing and sewer lining project. The I/I removal project eliminated approximately 200,000 gpd.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed nine (9) I/I reduction projects through the Authority's funding assistance program. Of the \$3,370,800 allotted through the Program's Phases 1-7, the community has \$559,900 remaining in funding assistance.

## **28. READING: North System**

### Background Information:

- Miles of Sewer: 96
- Sewered Population: 22,038
- Three Year ('07 - '09) Annual Average I/I: 1.60 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Infiltration/Inflow Investigations – Spot Gauging & Flow Isolation Report (March 2010)

Private Source Inflow Removal Program: The Town is continuing to work with property owners where illicit connections were found during the Building Inspection Program. One residential sump pump was removed from the sewer system.

I/I Rehabilitation Projects in Design or Construction: The Town is continuing with its annual sewer rehabilitation program which for this period included cleaning/TV inspection of 14,376 LF of sewer, testing 1702 main line joints, sealing 245 main line joints, testing 144 lateral service joints, sealing 88 lateral service joints and root treatment of 12,976 LF of sewer.

### Reporting Period Activity:

- For the period August – September 2009, the Town smoke tested approximately 308,000 LF sewer, ranging from 6 to 24-inch diameter. The testing revealed 22 houses connected to Town sewer that were recorded to be on septic and 17 confirmed direct connections including one major direct connection on California Road. In October 2009, the direct connection on California Road was repaired, removing approximately 261,398 gal/day of inflow.
- In August 2009, funds were distributed for the following projects: (1) SSES Study which will include flow isolation of approximately 157,200 LF of sewer in Sewer Meter Areas Nos. 1 / 4A; smoke testing of approximately 311,700 LF of sewer in Sewer Meter Areas Nos. 1, 2, 2A, 2B, 2C, 3B and 4C; night-time spot gauging in Sewer Meter Area No. 2B; and (2) Joint testing and sealing of the sewer in Sewer Meter Area No. 2B which will depend upon the amount of funds available at the completion of the SSES work (MWRA Project No. WRA-P7-28-3-701).

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,520,100 allotted through the Program's Phases 1-7, the community has \$404,000 remaining in funding assistance.

## **29. REVERE: North System**

### Background Information:

- Miles of Sewer: 78
- Sewered Population: 60,144
- Three Year ('07 - '09) Annual Average I/I: 3.31 mgd
- Massachusetts DEP Administrative Order: No. 837 (Issued April 21, 1991)
- EPA Clean Water Act Administrative Order: EPA Docket No. 07-004

Latest I/I or SSES Report: Hydraulic Model Report (May 2009)

Private Source Inflow Removal Program: The City removed an additional six (6) illegal sump pumps during this period. Sewer Mitigation Funds, which are received from developers (10:1 ratio), are used to perform sewer rehabilitations. There were no additional sewer mitigation funds received from developers during this reporting period.

I/I Rehabilitation Projects in Design or Construction: The following sewer rehabilitations were completed: cleaned and internally inspected 22,680 LF of 6 to 8-inch sewer; 2385 LF of 10 to 12-inch sewer; 3400 LF of 15 to 18-inch sewer; and 4300 LF of 21 to 24-inch sewer.

### Reporting Period Activity:

- City-wide Sewer System Evaluation Survey (SSES) is ongoing.
- In February 2010, funds were distributed for the internal TV inspection of approximately 5000 LF of the Revere Trunk Sewer. The portion of the trunk sewer to be inspected begins at the connection to the MWRA Interceptor Sewer, traverses approximately 2000 LF along Revere Beach Parkway, then approximately 2500 LF along Harris Street to American Legend Highway for approximately 500 LF (MWRA Project No. WRA-P7-29-1-712).

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$5,502,900 allotted through the Program's Phases 1-7, the community has \$723,700 remaining in funding assistance.

## **30. SOMERVILLE: North System**

### Background Information:

- Miles of Sewer: 128
- Sewered Population: 75,662
- Three Year ('07 - '09) Annual Average I/I: 4.78 mgd
- Massachusetts DEP Administrative Order: NON-NE-00-1006 (Issued January 21, 2000)
- EPA Clean Water Act Administrative Order: EPA Docket No. 07-004

Somerville is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). As part of the MWRA CSO Facilities Upgrade Project, Somerville's flows are being evaluated for volume and discharge locations.

Latest I/I or SSES Report: City-wide Sewer Assessment Report (February 2007)

Private Source Inflow Removal Program: A 4 to 1 I/I Reduction policy continues to be enforced with potential developers.

I/I Rehabilitation Projects in Design or Construction:

- The construction associated with the Pearson Avenue and Josephine Street Sewer, Drain & Water Line Replacement Project has been completed.
- Preliminary plans are currently being completed for the I/I mitigation in the Ten Hills area to replace storm drain and sewer where substantial mixing has been occurring due to broken pipelines. This work is associated with the Assembly Square Development Project.
- Construction of the large diameter (48, 60 and 66-inch) storm drains in Somerville Avenue between Union Square and Porter Square has been completed. The only remaining work is the final paving which is expected to be completed by Fall 2010. This drain will form the basis for sewer separation upstream in a 200 acre watershed.

Reporting Period Activity:

- Work associated with the installation of a 72-inch storm drain outfall to handle the storm runoff from the Assembly Square Development Project is ongoing.
- Inspection and design solutions to sources of contamination in storm drains (as cited in DEP letter to City dated 6/4/08) in the Alewife Brook watershed and the lower Mystic River 24-inch x 24-inch storm outlet is ongoing.
- Investigation of the storm drainage system tributary to the Somerville Marginal Conduit for sources of contamination (with an ultimate goal of repairing the 7-foot x 7-foot drain under McGrath Highway) is ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$8,767,800 allotted through the Program's Phases 1-7, the community has \$3,044,010 remaining in funding assistance.

### **31. STONEHAM: North System**

Background Information:

- Miles of Sewer: 63
- Sewered Population: 21,085
- Three Year ('07 - '09) Annual Average I/I: 1.67 mgd
- Massachusetts DEP Administrative Order: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-028

Latest I/I or SSES Report: Manhole/CCTV Inspection in Marble/Main Streets Area Final Report (September 2007)

Private Source Inflow Removal Program: Continuing to inspect buildings on a limited basis.

I/I Rehabilitation Projects in Design or Construction: Construction of the Phase 2 Sewer System Rehabilitation was completed Spring 2010. Warranty reinspection on the main line sewer rehabilitations has been completed. Warranty re-inspection of the testing & sealing for the service laterals is scheduled for Spring 2011.

Reporting Period Activity: See above work description; Planning and Design for the Phase 3 Sewer System Rehabilitation is ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$2,867,900 allotted through the Program's Phases 1-7, the community has \$416,000 remaining in funding assistance.

### **32. STOUGHTON: South System**

Background Information:

- Miles of Sewer: 72
- Sewered Population: 17,933
- Three Year ('07 - '09) Annual Average I/I: 2.12 mgd
- Massachusetts DEP Administrative Order: No. 538 (Issued June 12, 1984)

Latest I/I or SSES Report: Flow Metering Report (June 2009)  
Sewer System Evaluation (September 2009)  
Hydraulic Model Report (December 2009)  
Year 5 Rehabilitation Evaluation (December 2009)  
Year 6 Rehabilitation Evaluation (On-going)

Private Source Inflow Removal Program: Town has adopted new sewer use regulations which address private inflow removal. TV inspection of service connections/house-to-house inspections ongoing. Sewer System Evaluation completed September 2009 (MWRA WRA-P6-32-1-650). Public Building Inspection Report portion of Sewer System Evaluation completed May 2009. Two sump pumps located during Public Building Inspection were rerouted to the storm drain system.

I/I Rehabilitation Projects in Design or Construction: Sewer System Infiltration Rehabilitation (Contract No. 07-1) warranty retesting completed June 2009 (MWRA Project No. WRA-P6-32-3-623). Morton Street Easement Sewer Lining Project completed September 2009 (MWRA Project No. WRA-P6-32-3-623). Year 4 Sewer System Evaluation Report completed February 2009. Years 3 / 4 Sewer System Infiltration Rehabilitation design completed December 2009. Years 3 / 4 Sewer System Infiltration Rehabilitation (Contract No. 09-1) construction ongoing (MWRA Project No. WRA-P7-32-3-704). Year 5 Sewer System Evaluation Report completed December 2009 (MWRA Project No. WRA-P7-32-3-704). Year 6 Sewer System Evaluation Report ongoing.

Reporting Period Activity: To connect a subdivision on West Street, 260 LF of 8-inch sanitary sewer was added to the collection system. Sewer System GIS Mapping / Hydraulic Model Development Report completed December 2009.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$2,696,900 allotted through the Program's Phases 1-7, the community has \$498,500 remaining in funding assistance.

### **33. WAKEFIELD: North System**

Background Information:

- Miles of Sewer: 93
- Sewered Population: 23,975
- Three Year ('07 - '09) Annual Average I/I: 2.86 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Brick Trunk Outfall Sewer Investigation (October 2008)  
Subarea 7 Smoke Testing & Dyed Water Testing (July 2008)

Private Source Inflow Removal Program:

- Developing plan to remove roof drains from the sewer at the Americal Civic Center (Main Street). Work is expected to be completed this Fall.
- Town continues to receive 4 to 1 removal from completed subdivisions/ developments.

I/I Rehabilitation Projects in Design or Construction: Currently, there are no I/I rehabilitation projects in design or construction.

#### Reporting Period Activity:

- Performed heavy cleaning and internal inspection of the Town interceptor sewer from New Salem Street to Water Street of grease and debris. Received assistance from MWRA.
- Developing a Program with assistance from consultant for further I/I removal throughout the Town. Anticipating requesting funds under the MWRA I/I Local Financial Assistance Program in the next funding distribution (November 2010).

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. Of the \$3,396,900 allotted through the Program's Phases 1-7, the community has \$851,900 remaining in funding assistance.

### **34. WALPOLE: South System**

#### Background Information:

- Miles of Sewer: 59
- Sewered Population: 16,424
- Three Year ('07 - '09) Annual Average I/I: 1.09 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Removal Program: Year 3 (February 2009)  
Flow Metering Report (April 2010)  
I/I Removal Program: Year 4 (Ongoing)

Private Source Inflow Removal Program: The Town includes house-to-house private inflow inspection program as part of its water meter replacement program. Town-wide wastewater metering was conducted between November 2008 and May 2009. Report completed April 2010.

I/I Rehabilitation Projects in Design or Construction: Year 2 I/I Rehabilitation (Contract 2008-32 / MWRA Project No. WRA-P6-34-3-641) work included cleaning and inspection of 10,100 LF of 8 to 36-inch sewer; testing 2560 sewer joints; sealing 1277 sewer joints; sealing 26 manhole inverts; cementitious lining of 250 VF of manholes; chemical root treatment of 2620 LF of 8 to 36-inch sewer; installing 111 LF of CIP short liner; installing 8 LF of CIP structural short; installing 1890 LF of CIP pipe; rehabilitating 30 service connections and flow isolation (post-construction) of 15,000 LF of sewer. Project work completed June 2009.

Year 3 I/I Investigation (Contract 2008-32 / MWRA Project No. WRA-P6-34-3-641) work included flow isolation of 41,600 LF of sewer; cleaning and inspection of 37,500 LF of 6 and 8-inch sewer; cleaning and inspection of 4100 LF of 10 and 12-inch sewer and 200 manhole inspections. Year 3 Investigation work was performed in conjunction with the Year 2 Rehabilitation work. Year 3 I/I Rehabilitation construction is ongoing. Year 4 I/I Investigation is ongoing.

Reporting Period Activity: Approximately 1400 LF of gravity sewer was added on Pine Street to connect sewer flow from Route 1 to the existing collection system discharging to Washington Street.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$2,083,000 allotted through the Program's Phases 1-7, the community has \$324,000 remaining in funding assistance.

### **35. WALTHAM: North System**

Background Information:

- Miles of Sewer: 138
- Sewered Population: 60,176
- Three Year ('07 - '09) Annual Average I/I: 5.09 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-02-1003 (5/7/03)  
ACOP-NE-04-1N004 (3/16/05)  
ACOP-NE-10-1N001 (2/22/10)

Latest I/I or SSES Report: Wastewater Facilities Plan & Hydraulic Model Report  
(December 2009)

Private Source Inflow Removal Program:

- The Private Inflow Removal Contract No.1 for Area 5C-2 and 13 was bid in August 2009. Construction is 95% complete as of 7/1/2010. Once completed, the project will remove 61 private sump pumps from the sanitary sewer system. Estimated Inflow removal is 73,200 gpd per DEP guidelines.
- For the Private Inflow Removal Contract No.2 in the Lakeview Area (Area 5B and 5D), the investigations completed to date indicate 31 illicit sump pump connections. A second round of outreach and inspection is underway and will be completed by September 2010. This project is expected to be advertised for bid in Fall 2010.

I/I Rehabilitation Projects in Design or Construction:

The following sewer rehabilitations were performed under the Illicit Discharge Detection and Elimination (IDDE) Project for the period July 2009 to June 2010:

- Stone Road: Cleaning and CIPP lining of 265 LF of 8-inch sewer was completed in June 2010. Estimated peak infiltration removal is 8255 gpd.
- Porter Road: Cleaning and CIPP lining of 145 LF of 8-inch sewer and sealing of two sanitary manholes was completed in June 2010. Estimated peak infiltration removal is 677 gpd.

- Fuller Street: Conversion of one common manhole to sanitary manhole was completed in June 2010. Estimated peak inflow removal is indeterminate.
- Newton Street: Cleaning and CIPP lining of 242 LF of 6-inch sewer and sealing of two sanitary manholes was completed in June 2010. Estimated peak infiltration removal is 29.15 gpd
- River Street: Cleaning and CIPP lining of 260 LF of 6-inch sewer and sealing of one sanitary manhole was completed in June 2010. Estimated peak infiltration removal is 6192 gpd
- Main Street: Removal of sanitary sewer cross-connection at uncapped roof drain within sanitary manhole was completed in June 2010. Estimated peak inflow removal is 80.3 gpd.

Reporting Period Activity:

I/I Mitigation was also performed by private developers at various locations throughout the City. This mitigation involved the relining of the sewer on Hickory Drive, Hickory Drive Outlet, Winter Street, Gregory Lane, Cheryl Lane, Lincoln Street, Cedarcroft Lane, Lura Lane, Pond End School Lane, Walton Street and Malvern Street. The amount of I/I removed from the sewer system was 41,560 gpd.

In August 2009, CCTV Inspection was performed on approximately 10,500 LF of sewer on Lexington Street and Totten Pond Road.

In October 2009, smoke testing was performed on approximately 86,000 LF of sewer in Sewer Areas 13 / 14.

During March / April 2010, two flow meters were installed for six weeks in Sewer Areas 12A (Lake and Lexington Street Area) and Area 15.

In April 2010, smoke testing was performed on approximately 38,000 LF of sewer in Sewer Area 12A (Lake and Lexington Street Area).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$7,808,400 allotted through the Program's Phases 1-7, the community has \$3,046,000 remaining in funding assistance.

## 36. WATERTOWN: North System

### Background Information:

- Miles of Sewer: 75
- Sewered Population: 32,365
- Three Year ('07 - '09) Annual Average I/I: 1.67 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004

Latest I/I or SSES Report: TV Inspection Report (Nichols Avenue & Boylston Street Sewers)  
(June 2009)

Private Source Inflow Removal Program: The Town performed 45 building inspections for potential inflow sources and/or illicit discharges during this period.

### I/I Rehabilitation Projects in Design or Construction:

- Construction for Contract #08-1 (CIP Liner Installation) and Contract #08-2 (Sewer Replacement) in the Cottage Street easement and Spring Street has been completed. For Contract #08-1, approximately 3100 LF of sewers were rehabilitated using cured-in-place pipe (CIPP) methods. This work included rehabilitation of approximately 710 LF of deteriorated 15 and 18-inch VC sewer segments along Spring Street and rehabilitation of approximately 2390 LF of deteriorated 12 and 18-inch sewers along the Cottage Street easement. The estimated I/I amount removed as a result of the rehabilitation work is 66,240 gpd. Also included in this Contract, five manholes on Spring Street were rehabilitated by cement lining and epoxy coating. One Cottage Street manhole and two siphon structures were also rehabilitated. The work is estimated to remove 11,520 gpd of I/I. Under Contract #08-2, approximately 850 LF of sewer was replaced. This work included replacement of deteriorated 15 and 18-inch VC sewer segments along Spring Street. In addition, a 12-inch ductile iron sewer crossing a drain line was replaced with 13 feet of 16-inch ductile sewer. The estimated I/I amount removed as a result of the rehabilitation work is 41,760 gpd.
- The Town also performed eleven repairs to the sanitary collection system, rebuilt/repared eleven sanitary sewer manholes and removed three illicit connections between the sanitary and storm water systems.

### Reporting Period Activity:

- CCTV Inspection of the sewers in the Nichols Avenue and Boylston Street areas revealed several defects. A summary of recommendations for replacement or rehabilitation has been completed by the town's consultant. Approximately 1225 LF of sewer is recommended for replacement. The estimated I/I to be removed is 30,240 gpd. Approximately 3140 LF of sewer is recommended for rehabilitation. The estimated I/I to be removed is 80,640 gpd.

- In May 2010, funds were distributed for the following two projects: (1) Design and construction of sewer replacement in Lexington Street and sewer rehabilitations in portions of Sewer Subsystems 7/8; and (2) Additional cost for sewer rehabilitations and replacement in Nichols Avenue and Boylston Street. The annual infiltration to be removed is estimated to be 0.173 mgd.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I investigation projects through the Authority's funding assistance program. Of the \$3,653,800 allotted through the Program's Phases 1-7, the community has \$1,612,000 remaining in funding assistance.

### **37. WELLESLEY: South System**

Background Information:

- Miles of Sewer: 130
- Sewered Population: 27,244
- Three Year ('07 - '09) Annual Average I/I: 1.85 mgd
- Massachusetts DEP Administrative Order: No. 579 (Issued May 23, 1985)

Latest I/I or SSES Report: Phase 2 SSES (November 1994)

Private Source Inflow Removal Program: The DPW is contacting the owners of illegal sump pumps, based on previous private source inflow studies. To date, 18 sump pumps have been removed from the sanitary system. Also, the Town continues to pursue illegal sump pump connections identified through the water meter ERT Battery Changeout Transaction Program.

I/I Rehabilitation Projects in Design or Construction: The first year of Fuller Brook Area Sewer Inspection/Rehabilitation Project (Contract No. 09C-460-1366) is ongoing. To date, approximately 39,800 LF of sanitary sewer has been cleaned and CCTV inspected. Also, 2300 LF of storm drain has been CCTV inspected. Approximately 3100 joints of vitrified clay sewer pipe were tested, with 1295 needing to be sealed and retested.

The second year of the three year Wellesley Sewer Rehabilitation Project (Contract No. 07C-50-22 / MWRA Project No. WRA-P7-37-3-720) was completed Summer 2009. Project work included cleaning and television inspection of 63,360 LF of sewer; testing 6303 joints; sealing 2577 joints and rehabilitating 44 manholes.

Reporting Period Activity: Sewer System Improvements Project (Contract No. 08C-50-19) within the easement between No. 6 and No. 8 Earle Road and Cleveland Road was completed Summer 2009. Project work consisted of cured-in-place lining of approximately 500 LF of 12-inch VC sewer (MWRA Project No. WRA-P7-37-3-720). Fletcher Road Extension Sewer Rehabilitation work consisted of repairing 13 LF of existing 10-inch VC sanitary sewer main on the extension of Fletcher Road between Clovelly Road and Caroline Brook Parkway (MWRA Project No. WRA-P7-37-3-720).

MWRA I/I Local Financial Assistance Program: The community has financed nine (9) I/I reduction projects through the Authority's funding assistance program. Of the \$3,275,700 allotted through the Program's Phases 1-7, the community has \$1,205,953 remaining in funding assistance.

### **38. WESTWOOD: South System**

Background Information:

- Miles of Sewer: 77
- Sewered Population: 13,4880
- Three Year ('07 - '09) Annual Average I/I: 0.74 mgd
- Massachusetts DEP Administrative Order: No. 578 (Issued May 23, 1985)

Latest I/I or SSES Report: SSES Phases 1 and 2 (January 1991)  
Town-wide I/I Study (CY10/11)

Private Source Inflow Removal Program: A House-to-house inspection survey has been completed. The survey included inspection of 1880 residences and identified 135 suspect sump pumps. Sump pump removal notification letters forthcoming. The Town has initiated a Town-wide I/I Study.

I/I Rehabilitation Projects in Design or Construction: The FY10 maintenance program has been completed. The program included cleaning and television inspection of 110,000 LF of sewer.

Reporting Period Activity: Private subdivision work (Summer Street) included the installation of 1700 LF of sewer extensions.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$1,425,300 allotted through the Program's Phases 1-7, the community has \$386,000 remaining in funding assistance.

### **39. WEYMOUTH: South System**

Background Information:

- Miles of Sewer: 238
- Sewered Population: 51,131
- Three Year ('07 - '09) Annual Average I/I: 3.85 mgd
- Massachusetts DEP Administrative Order: No. 543 (Issued November 14, 1984)  
ACO-NE-04-1N002 (Issued November 19, 1998)

Latest I/I or SSES Report: Sewer System Hydraulic Model / Evaluation (Ongoing)  
Town-Wide Sewer Investigation – Year 2 (Ongoing)  
Union Street Area Sewer Investigation (Ongoing)

Private Source Inflow Removal Program: The Town has completed the redirection of 320 sump pumps (for an estimated 160,000 gpd of inflow removal). Two sump pumps were redirected during FY10. Town-Wide Sewer Investigation – Year 2 is ongoing (MWRA Project No. WRA-P7-39-1-715).

I/I Rehabilitation Projects in Design or Construction: Sewer System CIP Contract 1, Winter Street to Essex Street Sewer Replacement is complete. Approximately 123,900 gpd of infiltration removed from sewer system. Mill River/North Weymouth Infiltration Rehabilitations (Contract S05-1 / (MWRA Project No. WRA-P5-39-3-535) is complete.

Montcalm Sanitary Sewer Overflow Study (Phase 2) included cleaning and television inspection of 3097 LF of sewer from MH 1145 to MWRA connection at Newell Park. The Town removed and replaced 1435 LF of 21, 27, 30-inch sewer with 42-inch sewer from Winter Street to Washington Street and 1225 LF of 30-inch sewer with 42-inch Vylon pipe on Essex Street.

Reporting Period Activity: Sewer extension (Wampum Street) added 1300 LF of 8-inch PVC gravity sewer to the sanitary system. Sewer extension (Meredith Street) added 1250 LF of 8-inch PVC gravity sewer to the sanitary system. Sewer extension (Poinsettia Avenue) added 180 LF of 8-inch PVC gravity sewer to the sanitary system. Sewer extension (Main Street Housing) added 130 LF of 8-inch PVC gravity sewer to the sanitary system.

MWRA I/I Local Financial Assistance Program: The community has financed ten (10) I/I reduction projects through the Authority's funding assistance program. Of the \$6,505,900 allotted through the Program's Phases 1-7, the community has \$1,826,000 remaining in funding assistance.

#### **40. WILMINGTON: North System**

Background Information:

- Miles of Sewer: 20
- Sewered Population: 3,962
- Three Year ('07 - '09) Annual Average I/I: 0.49 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Infrastructure Maintenance and Management Program (IMMP) Phase 2 Report (March 2005)

Private Source Inflow Removal Program: Town continuing inspections on an as needed basis.

I/I Rehabilitation Projects in Design or Construction: The construction of the Main Street Interceptor Sewer Rehabilitation Project is approximately 90% complete. This project consists of the cured-in-place lining of approximately 3300 LF of the 36-inch RCP interceptor sewer and manholes which conveys the Town's sewage to the MWRA sewer system. A large portion of this interceptor sewer, which was inspected by in-line closed circuit television inspection in 2001, is in poor condition as a result of interaction of hydrogen sulfide with the reinforced concrete pipe and manholes. Infiltration was also observed at various locations. The estimated peak infiltration removal is 0.06 mgd. Approximately 25 LF of collapsed 8-inch sewer on Industrial Way was replaced on an emergency basis. Further investigations into the cause and extent of the problem are being conducted.

Reporting Period Activity: In August 2009, funds were distributed for the above-referenced rehabilitation of the 36-inch RCP interceptor sewer which conveys the Town's sewage to the MWRA sewer system (MWRA Project No. WRA-P7-40-3-703).

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$1,388,000 allotted through the Program's Phases 1-7.

#### **41. WINCHESTER: North System**

Background Information:

- Miles of Sewer: 83
- Sewered Population: 21,069
- Three Year ('07 - '09) Annual Average I/I: 1.46 mgd
- Massachusetts DEP Administrative Order: Draft ACO in 2001.

Latest I/I or SSES Report: West Side Building Inspection Report (May 2009)

Private Source Inflow Removal Program: The Town's Private Inflow Source Removal Program is ongoing. The Town has removed three sump pump inflow sources from the sanitary sewer system over the past year.

I/I Rehabilitation Projects in Design or Construction: The design of the Lockeland Road and Cambridge Street Sewer Rehabilitation Project (Hamilton Farms Development) was completed March 2010. Bids were accepted on March 24, 2010. Construction is ongoing with completion expected by Fall 2010. This project is estimated to remove 12,096 gpd of peak infiltration.

Reporting Period Activity:

- Construction of the Lockeland Road and Cambridge Street Sewer Rehabilitation Project is ongoing.

- In February 2010, funds were provided for the construction and engineering construction services associated with the High Street Sewer Rehabilitation Project. The work will be performed in portions of Arlington Street, Cambridge Street, Everett Avenue, High Street, Lockeland Road, Manomet Road and Ridge Street. The work includes the repair of sewer defects identified during the Hamilton Farms Sewer System Investigation Project and designed under the Hamilton Farms Sewer Rehabilitation Design Project. Approximate Scope of Work includes: replacement of 1855 LF of sewer; replacement of four sewer manholes; replacement of 15 sewer building connections; cementitious lining of 241 VF of manholes; chemical root treatment of 1280 LF of sewers; root treatment of two manholes; installation of 241 LF of structural cured-in-place pipe; and cleaning and inspection of 335 LF of sewers.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,424,000 allotted through the Program's Phases 1-7, the community has \$693,000 remaining in funding assistance.

## **42. WINTHROP: North System**

Background Information:

- Miles of Sewer: 36
- Sewered Population: 17,943
- Three Year ('07 - '09) Annual Average I/I: 1.08 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sanitary Sewer Evaluation Report (April 2007)

Private Source Inflow Removal Program: Letters have been sent to homeowners and businesses along Putnam Street where sewer construction activities uncovered evidence of illegal sump pump connections.

I/I Rehabilitation Projects in Design or Construction: The Town is proceeding with sewer replacement construction in Putnam Street and Putnam Place Area. The recommended sewer construction work involves the replacement of approximately 1100 LF of 10-inch sewer and 500 LF of 8-inch sewer along with associated manholes/sewer services. The estimated annual I/I removal is 0.01 mgd. Design was completed April 2009. Bids were accepted on July 9, 2009. The contract was awarded in July 2009. The sewer replacement work on Pauline Street, Putnam Street, Putnam Place and Walden Street has been completed.

Reporting Period Activity: In May 2010, funds (MWRA Project No. WRA-P7-42-3-719) were distributed for the additional costs associated with the Sewer Replacement on Putnam Street and Putnam Place that was originally funded under MWRA Project No. WRA-P6-42-3-647.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$1,926,400 allotted through the Program's Phases 1-7, the community has \$614,600 remaining in funding assistance.

### **43. WOBURN: North System**

Background Information:

- Miles of Sewer: 141
- Sewered Population: 35,765
- Three Year ('07 - '09) Annual Average I/I: 4.67 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1005 (August 16, 2001)

Latest I/I or SSES Report: Horn Pond Sanitary Sewer Investigation Final Report (May 2010)

Private Source Inflow Removal Program: Private inflow sources identified in the Dix Road, West Side and Area #3 Subareas were removed as part of the Dix Road, West Side, and Area #3 Private Inflow Source Removal Project. To date, 60 positive sources have been removed. Of the 704 properties in the area that had not been inspected, 300 inspections have been performed, 17 addresses do not exist and 387 property owners were unresponsive. Property owners who do not participate can be subject to a daily fine for violating the sewer use ordinance.

I/I Rehabilitation Projects in Design or Construction:

- The Dix Road, West Side, and Area #3 Private Inflow Source Removal Project was awarded to Cape Ann Equipment (Notice to Proceed was April 13, 2009). To date, 60 positive sources have been removed from the sanitary sewer system. An estimated 456,480 gpd of peak inflow has been removed from the sanitary sewer system through this work.
- Bids for the Arlington Road Area Sanitary Sewer Rehabilitation Project were accepted on November 19, 2009. Construction is substantially complete. The work included rehabilitation of approximately 9000 LF of sanitary sewers and approximately 50 sanitary sewer manholes. Inflow removal will be estimated during completion of the Arlington Road Area Flow Evaluation. The flow evaluation includes post-construction flow isolation on all rehabilitated line segments and is planned for Spring 2011.
- Bids for the Area #3 Sanitary Sewer Rehabilitation Project were accepted on September 30, 2009. Construction is scheduled to be substantially complete in August 2010. The work included rehabilitation of approximately 45,000 LF of sanitary sewers and approximately 90 sanitary sewer manholes. Inflow removal will be estimated during completion of the Area #3 Flow Evaluation. The flow evaluation includes post-construction flow isolation on all rehabilitated line segments and is planned for Spring 2011.

Reporting Period Activity:

- Contract Documents for the Area #3 Sanitary Sewer Rehabilitations were submitted September 2009
- Contract Documents for the Arlington Road Area Sanitary Sewer Rehabilitations were submitted November 2009.
- The Final Report on the Horn Pond Sanitary Sewer Interceptor Investigation was submitted May 2010.
- In August 2009, funds were distributed for the sewer rehabilitations in the following areas: Sewer Area #3 as recommended by the Area #3 Sewer System Evaluation Survey Final Report dated April 2008; the Arlington Road Area as recommended by the Arlington Road Area Sewer System Evaluation Survey Report; the Horn Pond Sanitary Sewer Interceptor as recommended by the draft Horn Pond Sanitary Sewer Interceptor Investigation Report dated April 2008; installation of a manhole to manhole liner between Manholes Nos. SI-51 and SI-52 on the Sylvania Interceptor. The estimated peak I/I reduction is 0.50 mgd (MWRA Project No. WRA-P7-43-3-706).

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. The City has utilized all of the \$6,358,500 allotted through the Program's Phases 1-7.

ATTACHMENT 6  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY10  
Reporting Period – July 2009 Through June 2010

**CY09 COMMUNITY WASTEWATER FLOW DATA**

This attachment contains calendar year 2009 wastewater flow data for the 43 MWRA member sewer communities. There are three separate data tables. The first table (one page) presents the CY09 monthly total wastewater flow estimates for each community derived from MWRA's wastewater metering system. Each community's percent average daily flow and percent maximum month flow are used as components of MWRA's annual wholesale sewer charge. The second table (one page) presents the CY09 community flow components (sanitary flow, infiltration, and stormwater inflow) as estimated by MWRA. The third table (three pages) presents the estimated community flow components in two formats: (1) alphabetically and (2) sorted (ranked) from high to low.

CY09 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

Community	Total Population	Sewered Population	CY09 Average Daily Flow (ADF) By Calendar Month (MGD)												12 Month Average Daily Flow (MGD)	Percent Average Daily Flow	Max. Month ADF (MGD)	Percent Max. Month ADF
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
Arlington	41,144	40,733	6.23	6.13	6.28	6.24	4.43	3.66	5.04	3.89	3.44	3.91	4.90	6.47	5.05	1.5%	6.47	1.6%
Ashland	15,796	11,847	1.46	1.37	1.49	1.32	1.09	1.06	1.26	1.21	1.00	1.06	1.15	1.33	1.23	0.4%	1.49	0.4%
Bedford	13,146	12,357	2.95	3.04	3.30	3.18	2.50	2.15	2.76	2.15	1.87	2.05	2.40	2.89	2.60	0.8%	3.30	0.8%
Belmont	23,356	22,912	4.06	4.36	4.54	4.32	2.73	2.57	3.51	2.52	2.34	2.83	3.39	4.38	3.46	1.1%	4.54	1.1%
BWSC	608,352	607,744	91.05	95.39	95.78	102.20	86.10	83.96	103.12	83.59	84.99	92.23	88.46	97.87	92.06	28.1%	103.12	25.9%
Braintree	34,422	34,388	7.54	8.11	7.93	7.90	6.28	5.39	6.91	5.41	4.95	5.90	6.60	8.26	6.76	2.1%	8.26	2.1%
Brookline	54,809	54,699	12.63	12.16	13.18	12.08	8.74	8.64	10.97	8.77	8.16	9.17	9.87	11.78	10.51	3.2%	13.18	3.3%
Burlington	25,034	25,009	4.20	4.17	4.58	4.44	3.53	3.29	4.00	3.29	2.85	2.94	3.36	4.21	3.74	1.1%	4.58	1.1%
Cambridge	101,388	101,287	17.88	17.95	19.39	22.88	17.63	18.80	23.13	17.17	17.68	20.46	17.77	19.63	19.21	5.9%	23.13	5.8%
Canton	21,916	14,355	2.75	2.65	2.84	2.99	2.46	2.52	2.90	2.08	1.92	2.14	2.41	2.76	2.53	0.8%	2.99	0.8%
Chelsea	38,203	38,203	3.90	4.20	4.17	4.29	3.26	3.64	4.86	3.72	3.49	4.42	4.22	4.80	4.08	1.2%	4.86	1.2%
Dedham	24,132	22,684	4.66	4.83	4.85	4.72	3.44	2.79	3.66	2.67	2.40	3.14	4.15	5.41	3.89	1.2%	5.41	1.4%
Everett	37,269	37,269	5.81	5.94	5.93	6.06	4.81	4.66	6.01	4.87	4.80	5.48	5.19	6.01	5.46	1.7%	6.06	1.5%
Framingham	64,786	59,603	8.04	7.95	8.40	8.29	6.30	5.93	7.45	6.03	5.17	5.29	6.51	8.26	6.97	2.1%	8.40	2.1%
Hingham	7,555	6,869	1.47	1.67	1.60	1.55	0.80	0.61	1.16	0.62	0.94	1.12	1.16	2.01	1.22	0.4%	2.01	0.5%
Holbrook	10,663	8,991	1.00	0.94	0.92	1.02	0.83	0.75	0.86	0.69	0.70	0.80	0.83	0.98	0.86	0.3%	1.02	0.3%
Lexington	30,332	30,211	7.11	6.54	7.83	7.48	5.47	4.74	6.90	5.10	3.83	4.07	5.48	7.60	6.02	1.8%	7.83	2.0%
Malden	55,712	55,656	9.76	10.76	10.35	10.64	8.48	8.15	9.57	8.16	7.39	8.49	9.00	10.46	9.26	2.8%	10.76	2.7%
Medford	55,565	55,509	10.21	10.57	10.23	10.88	8.22	7.49	9.05	7.66	7.24	8.36	9.29	10.97	9.17	2.8%	10.97	2.8%
Melrose	26,782	26,755	4.90	5.20	5.26	5.89	3.62	3.28	4.55	3.43	3.01	3.70	4.68	5.67	4.43	1.4%	5.89	1.5%
Milton	26,272	24,433	4.56	4.83	4.84	4.78	3.18	2.36	3.41	2.33	2.12	2.80	3.67	5.20	3.67	1.1%	5.20	1.3%
Natick	31,975	27,786	2.95	2.97	2.99	2.96	2.79	2.68	2.76	2.69	2.56	2.66	2.87	3.10	2.83	0.9%	3.10	0.8%
Needham	28,263	27,246	4.83	4.85	5.12	5.08	3.87	3.11	3.84	3.04	2.95	3.40	4.08	4.95	4.09	1.3%	5.12	1.3%
Newton	83,271	82,022	24.49	23.17	24.92	22.71	15.72	13.60	18.20	12.35	11.04	11.89	17.15	20.22	17.93	5.5%	24.92	6.3%
Norwood	28,172	27,665	5.81	5.81	6.14	6.33	4.13	3.97	5.11	3.76	3.33	4.25	5.26	6.38	5.02	1.5%	6.38	1.6%
Quincy	91,622	91,613	16.02	16.13	16.27	16.93	13.80	12.51	14.54	12.39	12.72	13.77	14.11	17.18	14.69	4.5%	17.18	4.3%
Randolph	30,168	30,138	4.54	4.49	4.51	4.59	3.44	3.06	3.91	2.88	2.54	3.03	3.54	4.94	3.79	1.2%	4.94	1.2%
Reading	23,129	22,158	3.47	3.69	4.05	3.97	2.85	2.40	3.03	2.44	2.18	2.45	3.15	4.07	3.14	1.0%	4.07	1.0%
Revere	55,341	55,286	7.84	8.15	7.67	8.27	5.33	5.85	7.94	5.45	5.60	6.90	7.01	8.97	7.08	2.2%	8.97	2.3%
Somerville	74,405	74,405	9.90	9.72	10.41	11.19	7.86	8.97	12.77	8.15	8.40	10.24	10.47	12.60	10.06	3.1%	12.77	3.2%
Stoneham	21,508	21,121	4.07	4.16	4.39	4.49	3.00	2.73	3.72	2.79	2.15	2.76	3.53	4.47	3.52	1.1%	4.49	1.1%
Stoughton	26,951	17,922	4.58	4.46	4.49	4.62	3.74	3.15	4.03	2.85	2.45	3.03	3.73	4.86	3.83	1.2%	4.86	1.2%
Wakefield	24,706	23,965	5.56	5.59	6.11	6.12	4.29	3.46	4.34	3.62	3.15	3.67	4.51	6.03	4.70	1.4%	6.12	1.5%
Walpole	23,086	16,391	2.63	2.41	2.58	2.70	2.33	1.92	2.33	1.80	1.71	1.92	2.21	2.60	2.26	0.7%	2.70	0.7%
Waltham	60,325	60,265	12.15	11.27	12.98	12.55	9.50	8.26	10.71	8.64	7.72	8.58	10.03	11.71	10.34	3.2%	12.98	3.3%
Watertown	32,521	32,521	4.56	4.64	4.69	4.56	3.37	2.97	3.79	3.15	2.72	3.11	3.67	4.46	3.80	1.2%	4.69	1.2%
Wellesley	26,985	26,364	4.31	4.28	4.62	4.41	3.06	2.60	3.31	2.69	2.46	2.82	3.55	4.55	3.55	1.1%	4.62	1.2%
Westwood	14,010	13,310	1.91	1.90	1.99	1.94	1.42	1.18	1.55	1.28	1.25	1.41	1.70	2.18	1.64	0.5%	2.18	0.5%
Weymouth	53,272	51,088	10.38	10.80	9.69	9.57	7.18	6.37	7.90	6.09	6.18	7.55	8.00	10.29	8.32	2.5%	10.80	2.7%
Wilmington	21,679	4,032	1.32	1.30	1.37	1.33	1.19	1.20	1.18	1.20	0.97	0.89	1.19	1.71	1.24	0.4%	1.71	0.4%
Winchester	21,137	21,116	2.94	3.01	3.39	3.28	2.25	1.76	2.38	1.79	1.62	1.81	2.33	3.37	2.49	0.8%	3.39	0.9%
Winthrop	20,154	20,154	2.16	1.76	2.31	2.30	2.02	2.03	2.36	1.96	1.93	2.31	2.25	2.55	2.17	0.7%	2.55	0.6%
Woburn	37,042	35,190	9.14	9.52	9.93	9.73	7.80	7.15	8.23	7.04	6.88	7.26	8.15	10.26	8.42	2.6%	10.26	2.6%

Total/Average	2,146,356	2,073,270	357.73	362.84	374.31	382.78	294.84	277.37	349.01	273.41	262.80	296.07	316.98	378.40	327.11	100%	398.27	100%
---------------	-----------	-----------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	------	--------	------

**2009 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY09-12 MONTHS)**

28-Apr-10

COMMUNITY						2009 Averages (1)		Components of Average Daily Flow (Estimated) (2)									
	Community Demographics		No. of Connects to MWRA System	Miles of Local Sewers (3)	No. of Meters for Permanent System	Average Daily Flow ADF (MGD)	Percent Average Daily Flow (6)	Selected Dry Day ADF (MGD)	Average Daily Infiltration (MGD)	Infiltration As a % of Average Daily Flow	Average Sanitary Flow (MGD)	Sanitary As a % of Average Daily Flow	Average Daily Inflow (4) (MGD)	Inflow As a % of Average Daily Flow	Peak Month ADF (MGD)	Percent Peak Month ADF (6)	
	Total Population	Sewered Population															
Arlington	41,144	40,733	321	106	7	5.05	1.54%	4.61	2.01	39.8%	2.60	51.5%	0.44	8.7%	6.47	1.62%	
Ashland	15,796	11,847	2	43	2	1.23	0.38%	1.15	0.35	28.5%	0.80	65.0%	0.08	6.5%	1.49	0.37%	
Bedford	13,146	12,357	2	68	2	2.60	0.79%	2.47	1.27	48.8%	1.20	46.2%	0.13	5.0%	3.30	0.83%	
Belmont	23,356	22,912	2	78	2	3.46	1.06%	3.03	1.43	41.3%	1.60	46.2%	0.43	12.4%	4.54	1.14%	
BWSC (5)	608,352	607,744	234	840	33	92.06	28.14%	79.16	22.16	24.1%	57.00	61.9%	12.90	14.0%	103.12	25.89%	
Braintree	34,422	34,388	15	133	7	6.76	2.07%	6.21	3.01	44.5%	3.20	47.3%	0.55	8.1%	8.26	2.07%	
Brookline (5)	54,809	54,699	9	102	12	10.51	3.21%	9.50	5.00	47.6%	4.50	42.8%	1.00	9.5%	13.18	3.31%	
Burlington	25,034	25,009	0	115	1	3.74	1.14%	3.52	1.52	40.6%	2.00	53.5%	0.22	5.9%	4.58	1.15%	
Cambridge (5)	101,388	101,287	116	150	9	19.21	5.87%	15.73	4.73	24.6%	11.00	57.3%	3.48	18.1%	23.13	5.81%	
Canton	21,916	14,355	63	62	6	2.53	0.77%	2.20	1.00	39.5%	1.20	47.4%	0.34	13.4%	2.99	0.75%	
Chelsea (5)	38,203	38,203	40	41	5	4.08	1.25%	3.18	0.68	16.7%	2.50	61.3%	0.91	22.3%	4.86	1.22%	
Dedham	24,132	22,684	25	76	6	3.89	1.19%	3.45	1.65	42.4%	1.80	46.3%	0.44	11.3%	5.41	1.36%	
Everett	37,269	37,269	20	57	7	5.46	1.67%	4.91	1.41	25.8%	3.50	64.1%	0.55	10.1%	6.06	1.52%	
Framingham	64,786	59,603	4	275	4	6.97	2.13%	6.50	2.00	28.7%	4.50	64.6%	0.47	6.7%	8.40	2.11%	
Hingham	7,555	6,869	1	31	1	1.22	0.37%	0.98	0.58	47.5%	0.40	32.8%	0.24	19.7%	2.01	0.50%	
Holbrook	10,663	8,991	2	31	2	0.86	0.26%	0.80	0.30	34.9%	0.50	58.1%	0.06	7.0%	1.02	0.26%	
Lexington	30,332	30,211	17	151	4	6.02	1.84%	5.48	2.68	44.5%	2.80	46.5%	0.53	8.8%	7.83	1.97%	
Malden	55,712	55,656	242	99	6	9.26	2.83%	8.56	3.56	38.4%	5.00	54.0%	0.70	7.6%	10.76	2.70%	
Medford	55,565	55,509	71	113	6	9.17	2.80%	8.26	3.76	41.0%	4.50	49.1%	0.92	10.0%	10.97	2.75%	
Melrose	26,782	26,755	187	74	5	4.43	1.35%	3.86	1.96	44.2%	1.90	42.9%	0.57	12.9%	5.89	1.48%	
Milton	26,272	24,433	45	83	14	3.67	1.12%	3.18	1.78	48.5%	1.40	38.1%	0.49	13.4%	5.20	1.31%	
Natick	31,975	27,786	27	107	4	2.83	0.87%	2.72	0.92	32.5%	1.80	63.6%	0.11	3.9%	3.10	0.78%	
Needham	28,263	27,246	21	115	2	4.09	1.25%	3.73	1.73	42.3%	2.00	48.9%	0.36	8.8%	5.12	1.29%	
Newton	83,271	82,022	51	271	7	17.93	5.48%	16.53	9.93	55.4%	6.60	36.8%	1.40	7.8%	24.92	6.26%	
Norwood	28,172	27,665	30	83	6	5.02	1.53%	4.33	1.93	38.4%	2.40	47.8%	0.69	13.7%	6.38	1.60%	
Quincy	91,622	91,613	56	202	6	14.69	4.49%	13.54	5.04	34.3%	8.50	57.9%	1.15	7.8%	17.18	4.31%	
Randolph	30,168	30,138	2	101	2	3.79	1.16%	3.46	1.46	38.5%	2.00	52.8%	0.33	8.7%	4.94	1.24%	
Reading	23,129	22,158	2	86	2	3.14	0.96%	2.88	1.38	43.9%	1.50	47.8%	0.26	8.3%	4.07	1.02%	
Revere	55,341	55,286	3	78	1	7.08	2.16%	5.79	1.99	28.1%	3.80	53.7%	1.29	18.2%	8.97	2.25%	
Somerville (5)	74,405	74,405	43	107	7	10.06	3.08%	7.73	2.43	24.2%	5.30	52.7%	2.33	23.2%	12.77	3.21%	
Stoneham	21,508	21,121	23	63	7	3.52	1.08%	3.08	1.28	36.4%	1.80	51.1%	0.44	12.5%	4.49	1.13%	
Stoughton	26,951	17,922	1	60	2	3.83	1.17%	3.57	2.07	54.0%	1.50	39.2%	0.26	6.8%	4.86	1.22%	
Wakefield	24,706	23,965	10	82	2	4.70	1.44%	4.30	2.60	55.3%	1.70	36.2%	0.40	8.5%	6.12	1.54%	
Walpole	23,086	16,391	1	56	2	2.26	0.69%	2.14	0.94	41.6%	1.20	53.1%	0.12	5.3%	2.70	0.68%	
Waltham	60,325	60,265	3	138	3	10.34	3.16%	9.62	4.02	38.9%	5.60	54.2%	0.72	7.0%	12.98	3.26%	
Watertown	32,521	32,521	14	75	3	3.80	1.16%	3.53	1.23	32.4%	2.30	60.5%	0.28	7.4%	4.69	1.18%	
Wellesley	26,985	26,364	2	130	3	3.55	1.09%	3.23	1.23	34.6%	2.00	56.3%	0.32	9.0%	4.62	1.16%	
Westwood	14,010	13,310	3	77	3	1.64	0.50%	1.49	0.69	42.1%	0.80	48.8%	0.15	9.1%	2.18	0.55%	
Weymouth	53,272	51,088	17	238	4	8.32	2.54%	7.56	3.76	45.2%	3.80	45.7%	0.77	9.3%	10.80	2.71%	
Wilmington	21,679	4,032	2	19	1	1.24	0.38%	1.18	0.38	30.6%	0.80	64.5%	0.06	4.8%	1.71	0.43%	
Winchester	21,137	21,116	72	83	7	2.49	0.76%	2.28	1.18	47.4%	1.10	44.2%	0.21	8.4%	3.39	0.85%	
Winthrop	20,154	20,154	21	36	6	2.17	0.66%	1.96	0.86	39.6%	1.10	50.7%	0.20	9.2%	2.55	0.64%	
Woburn	37,042	35,190	18	141	13	8.42	2.57%	7.95	3.45	41.0%	4.50	53.4%	0.47	5.6%	10.26	2.58%	
<b>Totals/Averages</b>	<b>2,146,356</b>	<b>2,073,272</b>	<b>1,840</b>	<b>5,076</b>	<b>234</b>	<b>327.11</b>	<b>100.00%</b>	<b>289.34</b>	<b>113.34</b>	<b>34.6%</b>	<b>176.00</b>	<b>53.8%</b>	<b>37.77</b>	<b>11.5%</b>	<b>398.27</b>	<b>100.00%</b>	

**FOOTNOTES:**

- (1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2009.
- (2) Wastewater flow components are estimated through engineering analysis by MWRA staff.
- (3) Miles of Local Sewers are from MWRA's regional collection system database or as reported by the Community and do not include service laterals.
- (4) Average Daily Inflow is calculated as a total inflow over the period of January through December 2009 divided by 365 days. Actual inflow during a specific storm event must be calculated separately.
- (5) Community with combined sewers. Inflow figures include combined flow during storm events tributary to MWRA's WWTP.
- (6) Percent average Daily Flow and Percent Peak Month ADF are the two flow-based components of MWRA's Wholesale Sewer Rate Methodology.

**Column Summations: Average Daily Flow (ADF) Column F = I+K+M Average Dry Day Flow Column H = I+K**

2009 Final Community Wastewater Flow Component Estimates (Alphabetical Detail page 1 of 3)

19-Jul-10

Community	Sewered Population	Miles of Local Sewers	IDM of Local Sewers	Average Daily Flow ADF (MGD)	Average Annual Infiltration (MGD)	Average Annual Inflow (MGD)	Average Sanitary Flow (MGD)	ADF (GPD Per IDM)	I/I (GPD Per IDM)	Infiltration (GPD Per IDM)	Inflow (GPD Per IDM)	Inflow (GPD Per Sewer Mile)	Average Sanitary (GPD Per Sew. Pop.)
Arlington	41,144	106	896	5.05	2.01	0.44	2.60	5,636	2,734	2,243	491	4,142	64
Ashland	15,796	43	390	1.23	0.35	0.08	0.80	3,154	1,103	897	205	1,865	68
Bedford	13,146	68	552	2.60	1.27	0.13	1.20	4,710	2,536	2,301	236	1,912	97
Belmont	23,356	78	708	3.46	1.43	0.43	1.60	4,887	2,627	2,020	607	5,541	70
BWSC	608,352	840	14,024	92.06	22.16	12.90	57.00	6,564	2,500	1,580	920	15,355	94
Braintree	34,422	133	1,215	6.76	3.01	0.55	3.20	5,564	2,930	2,477	453	4,148	93
Brookline	54,809	102	1,090	10.51	5.00	1.00	4.50	9,642	5,505	4,587	917	9,850	82
Burlington	25,034	115	1,042	3.74	1.52	0.22	2.00	3,589	1,670	1,459	211	1,913	80
Cambridge	101,388	150	2,344	19.21	4.73	3.48	11.00	8,195	3,503	2,018	1,485	23,197	109
Canton	21,916	62	567	2.53	1.00	0.34	1.20	4,462	2,363	1,764	600	5,487	84
Chelsea	38,203	41	618	4.08	0.68	0.91	2.50	6,602	2,573	1,100	1,472	21,997	65
Dedham	24,132	76	712	3.89	1.65	0.44	1.80	5,463	2,935	2,317	618	5,761	79
Everett	37,269	57	686	5.46	1.41	0.55	3.50	7,959	2,857	2,055	802	9,574	94
Frammingham	64,786	275	2,519	6.97	2.00	0.47	4.50	2,767	981	794	187	1,709	75
Hingham	7,555	31	270	1.22	0.58	0.24	0.40	4,519	3,037	2,148	889	7,742	58
Holbrook	10,663	31	312	0.86	0.30	0.06	0.50	2,756	1,154	962	192	1,935	56
Lexington	30,332	151	1,487	6.02	2.68	0.53	2.80	4,048	2,159	1,802	356	3,508	93
Malden	55,712	99	876	9.26	3.56	0.70	5.00	10,571	4,863	4,064	799	7,049	90
Medford	55,565	113	982	9.17	3.76	0.92	4.50	9,338	4,766	3,829	937	8,125	81
Melrose	26,782	74	635	4.43	1.96	0.57	1.90	6,976	3,984	3,087	898	7,750	71
Milton	26,272	83	680	3.67	1.78	0.49	1.40	5,397	3,338	2,618	721	5,902	57
Natick	31,975	107	954	2.83	0.92	0.11	1.80	2,966	1,080	964	115	1,028	65
Needham	28,263	115	1,075	4.09	1.73	0.36	2.00	3,805	1,944	1,609	335	3,129	73
Newton	83,271	271	2,579	17.93	9.93	1.40	6.60	6,952	4,393	3,850	543	5,166	80
Norwood	28,172	83	763	5.02	1.93	0.69	2.40	6,579	3,434	2,529	904	8,332	87
Quincy	91,622	202	1,956	14.69	5.04	1.15	8.50	7,510	3,165	2,577	588	5,693	93
Randolph	30,168	101	1,138	3.79	1.46	0.33	2.00	3,330	1,573	1,283	290	3,267	66
Reading	23,129	86	747	3.14	1.38	0.26	1.50	4,203	2,195	1,847	348	3,025	68
Revere	55,341	78	832	7.08	1.99	1.29	3.80	8,510	3,942	2,392	1,550	16,538	69
Somerville	74,405	107	1,523	10.06	2.43	2.33	5.30	6,605	3,125	1,596	1,530	21,689	71
Stoneham	21,508	63	517	3.52	1.28	0.44	1.80	6,809	3,327	2,476	851	6,984	85
Stoughton	26,951	60	621	3.83	2.07	0.26	1.50	6,167	3,752	3,333	419	4,362	84
Wakefield	24,706	82	842	4.70	2.60	0.40	1.70	5,582	3,563	3,088	475	4,863	71
Walpole	23,086	56	577	2.26	0.94	0.12	1.20	3,917	1,837	1,629	208	2,143	73
Waltham	60,325	138	1,289	10.34	4.02	0.72	5.60	8,022	3,677	3,119	559	5,213	93
Watertown	32,521	75	616	3.80	1.23	0.28	2.30	6,169	2,451	1,997	455	3,731	71
Wellesley	26,985	130	1,271	3.55	1.23	0.32	2.00	2,793	1,220	968	252	2,462	76
Westwood	14,010	77	627	1.64	0.69	0.15	0.80	2,616	1,340	1,100	239	1,948	60
Weymouth	53,272	238	2,272	8.32	3.76	0.77	3.80	3,662	1,994	1,655	339	3,235	74
Wilmington	21,679	19	259	1.24	0.38	0.06	0.80	4,788	1,699	1,467	232	3,176	198
Winchester	21,137	83	633	2.49	1.18	0.21	1.10	3,934	2,196	1,864	332	2,530	52
Winthrop	20,154	36	309	2.17	0.86	0.20	1.10	7,023	3,430	2,783	647	5,599	55
Woburn	37,042	141	1,393	8.42	3.45	0.47	4.50	6,045	2,814	2,477	337	3,333	128
Total	2,146,356	5,076	55,398	327.09	113.34	37.77	176.00						
Average	49,915	118	1,288	7.61	2.64	0.88	4.09	5,600	2,750	2,156	594	6,323	72

2009 Final Community Wastewater Flow Component Estimates (Ranked Detail page 2 of 3)

19-Jul-10

Community	Sewered Population	Community	Miles of Local Sewers	Community	IDM of Local Sewers	Community	Average Daily Flow ADF (MGD)	Community	Average Annual Infiltration (MGD)	Community	Average Annual Inflow (MGD)	Community	Average Sanitary Flow (MGD)
BWSC	608,352	BWSC	840	BWSC	14,024	BWSC	92.06	BWSC	22.16	BWSC	12.90	BWSC	57.00
Cambridge	101,388	Frammingham	275	Newton	2,579	Cambridge	19.21	Newton	9.93	Cambridge	3.48	Cambridge	11.00
Quincy	91,622	Newton	271	Frammingham	2,519	Newton	17.93	Quincy	5.04	Somerville	2.33	Quincy	8.50
Newton	83,271	Weymouth	238	Cambridge	2,344	Quincy	14.69	Brookline	5.00	Newton	1.40	Newton	6.60
Somerville	74,405	Quincy	202	Weymouth	2,272	Brookline	10.51	Cambridge	4.73	Revere	1.29	Waltham	5.60
Frammingham	64,786	Lexington	151	Quincy	1,956	Waltham	10.34	Waltham	4.02	Quincy	1.15	Somerville	5.30
Waltham	60,325	Cambridge	150	Somerville	1,523	Somerville	10.06	Medford	3.76	Brookline	1.00	Malden	5.00
Malden	55,712	Woburn	141	Lexington	1,487	Malden	9.26	Weymouth	3.76	Medford	0.92	Brookline	4.50
Medford	55,565	Waltham	138	Woburn	1,393	Medford	9.17	Malden	3.56	Chelsea	0.91	Frammingham	4.50
Revere	55,341	Braintree	133	Waltham	1,289	Woburn	8.42	Woburn	3.45	Weymouth	0.77	Medford	4.50
Brookline	54,809	Wellesley	130	Wellesley	1,271	Weymouth	8.32	Braintree	3.01	Waltham	0.72	Woburn	4.50
Weymouth	53,272	Needham	115	Braintree	1,215	Revere	7.08	Lexington	2.68	Malden	0.70	Revere	3.80
Arlington	41,144	Burlington	115	Randolph	1,138	Frammingham	6.97	Wakefield	2.60	Norwood	0.69	Weymouth	3.80
Chelsea	38,203	Medford	113	Brookline	1,090	Braintree	6.76	Somerville	2.43	Melrose	0.57	Everett	3.50
Everett	37,269	Somerville	107	Needham	1,075	Needham	6.02	Lexington	2.07	Stoughton	0.55	Braintree	3.20
Woburn	37,042	Natick	107	Burlington	1,042	Everett	5.46	Arlington	2.01	Everett	0.55	Lexington	2.80
Braintree	34,422	Arlington	106	Medford	982	Arlington	5.05	Frammingham	2.00	Lexington	0.53	Arlington	2.60
Watertown	32,521	Brookline	102	Natick	954	Norwood	5.02	Revere	1.99	Milton	0.49	Chelsea	2.50
Natick	31,975	Randolph	101	Arlington	896	Wakefield	4.70	Melrose	1.96	Frammingham	0.47	Norwood	2.40
Lexington	30,332	Malden	99	Malden	876	Melrose	4.43	Norwood	1.93	Woburn	0.47	Watertown	2.30
Randolph	30,168	Reading	86	Wakefield	842	Needham	4.09	Milton	1.78	Arlington	0.44	Burlington	2.00
Needham	28,263	Milton	83	Revere	832	Chelsea	4.08	Needham	1.73	Dedham	0.44	Needham	2.00
Norwood	28,172	Winchester	83	Norwood	763	Dedham	3.89	Dedham	1.65	Stoneham	0.44	Randolph	2.00
Wellesley	26,985	Norwood	83	Reading	747	Stoughton	3.83	Burlington	1.52	Belmont	0.43	Wellesley	2.00
Stoughton	26,951	Wakefield	82	Dedham	712	Watertown	3.80	Randolph	1.46	Wakefield	0.40	Melrose	1.90
Melrose	26,782	Revere	78	Belmont	708	Randolph	3.79	Belmont	1.43	Needham	0.36	Dedham	1.80
Milton	26,272	Belmont	78	Everett	686	Everett	3.74	Everett	1.41	Canton	0.34	Natick	1.80
Burlington	25,034	Westwood	77	Milton	680	Milton	3.67	Reading	1.38	Randolph	0.33	Stoneham	1.80
Wakefield	24,706	Dedham	76	Melrose	635	Wellesley	3.55	Stoneham	1.28	Wellesley	0.32	Wakefield	1.70
Dedham	24,132	Watertown	75	Winchester	633	Stoneham	3.52	Bedford	1.27	Watertown	0.28	Belmont	1.60
Belmont	23,356	Melrose	74	Westwood	627	Belmont	3.46	Belmont	1.23	Reading	0.26	Reading	1.50
Reading	23,129	Bedford	68	Stoughton	621	Reading	3.14	Watertown	1.23	Stoughton	0.26	Stoughton	1.50
Walpole	23,086	Stoneham	63	Chelsea	618	Natick	2.83	Wellesley	1.23	Hingham	0.24	Milton	1.40
Canton	21,916	Canton	62	Watertown	616	Bedford	2.60	Winchester	1.18	Burlington	0.22	Bedford	1.20
Wilmington	21,679	Stoughton	60	Walpole	577	Canton	2.53	Canton	1.00	Walpole	0.21	Canton	1.20
Stoneham	21,508	Everett	57	Canton	567	Winchester	2.49	Natick	0.92	Natick	0.20	Walpole	1.20
Winchester	21,137	Walpole	56	Bedford	552	Walpole	2.26	Winthrop	0.86	Winthrop	0.20	Winthrop	1.10
Winthrop	20,154	Ashland	43	Stoneham	517	Bedford	2.17	Westwood	0.86	Westwood	0.15	Winchester	1.10
Ashland	15,796	Chelsea	41	Stoneham	517	Winthrop	2.17	Westwood	0.69	Bedford	0.13	Winthrop	1.10
Westwood	14,010	Winthrop	36	Holbrook	312	Ashland	1.64	Chelsea	0.68	Walpole	0.12	Ashland	0.80
Bedford	13,146	Hingham	31	Winthrop	309	Wilmington	1.24	Hingham	0.58	Natick	0.11	Westwood	0.80
Holbrook	10,663	Holbrook	31	Hingham	270	Ashland	1.23	Wilmington	0.38	Ashland	0.08	Wilmington	0.80
Hingham	7,555	Wilmington	19	Hingham	270	Holbrook	1.22	Ashland	0.35	Holbrook	0.06	Holbrook	0.50
				Wilmington	259	Holbrook	0.86	Holbrook	0.30	Wilmington	0.06	Hingham	0.40
Total	2,146,356	Total	5,076	Total	55,398	Total	327.09	Total	113.34	Total	37.77	Total	176.00
Average	49,915	Average	118	Average	1,288	Average	7.61	Average	2.64	Average	0.88	Average	4.09

2009 Final Community Wastewater Flow Component Estimates (Ranked Detail page 3 of 3)

19-Jul-10

Community	ADF (GPD Per IDM)	Community	I/I (GPD Per IDM)	Community	Infiltration (GPD Per IDM)	Community	Inflow (GPD Per IDM)	Community	Inflow (GPD Per Sewer Mile)	Community	Average Sanitary (GPD Per Sew. Pop.)
Malden	10,571	Brookline	5,505	Brookline	4,587	Revere	1,550	Cambridge	23,197	Wilmington	198
Brookline	9,642	Malden	4,863	Malden	4,064	Somerville	1,530	Chelsea	21,997	Woburn	128
Medford	9,338	Medford	4,766	Newton	3,850	Cambridge	1,485	Somerville	21,689	Cambridge	109
Revere	8,510	Newton	4,393	Medford	3,829	Chelsea	1,472	Revere	16,538	Bedford	97
Cambridge	8,195	Melrose	3,984	Stoughton	3,333	Medford	937	BWSC	15,355	Everett	94
Waltham	8,022	Revere	3,942	Waltham	3,119	BWSC	920	Brookline	9,850	Brookline	94
Everett	7,959	Stoughton	3,752	Wakefield	3,088	Brookline	917	Everett	9,574	Braintree	93
Quincy	7,510	Waltham	3,677	Melrose	3,087	Norwood	904	Norwood	8,332	Waltham	93
Winthrop	7,023	Wakefield	3,563	Winthrop	2,783	Melrose	898	Medford	8,125	Quincy	93
Melrose	6,976	Cambridge	3,503	Milton	2,618	Hingham	889	Melrose	7,750	Lexington	93
Newton	6,952	Norwood	3,434	Quincy	2,577	Stoneham	851	Hingham	7,742	Malden	90
Stoneham	6,809	Winthrop	3,430	Norwood	2,529	Everett	802	Malden	7,049	Norwood	87
Somerville	6,605	Milton	3,338	Braintree	2,477	Malden	799	Stoneham	6,984	Stoneham	85
Chelsea	6,602	Stoneham	3,327	Woburn	2,477	Milton	721	Milton	5,902	Stoughton	84
Norwood	6,579	Quincy	3,165	Stoneham	2,476	Winthrop	647	Dedham	5,761	Canton	84
BWSC	6,564	Somerville	3,125	Revere	2,392	Dedham	618	Quincy	5,693	Brookline	82
Watertown	6,169	Hingham	3,037	Dedham	2,317	Belmont	607	Winthrop	5,599	Medford	81
Stoughton	6,167	Dedham	2,935	Bedford	2,301	Canton	600	Belmont	5,541	Newton	80
Woburn	6,045	Braintree	2,930	Arlington	2,243	Quincy	588	Canton	5,487	Burlington	80
Arlington	5,636	Everett	2,857	Hingham	2,148	Waltham	559	Waltham	5,213	Dedham	79
Wakefield	5,582	Woburn	2,814	Everett	2,055	Newton	543	Newton	5,166	Wellesley	76
Braintree	5,564	Arlington	2,734	Belmont	2,020	Arlington	491	Wakefield	4,863	Framingham	75
Dedham	5,463	Arlington	2,734	Cambridge	2,018	Wakefield	475	Stoughton	4,362	Weymouth	74
Milton	5,397	Belmont	2,627	Watertown	1,997	Watertown	455	Braintree	4,148	Needham	73
Belmont	4,887	Chelsea	2,573	Winchester	1,864	Braintree	453	Arlington	4,142	Walpole	73
Wilmington	4,788	Bedford	2,536	Reading	1,847	Stoughton	419	Watertown	3,731	Somerville	71
Bedford	4,710	BWSC	2,500	Lexington	1,802	Lexington	356	Lexington	3,508	Melrose	71
Hingham	4,519	Watertown	2,451	Canton	1,764	Reading	348	Woburn	3,333	Wakefield	71
Canton	4,462	Canton	2,363	Weymouth	1,655	Weymouth	339	Randolph	3,267	Watertown	71
Reading	4,203	Winchester	2,196	Reading	1,629	Walpole	337	Woburn	3,235	Belmont	70
Lexington	4,048	Reading	2,195	Lexington	1,609	Needham	335	Wilmington	3,176	Revere	69
Winchester	3,934	Lexington	2,159	Needham	1,609	Needham	335	Needham	3,129	Reading	68
Walpole	3,917	Weymouth	1,994	Somerville	1,596	Winchester	332	Reading	3,025	Ashland	68
Needham	3,805	Needham	1,944	BWSC	1,580	Randolph	290	Winchester	2,530	Randolph	66
Weymouth	3,662	Walpole	1,837	Wilmington	1,467	Wellesley	252	Westwood	2,462	Chelsea	65
Burlington	3,589	Wilmington	1,699	Burlington	1,459	Westwood	239	Walpole	2,143	Natick	65
Randolph	3,330	Burlington	1,670	Randolph	1,283	Bedford	236	Westwood	1,948	Arlington	64
Ashland	3,154	Randolph	1,573	Westwood	1,100	Wilmington	232	Holbrook	1,935	Westwood	60
Natick	2,966	Westwood	1,340	Chelsea	1,100	Burlington	211	Burlington	1,913	Hingham	58
Wellesley	2,793	Natick	1,220	Wellesley	968	Walpole	208	Bedford	1,912	Milton	57
Framingham	2,767	Holbrook	1,154	Natick	964	Ashland	205	Ashland	1,865	Holbrook	56
Holbrook	2,756	Ashland	1,103	Holbrook	962	Framingham	187	Framingham	1,709	Winthrop	55
Westwood	2,616	Natick	1,080	Ashland	897	Natick	115	Natick	1,028	Winchester	52
		Framingham	981	Framingham	794						
Total		Total		Total		Total		Total		Total	
Average	5,600	Average	2,750	Average	2,156	Average	594	Average	6,323	Average	72