

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

August 27, 2008

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 2008**

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 2008.

- Attachment 1 – Overview of MWRA Regional I/I Reduction Plan
- Attachment 2 – MWRA Regional I/I Reduction Plan - FY08 Progress Update and Detailed Implementation Schedule for FY09 Activities
- Attachment 3 – MWRA Actions Taken to Reduce I/I During FY08
- 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 – CY07 Community Wastewater Flow Data

In compliance with Special Conditions No. 16 of MWRA's Sewer System Connection/Extension Permit No. W068666 for construction of the Upper Neponset Valley Relief Sewer, the Authority has submitted (under separate cover letter dated August 22, 2008) the information required prior to September 1, 2008.

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 FY08
Reporting Period – July 2007 Through June 2008

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 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 FY08
Reporting Period – July 2007 Through June 2008

**MWRA REGIONAL I/I REDUCTION PLAN -
FY08 PROGRESS UPDATE AND DETAILED
IMPLEMENTATION SCHEDULE FOR FY09 ACTIVITIES**

This document provides a progress update for FY08 accomplishments and a description of the activities to be accomplished during FY09 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 FY08, 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 FY08 are detailed in Attachment 3. Additional information on MWRA's FY08 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.

During FY09, 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 FY08, 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 FY09.

Two areas in the regional collection system have been previously identified as “at risk” for backups and SSOs due to wet weather sewer capacity issues for rainfall events at or near the MA DEP recommended design storm. These two areas are delineated in the bullets below:

- **Braintree/Weymouth, area along MWRA's Braintree/Weymouth Extension Sewer from the Smelt Brook Siphon downstream to the Mill Cove Siphon; and,**
- **Newton/West Roxbury, area along MWRA's Upper Neponset Valley Sewer from the Brookline/Newton/West Roxbury borders downstream to the VFW Parkway.**

Each of these problem areas has been addressed by an MWRA relief sewer project that was completed in FY08 and has increased regional sewer capacity to a level above the design standard. The projects include the MWRA's \$231 million Braintree/Weymouth Relief Facilities and the MWRA's \$56 million Upper Neponset Valley Relief Sewer Project. See additional project details in Attachment 3.

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 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 regional SSO problems. During FY08, cooperative efforts have been discussed with representatives in the Melrose/Stoneham/Wakefield region.

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 FY08, MWRA completed construction on two regional relief sewer projects of note: the \$231 million Braintree/Weymouth Relief Sewer Project and the \$56 million Upper Neponset Valley Relief Sewer Project. Additional detail on these and other regional capital projects are provided in Attachment 3.

During FY08, MWRA continued to coordinate with member communities to reduce I/I from local collection systems to help to 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 FY08, 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 FY09.

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.**
- **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. MWRA is currently designing a small sewer extension project in Melrose that will minimize the need for the interim operation to mitigate the SSO potential in this location.**
- **MWRA has completed construction modifications to the Wedgemere Siphon structure in Winchester.**
- **MWRA is currently rehabilitating 11,000 feet of deteriorated Mystic Valley Sewer (Section 160) that is located downstream of the siphon in Winchester/Medford.**

- **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 to the local low lying area.**
- **During FY08 MWRA purchased the property at 425 Pearl Street in Braintree that is located adjacent to the MWRA Pearl Street siphon. MWRA demolished the existing structure (private home) and graded the area thereby minimizing future potential for impacts if an SSO were to occur at the siphon structure during an extreme rainfall event.**
- **MWRA's Capital Improvement Plan includes a long-term Randolph Extension Sewer Relief Study to identify and evaluate potential system improvements.**

During FY09, work on this Strategy will continue.

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.

Plumbing inspectors from some communities have become directly involved with local private inflow source removal programs. MWRA's Toxic Reduction and Control (TRAC) staff coordinate with local plumbing inspectors regarding industrial permits.

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 FY08, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY07 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 FY09, 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.

The third construction phase of MWRA's Wastewater Central Monitoring (SCADA) Project was eliminated. However, high priority work originally planned in the third construction phase is being implemented by MWRA in-house maintenance and SCADA staff using previously developed design and programming guidelines. Some of the third SCADA construction phase work was determined to not be cost-effective, including the installation of permanent power at up to 36 existing wastewater metering sites to enable continuous operational monitoring in the gravity collection system. Including recent improvements made to the Telog system for monitoring remote meters, the existing system of coordination with local communities, on a case-by-case basis, using metered data collected at key collection system locations will continue.

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 FY08, 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. Additional outreach to community representatives and other stakeholders was made in informational meetings where the MWRA's I/I reduction Program was updated. Meetings were held with the MWRA Advisory Board on February 21, 2008 and the Wastewater Advisory Committee on June 6, 2008. This work will continue in FY09.

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 fulfills 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 the program through 2013. 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 the program through 2015. The additional \$40 million (phase 6) in financial assistance funds became available to the communities in FY07.

During FY08, MWRA continue to provide grants and loans to member sewer communities to fund local I/I reduction and sewer system rehabilitation projects. A total of \$22 million was distributed during FY08. Since inception of the program in May 1993, \$170 million has been distributed to fund 343 local projects. The program Guidelines, Financial Assistance Application, and summary of available funds by community are posted on MWRA's web site (mwra.com). A detailed status update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4.

During FY09, 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 FY15.

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 FY08, MWRA continued to provide emergency assistance to member communities, as requested. These efforts included cleaning and internal TV inspection of over 2 miles of local sewers, as well as, other emergency assistance. During FY09, 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 FY08, MWRA distributed technical information to member community Public Works Directors and local wastewater system operators, including:

- 1. August 8, 2007, MWRA distributed an informational package that included CY06 wastewater flow component estimates, as well as, a variety of articles/reports on public and private inflow reduction.**
- 2. January 2008 I/I Local Financial Assistance Program Funding Update.**

During FY09, 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 FY08, DEP and MWRA had no discussions on organizing additional joint workshops. During FY09, 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 FY08, MWRA continued to revise and upgraded its web site 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 FY08, 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 FY08, 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.

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's 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. 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. Chapter 4 of the manual “Optimizing Legal Authority” includes sections on Sewer Use Ordinances.

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. 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 FY08
Reporting Period – July 2007 Through June 2008

MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY08

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 34 miles of Authority-owned interceptors and more than 2.4 miles of community-owned sewers, internally sonar inspected 34 inverted siphon barrels, and physically inspected over 680 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.) during FY08. 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 FY08, maintenance work included hydraulic/mechanical cleaning of 20 miles of sewer pipelines and 82 siphon barrels, as well as, replacement of 64 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. In addition, over 2 miles of community-owned sewers were cleaned under the community assistance program.

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 FY08, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. A \$2 million evaluation/rehabilitation project for the Mystic Valley Sewer (Section 160 - 11,000 feet of deteriorated sewer) in Winchester and Medford is scheduled for completion in FY09. Evaluation and design of interceptor rehabilitation (interceptor renewal projects 1 and 7) will begin in FY09 and are budgeted at a total cost of \$3 million. Each of these projects will provide structural repairs for the pipelines and reduce I/I entering the MWRA interceptor system.
2. MWRA's \$231 million Braintree/Weymouth Relief Facilities Project was completed in spring 2008 with the construction of the Braintree-Weymouth Replacement Pump Station (the final phase of the project). The new facilities (Intermediate Pump Station, B/W Replacement Pump Station, and associated new interceptors and force mains) will provide additional sewer capacity in the Braintree/Weymouth system to reduce sanitary sewer overflows (SSOs).
3. MWRA's \$56 million Upper Neponset Valley Sewer Project was completed in spring 2008. This project provides hydraulic relief to about four miles of Sewer Sections 526, 527, 528, 529, and 530 located in Newton and West Roxbury. These sewers, constructed in 1896 to 1902, receive flow from West Roxbury, Newton, Brookline and Dedham. As an outcome of this project, I/I and periodic SSOs are reduced.

4. MWRA's \$9.2 million Cummingsville Replacement Sewer Project was substantially complete in May 2006. This project provides hydraulic relief through replacement of about one mile of Sewer Section 47 (constructed in the 1890's) and rehabilitation of about one mile of Sewer Section 86 (constructed in 1952) in Winchester. As an outcome of this project, I/I and periodic SSOs will be reduced. The last phase of the project, design and construction of modifications to sewer section 113 siphon chamber to provide a wider river channel, will be completed during FY09.
5. MWRA's \$80 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. Construction is scheduled for FY06-11.
6. 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 planned for 2008 through 2017. An additional \$80 million has been budgeted for design and repair/rehabilitation construction of 12,000 feet of 84-inch tunnel (Sewer Section 137). The existing tunnel has deteriorated due to high levels of hydrogen sulfide and sewer turbulence.
7. Design and construction for the rehabilitation of 2000 feet of sewer sections 624 in North Weymouth will commence in FY10.
8. MWRA's \$800 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 FY08
Reporting Period – July 2007 Through June 2008

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

Financial Assistance Update

All 43 member sewer communities are participating in MWRA's \$220.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY08, \$170 million has been distributed to fund local I/I reduction and sewer system rehabilitation projects. The program budget of \$220.75 million includes the most recent addition of \$40 million in new Phase 6 funds approved by the MWRA Board of Directors for distribution beginning in FY07. The table on page 2 provides a summary of funding allocations, distributions, and funds remaining for each MWRA sewer community. Distribution of the remaining \$51 million in funds has been approved through FY15.

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 Advisory Board, the Board of Directors approved a total program budget of \$220.75 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, and 6 funds (total of \$157 million) to a 45 percent grant and a 55 percent interest-free loan. The 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 THROUGH MAY 2008**

Community	Total Allocations (Phases 1/2/3/4/5/6)	Total Distributions (Phases 1/2/3/4/5/6)	Percent Distributed	Funds Remaining
Arlington	\$4,189,000	\$3,643,200	87%	\$545,800
Ashland	\$930,500	\$930,500	100%	\$0
Bedford	\$1,691,600	\$1,110,300	66%	\$581,300
Belmont	\$2,556,100	\$1,292,400	51%	\$1,263,700
Boston	\$62,946,200	\$47,276,701	75%	\$15,669,499
Braintree	\$3,861,000	\$2,483,127	64%	\$1,377,873
Brookline	\$6,268,200	\$4,730,200	75%	\$1,538,000
Burlington	\$2,389,800	\$2,389,800	100%	\$0
Cambridge	\$11,347,100	\$9,777,055	86%	\$1,570,045
Canton	\$2,013,900	\$1,645,900	82%	\$368,000
Chelsea	\$3,005,100	\$2,878,100	96%	\$127,000
Dedham	\$2,945,000	\$2,945,000	100%	\$0
Everett	\$3,841,500	\$3,141,500	82%	\$700,000
Framingham	\$6,019,000	\$4,230,395	70%	\$1,788,605
Hingham	\$741,500	\$589,500	80%	\$152,000
Holbrook	\$780,600	\$496,600	64%	\$284,000
Lexington	\$3,507,300	\$1,533,600	44%	\$1,973,700
Malden	\$5,641,900	\$4,593,900	81%	\$1,048,000
Medford	\$5,834,600	\$4,794,600	82%	\$1,040,000
Melrose	\$2,845,300	\$1,769,300	62%	\$1,076,000
Milton	\$2,779,500	\$2,279,500	82%	\$500,000
Natick	\$2,754,600	\$1,772,000	64%	\$982,600
Needham	\$3,218,600	\$1,478,300	46%	\$1,740,300
Newton	\$10,089,400	\$7,626,500	76%	\$2,462,900
Norwood	\$3,355,400	\$2,415,963	72%	\$939,437
Quincy	\$9,373,000	\$9,373,000	100%	\$0
Randolph	\$2,866,800	\$1,814,900	63%	\$1,051,900
Reading	\$2,116,100	\$1,816,700	86%	\$299,400
Revere	\$4,582,900	\$4,582,900	100%	\$0
Somerville	\$7,459,800	\$5,723,790	77%	\$1,736,010
Stoneham	\$2,451,900	\$2,451,900	100%	\$0
Stoughton	\$2,276,900	\$1,636,900	72%	\$640,000
Wakefield	\$2,880,900	\$2,545,000	88%	\$335,900
Walpole	\$1,759,000	\$1,759,000	100%	\$0
Waltham	\$6,580,400	\$4,212,400	64%	\$2,368,000
Watertown	\$3,113,800	\$1,487,400	48%	\$1,626,400
Wellesley	\$2,779,700	\$1,484,247	53%	\$1,295,453
Westwood	\$1,209,300	\$1,039,300	86%	\$170,000
Weymouth	\$5,561,900	\$4,529,900	81%	\$1,032,000
Wilmington	\$1,180,000	\$968,000	82%	\$212,000
Winchester	\$2,072,000	\$952,300	46%	\$1,119,700
Winthrop	\$1,614,400	\$999,800	62%	\$614,600
Woburn	\$5,318,500	\$4,633,000	87%	\$685,500
Totals	\$220,750,000	\$169,834,378	77%	\$50,915,622

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</u> <u>(\$ millions)</u>	<u>ONGOING PROJECTS</u> <u>(\$ millions)</u>	<u>TOTAL</u> <u>(\$ millions)</u>
Planning/Study:	\$ 21.0	\$ 8.8	\$ 29.8 (17%)
Design:	5.8	2.1	7.9 (5%)
Construction:	83.6	39.7	123.3 (73%)
Eng. Services During Const.:	5.9	2.9	8.8 (5%)
TOTAL	\$116.3 (68%)	\$ 53.5 (32%)	\$ 169.8 (100%)

Program Results

The I/I Local Financial Assistance Program began in May 1993. Through FY08, a total of 343 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 FY08) for planning/inspection include the following:

- 960 miles of sewer TV inspected
- 750 miles of sewer flow isolated
- 800 miles of sewer smoke tested
- 28,000 sewer manholes inspected
- 56,000 buildings inspected

Results for all projects (FY94 through FY08) for projects targeting infiltration reduction include the following:

- 35 miles sewer replaced
- 47 miles sewer CIP lined
- 100 miles sewer tested/chemically sealed
- 1,750 sewer spot repairs
- 5,300 service connection repairs
- 2.3 miles underdrains sealed

Results for all projects (FY94 through FY08) for projects targeting inflow reduction include the following:

- 700 catch basins disconnected
- 35 miles of new or replaced storm drains
- 8,000 manholes rehabilitated/sealed
- 1,150 manhole covers replaced or inflow seals installed
- 315 sump pumps redirected
- 6,000 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 66 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.

Projects Funded During FY08

Local projects are funded quarterly by MWRA. Funding summaries for the four quarterly funding distributions during FY08: August 2007 (six communities funded: Cambridge, Newton, Reading, Stoneham, Stoughton, and Wakefield), November 2007 (four communities funded: Arlington, Ashland, Boston, and Newton), February 2008 (five communities funded: Arlington, Bedford, Burlington, Dedham, and Westwood), and May 2008 (eight communities funded: Arlington, Boston, Burlington, Chelsea, Walpole, Watertown Wellesley, and Winthrop) are available from MWRA in hard copy.

**MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
FUNDING SUMMARY THROUGH MAY 2008**

Community	Total Allocations (Phases 1/2/3/4/5/6)	Total Distributions (Phases 1/2/3/4/5/6)	Percent Distributed	Funds Remaining
Arlington	\$4,189,000	\$3,643,200	87%	\$545,800
Ashland	\$930,500	\$930,500	100%	\$0
Bedford	\$1,691,600	\$1,110,300	66%	\$581,300
Belmont	\$2,556,100	\$1,292,400	51%	\$1,263,700
Boston	\$62,946,200	\$47,276,701	75%	\$15,669,499
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Brookline	\$6,268,200	\$4,730,200	75%	\$1,538,000
Burlington	\$2,389,800	\$2,389,800	100%	\$0
Cambridge	\$11,347,100	\$9,777,055	86%	\$1,570,045
Canton	\$2,013,900	\$1,645,900	82%	\$368,000
Chelsea	\$3,005,100	\$2,878,100	96%	\$127,000
Dedham	\$2,945,000	\$2,945,000	100%	\$0
Everett	\$3,841,500	\$3,141,500	82%	\$700,000
Framingham	\$6,019,000	\$4,230,395	70%	\$1,788,605
Hingham	\$741,500	\$589,500	80%	\$152,000
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Lexington	\$3,507,300	\$1,533,600	44%	\$1,973,700
Malden	\$5,641,900	\$4,593,900	81%	\$1,048,000
Medford	\$5,834,600	\$4,794,600	82%	\$1,040,000
Melrose	\$2,845,300	\$1,769,300	62%	\$1,076,000
Milton	\$2,779,500	\$2,279,500	82%	\$500,000
Natick	\$2,754,600	\$1,772,000	64%	\$982,600
Needham	\$3,218,600	\$1,478,300	46%	\$1,740,300
Newton	\$10,089,400	\$7,626,500	76%	\$2,462,900
Norwood	\$3,355,400	\$2,415,963	72%	\$939,437
Quincy	\$9,373,000	\$9,373,000	100%	\$0
Randolph	\$2,866,800	\$1,814,900	63%	\$1,051,900
Reading	\$2,116,100	\$1,816,700	86%	\$299,400
Revere	\$4,582,900	\$4,582,900	100%	\$0
Somerville	\$7,459,800	\$5,723,790	77%	\$1,736,010
Stoneham	\$2,451,900	\$2,451,900	100%	\$0
Stoughton	\$2,276,900	\$1,636,900	72%	\$640,000
Wakefield	\$2,880,900	\$2,545,000	88%	\$335,900
Walpole	\$1,759,000	\$1,759,000	100%	\$0
Waltham	\$6,580,400	\$4,212,400	64%	\$2,368,000
Watertown	\$3,113,800	\$1,487,400	48%	\$1,626,400
Wellesley	\$2,779,700	\$1,484,247	53%	\$1,295,453
Westwood	\$1,209,300	\$1,039,300	86%	\$170,000
Weymouth	\$5,561,900	\$4,529,900	81%	\$1,032,000
Wilmington	\$1,180,000	\$968,000	82%	\$212,000
Winchester	\$2,072,000	\$952,300	46%	\$1,119,700
Winthrop	\$1,614,400	\$999,800	62%	\$614,600
Woburn	\$5,318,500	\$4,633,000	87%	\$685,500
Totals	\$220,750,000	\$169,834,378	77%	\$50,915,622

ATTACHMENT 5
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY08
Reporting Period: July 2007 Through June 2008

**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 \$220.75 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 FY08, MWRA has distributed \$170 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: 41,812
- Two Year ('06 - '07) Annual Average I/I: 2.60 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Letter Report "Investigation & Recommendation for Rehabilitation of Sewer Laterals on Hemlock St and Landowne Road" (July 2008); Sewer System Evaluation Study (Year 2) Final Report (April 2008). A copy of the Report was sent to DEP in May 2008. Sewer System Evaluation Study (Year 3) Report and (Year 4) Report are ongoing.

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: The Year #1 Sewer Rehabilitation Design was completed September 2007; construction has commenced with completion expected in fall 2008. The Year #2 Sewer Rehabilitation Design is ongoing. The Design of the Sewer & Drain Improvements in the Mystic Bank Area was completed July 2008. Bids for this project were accepted July 31, 2008

Reporting Period Activity:

- The Year #4 Sewer System Investigation & Repair Program fieldwork was completed in spring 2008.
- In November 2007, funds were distributed for the Year #4 SSIRP Study and Smoke Testing of Sewers in the Years #1, 2 & 3 SSIRP Study Areas (MWRA Project No. WRA-P6-01-3-631).
- In February 2008, funds were distributed for the sanitary sewer investigation on Gould Road and Forest Street (MWRA Project No. WRA-P6-01-1-640).
- In May 2008, funds were distributed for the Investigation, Design & Construction of Sewer and Drain Improvements in the Mystic Bank Area (MWRA Project No. WRA-P6-01-3-645).

MWRA I/I Local Financial Assistance Program: The community has financed fourteen (14) I/I reduction projects through the Authority's funding assistance program. Of the \$4,189,000 allotted through the Program's Phases 1-6, the community has \$545,800 remaining in funding assistance.

2. ASHLAND: South System

Background Information:

- Miles of Sewer: 43
- Sewered Population: 11,606
- Two Year ('06 - '07) Annual Average I/I: 0.37 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

Private Source Inflow Removal Program: The Town performed 284 sump pump investigations of residential/commercial properties in Sub-Basin III which identified 2 sump pumps connected to the sewer system, 52 sump pumps not connected to the sewer system, and 22 properties with yard drains or roof leaders piped into the ground. Once Sub-Basin III / IV investigative work is complete, the Town plans to conduct a community-wide sump pump investigation of all properties connected to the sanitary sewer.

I/I Rehabilitation Projects in Design or Construction: Completed internal TV inspection and manhole rehabilitation in Sub-Basin IV. Completed I/I Investigation/Repair Summary Report for Sub-Basins I – IV.

Reporting Period Activity: Jefferson at Ashland Station Development to add 6670 LF of 6inch force main and 8-inch gravity sewer. Signature Estates II Development to add 800 LF of 8-inch PVC sewer and six sewer connections. Winter Hollow Estates to add 700 LF of 2-inch force main and seven sewer connections.

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 \$930,500 allotted through the Program's Phases 1-6.

3. BEDFORD: North System

Background Information:

- Miles of Sewer: 68
- Sewered Population: 11,216
- Two Year ('06 - '07) Annual Average I/I: 1.84 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: SSES, July 2006. 2008 SSES (Ongoing)

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

I/I Rehabilitation Projects in Design or Construction: The Heritage Estates Rehabilitations Project (Phase I of 2005 SSES Rehabilitations) began June 2007. The work is being conducted in areas where approximately 131,252 gpd of peak infiltration and 2408 gpd of peak inflow was identified. Post construction flow isolation was completed June 2008. Actual I/I removal will be provided following data analysis. The Phase II Sewer Rehabilitation Design is ongoing.

Reporting Period Activity:

In February 2008, funds were distributed for the CY08 Sewer System Evaluation Survey Study which is an expansion of the original SSES that was included under MWRA Project No. WRA-P6-03-2-617 (MWRA Project No. WRA-P6-03-1-639).

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 \$1,691,600 allotted through the Program's Phases 1-6, the community has \$581,300 remaining in funding assistance.

4. BELMONT: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 22,927
- Two Year ('06 - '07) Annual Average I/I: 1.89 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Report on the Comprehensive Flow Monitoring Project was completed September 2007. MWRA comments were issued November 2007. Sewer System Evaluation Survey is ongoing with nighttime flow assessment, smoke testing and in-house inspection being performed.

Private Source Inflow Removal Program: The first contract for connecting private inflow sources to the Town's storm drain system was completed March 2008.

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 project work. The Belmont Uplands project is currently under negotiations.

I/I Rehabilitation Projects in Design or Construction: The contract for connecting private inflow sources to the Town's storm drain system was awarded February 2004 and has been completed. This project removed approximately 1,165,000 gpd of peak daily inflow from the existing sewer.

In Spring 2007, a sewer rehabilitation project commenced. This project includes point repairs and relining of 31,000 LF of sewer and drain. It is estimated that 72,131 gpd of infiltration will be removed by this project. Contract value is approximately \$1.4M. Work has been completed.

Reporting Period Activity: See previous comments.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$2,556,100 allotted through the Program's Phases 1-6, the community has \$1,263,700 remaining in funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 858
- Sewered Population: 581,034
- Two Year ('06 - '07) Annual Average I/I: 41.75 mgd
- Massachusetts DEP Administrative Order: None (Cooperative agreement exists)

Latest I/I or SSES Reports: 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 22,500 downspouts have been disconnected. During CY05-CY07, 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, sixty-five (65) projects have received funding through the MWRA I/I Local Financial Assistance Program. During FY07-FY08, BWSC completed the following rehabilitation projects: 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, Chester Park Area Sewer Separation, West Side Interceptor Lining and Back Street 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.

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

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 over this period.

MWRA I/I Local Financial Assistance Program: The community has financed sixty-five (65) I/I identification/reduction projects through the Authority's funding assistance program. Of the \$62,946,200 allotted through the Program's Phases 1-6, the community has \$15,669,499 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 133
- Sewered Population: 33,694
- Two Year ('06 - '07) Annual Average I/I: 3.73 mgd
- Massachusetts DEP Administrative Order: No. 546 (Issued April 1, 1985),
ACO-NE-01-1001 (March 27, 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: Contract 06-S1: Howie Road Infiltration Rehabilitation (Sub-Areas L2 through L7) construction has been completed. The project removed an estimated peak infiltration removal of 0.20 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 \$3,861,000 allotted through the Program's Phases 1-6, the community has \$1,377,873 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 111
- Sewered Population: 55,590
- Two Year ('06 - '07) Annual Average I/I: 5.42 mgd
- Massachusetts DEP Administrative Order: None

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.

I/I Rehabilitation Projects in Design or Construction: Sewer Rehabilitation Project No. 6 is under design with investigative work continuing. Construction is scheduled to begin April 2009.

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 \$6,268,200 allotted through the Program's Phases 1-6, the community has \$1,538,000 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 115
- Sewered Population: 23,276
- Two Year ('06 - '07) Annual Average I/I: 1.83 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1004 (7/25/01)

Latest I/I or SSES Report: Easement Pipeline Investigation Report (May 2008)
Sewer System Evaluation Survey (January 2003)

Private Source Inflow Removal Program: Sump pump removal program is continuing as sump pumps are found.

I/I Rehabilitation Projects in Design or Construction: Bids were received November 2007 for the Phase 3 Sewer System Rehabilitation Project. Contract has been awarded to National Water Main Cleaning Company.

Reporting Period Activity:

- See above work description.
- In February 2008, funds were distributed for: (1) construction of Phase 3 Sewer System Rehabilitation Project and (2) Phase 4 Sewer System Rehabilitation Investigations (MWRA Project No. WRA-P6-08-3-638).
- In May 2008, funds were distributed to cover the cost of expanding the Phase 4 Sewer System Rehabilitation Investigations Project (MWRA Project No. WRA-P6-08-1-649).

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 \$2,389,800 allotted through the Program's Phases 1-6, the community has no remaining in funding assistance.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 148
- Sewered Population: 100,035
- Two Year ('06 - '07) Annual Average I/I: 9.56 mgd
- Massachusetts DEP Administrative Order: NE-96-1004

Latest I/I or SSES Report: Phase I/I & SSES Study (April 2004)

Private Source Inflow Removal Program: Building inspection work included Kirkland Road, Shea Road, Grey Gardens West and portions of Huron Avenue. The City adopted a new Sewer and Drain Ordinance in May 2008.

I/I Rehabilitation Projects in Design or Construction: The City continues its implementation of 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. See also Reporting Period Activity below.

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

Endicott Street Stormwater Outfall and Albany Street Sewer and Drain System Rehabilitation. This project was completed December 2007. The project included the removal of four common manholes and the rehabilitation of sewers and drains on Albany Street. Reduction of I/I from the Endicott Project will not be realized until the completion of Common Manhole Removal Contract No. 4 and the reconstruction of the Talbot Street/Charles River outfall. These future projects are part of the City's long range plan for the Cambridgeport Area.

Harvard Square Phase II. This construction project was completed Fall 2007. This project included the separation of approximately 25 acres within Harvard Square and the diversion of peak storm flows from the combined sewer system to the Charles River through a new storm drain that is being installed within an abandoned section of MBTA Red Line Tunnel.

Broadway Stormwater Management System (CAM 011) Phase VI and Contract 3D. This project involves the stormwater management of an area in mid-Cambridge. Once the project is complete, it will allow the connection of the Agassiz system into the separated mid-Cambridge system. The project is currently underway as part of the on-site construction of the new Cambridge Library and is expected to be completed by the end of CY08.

Common Manhole Removal Contract No. 6. This project will separate 13 common manholes in the Normandy Terrace area of the City. The project is scheduled to be advertised for construction in Fall 2008 and to be completed by mid 2009.

Common Manhole Removal Contract No 4A. This project originally included the separation of 8 common manholes along the south side of Massachusetts Avenue in Central Square. Scope of work was increased by including the separation of 14 common manholes along the north side of Massachusetts Avenue that were originally part of the Bishop Allen Stormwater Management Project. This project has been bid and awarded. Construction is scheduled to begin August 2008 with completion scheduled one year later.

Common Manhole Removal Contract No. 4B. This project includes the separation of the remaining common manholes in the Cambridgeport Area. Design work began October 2007. It is anticipated that this design will take approximately one year to complete with construction beginning in the Spring/Summer 2009. Construction anticipated to be completed within a 24 month period.

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 Avenue storm drain. The project is designed and on hold pending resolution of issues related to easements and permits. The separation of 14 common manholes, originally included as part of this project, was added to the Common Manhole Removal Contract 4A.

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 expected to be completed by April 2009.

In August 2007, funds were distributed for: (1) Design / Construction of Common Manhole Removal Contract #4A and (2) Construction of Common Manhole Removal Contract #6 (MWRA Project No. WRA-P6-09-3-624).

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 \$11,347,100 allotted through the Program's Phases 1-6, the community has \$1,570,045 remaining in funding assistance.

10. CANTON: South System

Background Information:

- Miles of Sewer: 62
- Sewered Population: 15,634
- Two Year ('06 - '07) Annual Average I/I: 1.72 mgd
- Massachusetts DEP Administrative Order: No. 537 (Issued April 3, 1984)

Latest I/I or SSES Report: Comprehensive Water Resources Management Plan (On-going)

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: Phase III-A I/I Rehabilitation Project (Contract 2006-1S) was bid December 2006. Project completed September 2007. Project work included cleaning/testing/sealing approximately 14,600 LF of pipe, replacing approximately 300 LF of existing main, rehabilitating 65 manholes and installing 40 watertight covers within Subsystem 14. Phase IV I/I Rehabilitation Project (Contract 2007-1S) completed Spring 2008. Project work included cleaning/testing/sealing approximately 30,000 LF of pipe and 30 manholes within Subsystems 1-5 / 11. Phase III-A / B I/I Identification/Design ongoing. Green Lodge Interceptor Replacement design complete. Contract Documents have been submitted for State SRF Funding. Project to be bid late Fall 2008.

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 \$2,013,900 allotted through the Program's Phases 1-6, the community has \$368,000 remaining in funding assistance.

11. CHELSEA: North System

Background Information:

- Miles of Sewer: 41
- Sewered Population: 32,518
- Two Year ('06 - '07) Annual Average I/I: 1.81 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: Private inflow source identification is complete for CHE-007 tributary areas. The City is in the process of implementing a developer-funded sewer bank for I/I removal improvements. The program is expected to be a 1 to 1 ratio.

I/I Rehabilitation Projects in Design or Construction:

- The construction of the Library Street Area Sewer & Drain Improvements has been completed.
- The construction of the Highland Street Area Infrastructure Improvements has been completed.
- Construction of the Spruce Street Roadway & Utility Project was delayed by third parties; construction is anticipated to be completed fall 2008.
- Design of the Crescent Ave Infrastructure Reconstruction Project is 90% complete; public bids for construction are expected to be received August 2008; construction is anticipated to be complete spring 2010. The project consists of installing a new sewer main on Crescent Avenue from Cary Avenue to Eleanor Street, rehabilitation of the existing combined sewer main into a stormwater conduit, and rehabilitation of the combined sewer main from Crescent Avenue in the easement at the MWRA NMF to Highland Street. The project also includes water main replacement and street/sidewalk improvements. The project is part of a multi-phased strategy to separate combined flows tributary to Combined Sewer Overflow CHE-008.
- Design of the Lock Street Sewer Replacement project is complete; permitting is ongoing; construction is anticipated to be complete December 2008. This project consists of the replacement of approximately 450 LF of 12 to 24-inch VC sewer with new 24-inch PVC sewer and associated manholes. A cross-connection between the sewer and drainage systems will also be eliminated.
- Design of the Jefferson Avenue Utility Improvement project was publicly bid May 2008; construction is planned for the 2009 construction season. This project consists of upgrades to aging water, sewer, and drainage systems, including sewer separation and installation of an underdrain to alleviate historical problems with groundwater breakout in the project area.
- Design of the Washington Avenue Utility / Infrastructure Improvements project was bid May 2008; design and construction of this project will be phased over several years based on available funding. The project consists of complete infrastructure improvements to include water, sewer, drainage, streets, sidewalks, intersection redesign, and surface aesthetics (i.e., lighting, plantings, etc.), including comprehensive sewer separation.
- Design of the Crescent Urban Renewal Area Utility Improvements is anticipated to begin fall 2008; construction is anticipated to take place during the 2009 construction season. The project includes upgrades to municipal water, sewer and drainage utilities, including sewer separation, in support of redevelopment of large private parcel adjacent to Route 1.

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 \$3,005,100 allotted through the Program's Phases 1-6, the community has \$127,000 remaining in funding assistance.

12. DEDHAM: South System

Background Information:

- Miles of Sewer: 89
- Sewered Population: 21,849
- Two Year ('06 - '07) Annual Average I/I: 2.85 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: Sewer By-Law adopted to change the sewer bank fee structure to a payment of \$4.50 per gallon of new wastewater added.

I/I Rehabilitation Projects in Design or Construction: Town completed the 2007 I/I Inspection Project. Project work included 151,315 LF of light cleaning/television inspection of 6 to 24-inch sanitary sewer and top-side inspection of 1792 sanitary sewer manholes. The Town also completed inspection of the Wigwam Brook Cross-Country Sewer Interceptor. Inspection resulted in the CIPP lining of 1,997 LF of 12 and 15-inch VC sanitary sewer.

The Town also has advertised the 2008 I/I Infiltration Rehabilitation Project(Contract No. 08-1 / MWRA Project No. WRA-P6-12-3-636). The project is designed to remove an estimated 1.21 mgd of peak I/I. Project work includes testing and sealing 43,190 LF of sewer main; testing and sealing 557 service connections; CIPP lining of 14,250 LF of sewer main; installation of 896 LF of short liners; and rehabilitation of 2382 VF of sewer manholes. Project work is scheduled for completion Spring 2009.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed twelve (12) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,945,000 allotted through the Program's Phases 1-6.

13. EVERETT: North System

Background Information:

- Miles of Sewer: 57
- Sewered Population: 36,837
- Two Year ('06 - '07) Annual Average I/I: 2.07 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Investigation (February 2000)

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

I/I Rehabilitation Projects in Design or Construction: The City is continuing with sewer rehabilitations that were completed in 2001. MWRA funds were distributed in May 2006 for project design/construction. It is anticipated that an estimated 300,000 gpd of annual infiltration will be removed by this project. Project design was completed August 2006 with bidding taken place in September 2006. Construction commenced November 2006 was completed Fall 2007.

Replacement of a 10-inch corrugated metal sewer pipe on Behan Street was completed April 2008.

The redirection of a catch basin at Broadway and Timothy Street (that was discharging to the sewer) was completed February 2008.

Reporting Period Activity: See above work description.

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 \$3,841,500 allotted through the Program's Phases 1-6, the community has \$700,000 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:

- Miles of Sewer: 275
- Sewered Population: 59,287
- Two Year ('06 - '07) Annual Average I/I: 2.38 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 (Ongoing)

Private Source Inflow Removal Program: As part of the SSES Phase 1 (covering Sewer Sub-areas CC / Q / EE), approximately 200 homes and businesses were inspected during summer 2007. Sixteen properties in Subarea CC and twenty properties in Subarea Q were identified with potential private inflow sources. These potential sources 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; required by DEP's ACO).

As part of the SSES Phase 2 project, approximately 400 homes and businesses are being targeted for house-to-house inspections in Subareas W / G during Summer/Fall 2008.

The Town is also undertaking a Storm Water Management Study that will provide Town-wide mapping of the sewer and storm water drainage systems. Private inflow sources will be identified and removed as part of rehabilitation contracts within portions of Gregory Road, Water Street, Simpson Drive, Central Street and Concord Street.

As part of the Gregory Road, Water Street and Fenwick Street projects (see below), an I/I study was undertaken to determine if there were tributary sewers with significant I/I issues and identification of private inflow sources. This included basement plumbing inspection of almost 300 homes and businesses. The inspections found only a few structures with sump pumps directly connected to the sewer. These illicit connections will be eliminated per the Town's Sump Pump and Illicit Connection Elimination Plan (June 2007; required by DEP's ACO).

I/I Rehabilitation Projects in Design or Construction: Rehabilitation of approximately 2300 LF of 10 to 12-inch VC and asbestos cement gravity sewer on Central Street. Final design is ongoing and the project is scheduled to be bid in September 2008. This project was developed in response to a DEP Administrative Consent Order issued in March 2007. Rehabilitation of sewer main / drain manhole on Mansfield Street. Rehabilitation was completed June 2007.

Reporting Period Activity: The Hemenway Pumping Station and Force Main Replacement Project consists of replacing the existing pump station and replacing the force main with approximately 4200 LF of 12-inch diameter ductile iron pipe. The project begins at the Hemenway Pump Station and ends at an existing manhole at Water Street / Potter Road. Much of the mechanical equipment in the station is in need of replacement, having exceeded its design life and design capacity and the existing force main is undersized with limited access for maintenance and repairs. Construction was completed Fall 2007.

The Water Street Sewer Replacement / Gregory Road Relief Sewer Project consists of replacing approximately 10,000 LF of 12 to 15-inch sewer in Water Street with new 24-inch sewer and installing approximately 2000 LF of 15-inch sewer in Hemenway Road to provide relief to an overburdened interceptor sewer that serves the Gregory Road area. Project design completed March 2007 and advertised for bids April 2007. Construction began June 2007 and is expected to substantially complete November 2008.

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 will replace a pumping station that is beyond its useful life and will resolve pumping station capacity issues that occur during high wet weather flows. Project design completed March 2007 and advertised for bids April 2007. Construction began June 2007 and is currently ongoing.

The Michaud / Cypress / Ransom Road Pumping Station Replacement Project consists of replacing three pump stations that have exceeded their design life. The Ransom Road Pump Station will be replaced with a higher capacity station to address hydraulic issues at the existing station. The force mains of the three pump stations will also be replaced, totaling approximately 1000 LF. A new gravity sewer will be extended from Wood Avenue to the Cypress Pump Station to address operation and maintenance issues with the existing 6-inch sewer. In total, approximately 1000 LF of force main will be installed and 2800 LF of 8-inch gravity sewer will be installed.

The above projects do not add infrastructure to the sewer system. They are replacement projects, which will renew piping systems and eliminate I/I and other defects associated with these pipe segments. Estimates based upon historical infiltration rates for the areas of work indicate that over 30,000 gpd will be removed through these projects.

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 \$6,019,000 allotted through the Program's Phases 1-6, the community has \$1,788,605 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 6,207
- Two Year ('06 - '07) 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)

Private Source Inflow Removal Program: The house-to-house sump pump inspection and roof leader disconnection programs continue. Thirty residential sump pump inspections and eight service lateral camera inspections were completed in FY08.

I/I Rehabilitation Projects in Design or Construction: In April 2007, the Town completed a manhole inspection program in the North Street area. Manhole rehabilitation (32 total) removed approximately 123,000 gpd of infiltration. The Town has also completed inspection of an additional 250 manholes. A summary report with recommendations for rehabilitation is scheduled for completion Fall 2008. 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.

Reporting Period Activity: Mill Street Pumping Station Rehabilitation will be complete Fall/Winter 2008. Community sewer extensions were undertaken at the Hingham Shipyard / Miles Road / DPW Facility / Back River.

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 \$741,500 allotted through the Program's Phases 1-6, the community has \$152,000 remaining in funding assistance.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 8,494
- Two Year ('06 - '07) Annual Average I/I: 0.35 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)

Private Source Inflow Removal Program: The State has recently approved the Town's Sewer Bank Policy. A building inspection program targeted structures in Sub-areas C/E/I/H(7). In total, thirty sump pump were identified with fifteen sump pumps considered suspect and recommended for dye testing. The fifteen suspect sump pumps have been redirected.

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

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 \$780,600 allotted through the Program's Phases 1-6, the community has \$284,000 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 172
- Sewered Population: 29,055
- Two Year ('06 - '07) Annual Average I/I: 2.96 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Metering, Modeling and Evaluation of the Sanitary Sewer System
Final Report (October 2007)

Private Source Inflow Removal Program: Town Meeting adopted a Stormwater Bylaw in May 2008. Regulations are being drafted for approval by Board of Selectmen in September 2008. These regulations will serve as a tool for the Town in removing sump pumps from the sewer system.

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 7,000 gpd. Project work is scheduled for completion November 2008.

Reporting Period Activity: The sewer system evaluation final report was received October 2007. The study called attention to deficiencies in the Town sewer system. Many sewers in easements that are routed through open space are overgrown and have not been inspected recently. The Town has followed up evaluation report by retaining an engineering/surveying firm to locate and clear all manholes in sewer easements and to clear footpaths through easements. To date, ten of the 46 identified easements have been surveyed. The product of this work will be a maintenance and rehabilitation plan for all the sewers in the easements.

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 \$3,507,300 allotted through the Program's Phases 1-6, the community has \$1,973,700 remaining in funding assistance.

18. MALDEN: North System

Background Information:

- Miles of Sewer: 100
- Sewered Population: 55,815
- Two Year ('06 - '07) Annual Average I/I: 4.69 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Malden Sewer System Survey II – Phase II Report
(Revised October 2007)

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

I/I Rehabilitation Projects in Design or Construction: Design of the sewer rehabilitations (as recommended by the Sewer System Survey II – Phase II) was completed August 2007. Subsequent construction (Contract No. 2007-S-1) was substantially complete as of August 2008. Funds for this project were distributed by MWRA in December 2006 (MWRA Project No. WRA-P6-18-3-601).

Reporting Period Activity: The Final Report of the Malden Sewer System Survey II – Phase II Report (submitted June 2007 and revised October 2007) was approved by MWRA in October 2007. A report copy was submitted to DEP. This report included flow isolation of approximately 128,000 LF of sewer and cleaning and internal inspection of approximately 32,300 LF of sewer. The recommended sewer rehabilitations are expected to eliminate approximately 423,000 gpd of infiltration. Final comments were issued by MWRA in July 2007.

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 \$5,641,900 allotted through the Program's Phases 1-6, the community has \$1,048,000 remaining in funding assistance.

19. MEDFORD: North System

Background Information:

- Miles of Sewer: 113
- Sewered Population: 53,469
- Two Year ('06 - '07) Annual Average I/I: 4.77 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: Construction of the Sydney Street Inflow Removal and Drainage Improvement Project has been completed. The Essex Street Sewer and Water Replacement Project started July 2008. Anticipated date of completion is November 2008.

Reporting Period Activity: See description above.

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 \$5,834,600 allotted through the Program's Phases 1-6, the community has \$1,040,000 remaining in funding assistance.

20. MELROSE: North System

Background Information:

- Miles of Sewer: 74
- Sewered Population: 27,000
- Two Year ('06 - '07) Annual Average I/I: 2.55 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 additional inspections were reported during this period.

I/I Rehabilitation Projects in Design or Construction: Two sewer rehabilitation projects (Contract Nos. 07-1 / 07-2) are substantially complete; only punch list items and release of retainage remain. Contract No. 07-1 involved cleaning, inspecting testing and sealing of 6 to 20-inch sewers; chemical root treatment; various manhole rehabilitations and liner installations; and TV

inspecting, testing and grouting of service connections. Contract No. 07-2 involved a series of open cut spot repairs of sewers in Ardsmoor Road, Leonard Road, Irving Street, Harvard Street, and the easement between Harvard Street and Lebanon Street. An additional ongoing design project involves sewer rehabilitations within the area tributary to the Upham Street Pump Station. These rehabilitations were identified in the “Upham Street Pump Station Tributary Area I/I Reduction Project” Report dated February 1995.

Reporting Period Activity: See description above.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority’s funding assistance program. Of the \$2,845,300 allotted through the Program’s Phases 1-6, the community has \$1,076,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 83
- Sewered Population: 24,291
- Two Year ('06 - '07) Annual Average I/I: 2.41 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)

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.

I/I Rehabilitation Projects in Design or Construction: Town-Wide Sewer Evaluation Program - Year 4 I/I Rehabilitation construction will be completed Fall 2008. Estimated infiltration reduction is 122,760 gpd. Town-Wide Sewer Evaluation Program - Year 5 was completed in February 2008. Subsequent I/I rehabilitation design/construction scheduled for completion Winter 2008/2009.

Reporting Period Activity: Approximately 1150 LF of 8-inch PVC sewer was installed on Brush Hill Road to extend the sewer main from the Fuller Village service southerly to the intersection with Blue Hill Avenue. 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 fifteen (15) I/I reduction projects through the Authority’s funding assistance program. Of the \$2,779,500 allotted through the Program’s Phases 1-6, the community has \$500,000 remaining in funding assistance.

22. NATICK: South System

Background Information:

- Miles of Sewer: 123
- Sewered Population: 27,441
- Two Year ('06 - '07) Annual Average I/I: 0.98 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 includes a house-to-house inspection component. Home inspections have been completed in conjunction with a water meter replacement program.

I/I Rehabilitation Projects in Design or Construction: The SSES includes manhole inspection, house-to-house private source investigation and sewer line smoke testing. Estimated peak infiltration removed is 0.01 mgd. Lined 3650 LF of 15-inch sewer on North Main Street. Project completed June 2007. Estimated peak infiltration removed is 0.01 mgd. Lined 1320 LF of 18-inch sewer on Speen Street. Project completed June 2007. Estimated peak infiltration removed is 0.01 mgd. Lined 3420 LF of 8-inch sewer on Franconia Avenue Easement. Project completed June 2007. Estimated peak infiltration removed is 0.01 mgd. Lined 809 LF of 10-inch sewer on Mill Street Easement. Project completed July 2007. Estimated peak infiltration removed is 0.01 mgd. Lined 606 LF of 16-inch sewer on Mill Street Easement. Project completed July 2007. Estimated peak infiltration removed is 0.01 mgd. Lined 548 LF of 8-inch sewer on E. Central Street. Project completed August 2007. Estimated peak infiltration removed is 0.01 mgd.

Reporting Period Activity: Town-Wide SSES on-going. Lowell Road (14 connections) sewer extension added 550 LF of 2-inch HDPE low pressure force main. Kylie Lane (6 connections) sewer extension will add 670 LF of 8-inch PVC sewer. The first phase of the Natick Mall expansion opened in September 2007 (contributing approximately 40,000 gpd of sewage). All Mall expansion sewers are privately owned.

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 \$2,754,600 allotted through the Program's Phases 1-6, the community has \$982,600 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 131
- Sewered Population: 27,826
- Two Year ('06 - '07) Annual Average I/I: 2.37 mgd
- Massachusetts DEP Administrative Order: No. 549 (Issued November 21, 1984)

Latest I/I or SSES Report: Smoke Testing Report (On-going)

Private Source Inflow Removal Program: House-to-House Inspection and Private Inflow Source Removal project has been awarded. Project completion scheduled for Fall 2008.

I/I Rehabilitation Projects in Design or Construction: Sewer Sub-Areas 2 / 24 / Lower 21 were TV inspected. A rehabilitation project has been designed and includes root treatment, heavy cleaning, testing and sealing of joints, spot CIP repair and full length (manhole-to-manhole) pipe replacement. Construction to begin during FY08. The Town, as a result of the 'Route 128 Add-A-Lane' project, has rehabilitated existing sewer lines within Route 128, eliminated 3000 LF of sewer parallel to the travel lanes and installed 3000 LF of sewer perpendicular to Route 128. Route 128 project work to be complete Fall 2008. The Town has also rehabilitated 700 LF of sewer, extending from Crawford Street to Reservoir Street.

Reporting Period Activity: Upgrade of Great Plain Avenue Pumping Station to be rebid. Richardson Drive Pumping Station elimination is in design phase.

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 \$3,218,600 allotted through the Program's Phases 1-6, the community has \$1,740,300 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 271
- Sewered Population: 81,827
- Two Year ('06 - '07) Annual Average I/I: 9.23 mgd
- Massachusetts DEP Administrative Order: ACO-NE-00-1001

Latest I/I or SSES Reports: Area A Flow Monitoring Report (May 2008)
Old Farm Road System Evaluation Report (November 2007)

Private Source Inflow Removal Program: The City continues to conduct home inspections for illicit connections to the sewer collection system. The sewer task force, created to develop/implement a Private Inflow Removal Program, has been holding meetings to discuss program issues. A draft Private Inflow Removal Program has been completed. Presentation before the Board of Aldermen is expected in the near future.

I/I Rehabilitation Projects in Design or Construction: Sanitary Sewer / Underdrain Rehabilitation (Contract #08-03) was bid with Notice to Proceed issued November 12, 2007. Expected project completion is June 2008. This project incorporates the repair of defects identified during the 2006 Underdrain TV and Design Project, defects identified during the Cheesecake and Laundry Brook Underdrain Access Point Inspection, and infiltration related defects identified during the Area A & C Smoke and Dye Testing Project. It is estimated that 304,100 gpd of peak infiltration will be removed as part of this project.

Cochituate Aqueduct Sanitary Sewer Rehabilitation (Contract #08-10) was bid with Notice to Proceed issued January 7, 2008. Expected project completion is June 2008. It is estimated that 792 gpd of peak infiltration will be removed as part of this project.

Cleaning, inspection, testing and sealing was performed on 7810 LF of sewer (2,230 joints tested and 1,042 joints sealed) and 116 LF of sewer service laterals were lined.

Reporting Period Activity: The “Old Farm Road System Evaluation” Final Report, which evaluated the flooding and surcharging of the storm drain/sewer systems in the Old Farm Road Area was completed November 2007 and approved by MWRA in December 2007. A report copy was submitted to DEP. The 2006 Underdrain TV Inspection Report was completed on the internal inspection of approximately 19,600 LF of sewer adjacent to underdrains in portions of the Hyde Avenue/George Street area; Hillside Avenue/Otis Street area; Cherry Street area; and the Commonwealth Avenue/Fuller Street area.

In August 2007, funds were distributed for: (1) Final design of Sewer Replacement on Regent Street and Bennington Street and (2) Walnut Street Area Underdrain / Sewer Manhole Investigations (MWRA Project No. WRA-P6-24-2-628).

In November 2007, funds were distributed for: (1) Final design of Sewer Rehabilitations and Replacement in Margaret Road Area and (2) Additional Cost for the Construction of the Cochituate Aqueduct Sanitary Sewer Rehabilitation Project MWRA Project No. WRA-P6-24-3-634).

MWRA I/I Local Financial Assistance Program: The community has financed twenty (20) I/I reduction projects through the Authority’s funding assistance program. Of the \$10,089,400 allotted through the Program’s Phases 1-6, the community has \$2,462,900 remaining in funding assistance.

25. NORWOOD: South System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 28,443
- Three Year ('06 - '07) Annual Average I/I: 2.88 mgd
- Massachusetts DEP Administrative Order: No. 534 (Issued July 25, 1983)

Latest I/I or SSES Report: Meadowbrook Area Sewer Inspection (August 2006)

Private Source Inflow Removal Program: As part of the Meadowbrook Area Sewer Inspection, ten buildings were inspected for illicit connections. Eleven illegal connections removed to date. As part of the Norwood Gardens SSES, fifty-six buildings were inspected and 10,000 LF of sewer line was smoke tested. Within the Hawes Brook sewer tributary area, eight property owners have been notified to redirect sump pumps.

I/I Rehabilitation Projects in Design or Construction: Meadowbrook Area Underdrain Access Manhole Project completed June 2007 (Contract No. NPW-07-04 / MWRA Project No. WRA-P6-25-3-610). Guild Street Sewer Rehabilitation design complete July 2008. Construction to begin Fall 2008.

Reporting Period Activity: 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.

MWRA I/I Local Financial Assistance Program: The community has financed thirteen (13) I/I reduction projects through the Authority's funding assistance program. Of the \$3,355,400 allotted through the Program's Phases 1-6, the community has \$939,437 remaining in funding assistance.

26. QUINCY: South System

Background Information:

- Miles of Sewer: 202
- Sewered Population: 88,970
- Two Year ('06 - '07) Annual Average I/I: 7.10 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)

Private Source Inflow Removal Program: Storm Water Discharge Ordinance has been approved. The ordinance forbids non-sanitary connections.

I/I Rehabilitation Projects in Design or Construction: Quincy Shore Drive Sewer Improvement Project (Phase II) construction completed Summer 2007. North Quincy Lateral Sewer Improvements (Phase II) design complete. Fenno Street / Division Street Sewer Improvements construction to be complete Fall 2008 (MWRA Project No. WRA-P6-26-3-616). Carlisle Street Pump Station / Main Replacement in design phase.

Reporting Period Activity: Carlisle Street Sewer Improvements Project construction complete. Removed 300 LF of 8-inch sewer main. Replaced with 310 LF of 4-inch force main and associated pump station. Edgewater Drive Improvements Project construction ongoing. Removed and replaced (with 12-inch PVC pipe) 654 LF of 12-inch PVC and VCR sewer main. Lined 1779 LF of sewer main. Hough's Neck Collection System / Sea Street Interceptor Improvements Projects ongoing.

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 \$9,373,000 allotted through the Program's Phases 1-6.

27. RANDOLPH: South System

Background Information:

- Miles of Sewer: 101
- Sewered Population: 30,738
- Two Year ('06 - '07) Annual Average I/I: 1.77 mgd
- Massachusetts DEP Administrative Order: No. 548 (Issued October 23, 1986)

Latest I/I or SSES Report: Amelian Road SSES (January 2003)

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 location. 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 has been completed to redirect these sump pumps to the drainage system. Total peak flow I/I removed is estimated to be 610,000 gpd.

I/I Rehabilitation Projects in Design or Construction: Sewer System Rehabilitation Project (Sub-areas 1-4/8) construction completed September 2007 (MWRA Project No. WRA-P5-27-3-551). Root Street Area Sewer System Rehabilitation Project design completed July 2008 (MWRA Project No. WRA-P6-27-3-609). Project to be bid Fall 2008.

Reporting Period Activity: The Town, working in conjunction with Avalon Bay, will begin a manhole sealing and sewer lining project in August 2008. The I/I removal project is targeted to eliminate approximately 200,000 gpd.

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 \$2,866,800 allotted through the Program's Phases 1-6, the community has \$1,051,900 remaining in funding assistance.

28. READING: North System

Background Information:

- Miles of Sewer: 96
- Sewered Population: 22,098
- Two Year ('06 - '07) Annual Average I/I: 1.60 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Illicit Sewer System Inflow Building Inspection Program Final Report (January 2007)

Private Source Inflow Removal Program: The Town is continuing to work with property owners where illicit connections were found during the Building Inspection Program. The Town has successfully removed an additional 5 illicit connections, which brings the total of illicit

connections removed to date to 60. I/I Remediation funds which are received from proposed developments are used to provide funding for the sewer rehabilitation work.

I/I Rehabilitation Projects in Design or Construction: The Town is continuing with its annual sewer rehabilitation program which included cleaning/TV inspection of 32,984 LF of sewer, testing 2,199 joints, sealing 1,133 joints, rebuilding 4 manhole inverts and sealing of 59 manholes.

Reporting Period Activity: In August 2007, funds were distributed for a Townwide Flow Monitoring Program. This project consists of continuous flow metering of 11 subareas and instantaneous flow metering at the other subareas for a period of 10 weeks (MWRA Project No. WRA-P6-28-1-627). A draft of this Report was prepared April 2008.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$2,116,100 allotted through the Program's Phases 1-6, the community has \$299,400 remaining in funding assistance.

29. REVERE: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 45,761
- Two Year ('06 - '07) Annual Average I/I: 3.36 mgd
- Massachusetts DEP Administrative Order: No. 837 (Issued April 21, 1991)

Latest I/I or SSES Report: SSES Phase 3 (August 1999)

Private Source Inflow Removal Program: The City removed an additional 10 illegal sump pump and 2 large sump pumps from Walgreen's on Broadway that were connected to the sewer system. Sewer Mitigation Funds, which are received from developers (10:1 ratio), are used to perform sewer rehabilitations.

I/I Rehabilitation Projects in Design or Construction: The following sewer rehabilitations were completed: lined 291 LF of 18-inch sewer on Eliot Road; lined 205 LF of 18-inch sewer on Tuscano Avenue; lined 193 LF of 24-inch sewer under the commuter railroad line behind NECCO; and pipe burst 850 LF of 20-inch sewer and replaced it with 24-inch sewer between Green Street and Revere Beach Parkway. Completed short liner repairs at 11 locations.

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. The City has utilized all of the \$4,582,900 allotted through the Program's Phases 1-6.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 128
- Sewered Population: 74,963
- Two Year ('06 - '07) Annual Average I/I: 5.17 mgd
- Massachusetts DEP Administrative Order: NON-NE-00-1006 (Issued January 21, 2000)

Latest I/I or SSES Report: Citywide Sewer Assessment Report (February 2007)

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

I/I Rehabilitation Projects in Design or Construction: The Somerville Avenue CIPP sewer lining and replacement, associated with the Mass Highway Somerville Avenue Reconstruction Project, which began in Spring 2007 was completed. This sewer rehabilitation included: 6300 LF of CIPP lining of 15, 20 and 24-inch sewer on the north side; CIPP lining of 10 and 12-inch sewer on the south side; 3090 LF of 10, 12, 18, 24 and 36-inch combined sewer replaced with PVC sewer; large diameter storm drain was installed on Somerville Avenue from Union Square to Porter Square. This drain will form the basis for upstream sewer separation in a 200 acre watershed. Total estimated I/I removed is 0.08 mgd.

The sanitary sewer and storm drain were replaced for the entire length on Pearson Avenue. Total estimated I/I removed is 0.006 mgd.

On Josephine Avenue, a new 15 and 18-inch storm drain was installed from Broadway to Kidder Avenue. All street runoff was removed from the sanitary sewer and underdrain. The sanitary sewer was also Insituformed. Approximately seven roof drains were eliminated for the underdrain. Total estimated I/I removed is 0.007 mgd.

Reporting Period Activity: See above work description. The analysis and planning for I/I mitigation in the Ten Hills area (to replace the storm drain and sewer where substantial mixing has been occurring due to broken pipelines) was completed.

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" x 24" 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' x 7' 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 \$7,459,800 allotted through the Program's Phases 1-6, the community has \$1,736,010 remaining in funding assistance.

31. STONEHAM: North System

Background Information:

- Miles of Sewer: 63
- Sewered Population: 21,258
- Two Year ('06 - '07) Annual Average I/I: 1.65 mgd
- Massachusetts DEP Administrative Order: None

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 Marble Street/ Main Street Area Sanitary Sewer System Rehabilitation are ongoing. This project involves rehabilitation of sewer lines/manholes in two areas of the Town. Area One includes Marble / Lincoln / Congress / Warren / Wright / Hancock / Benton and Winthrop Streets. Area Two includes Main Street / Fells / Middlesex and Peabody Road.

Phase 2 Sewer System Rehabilitation design was completed with the project bid being scheduled for August 28, 2008.

Reporting Period Activity: Upgrade of the GIS sewer mapping ongoing.

Sanitary Sewer System Inspection Final Report: Manhole and CCTV Inspection in Marble / Main Street Area was approved by MWRA in September 2007.

In August 2007, funds were distributed for the Phase 2 Sewer System I/I Rehabilitation Project. This project consists of reviewing previous investigations/studies to develop a list of prospective sewer rehabilitations. Design / Bidding / Construction to follow (MWRA Project No. WRA-P6-31-3-626).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,451,900 allotted through the Program's Phases 1-6.

32. STOUGHTON: South System

Background Information:

- Miles of Sewer: 60
- Sewered Population: 17,611
- Two Year ('06 - '07) Annual Average I/I: 1.99 mgd
- Massachusetts DEP Administrative Order: No. 538 (Issued June 17, 1984)

Latest I/I or SSES Report: 2008 Sewer System Evaluation (Ongoing)

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.

I/I Rehabilitation Projects in Design or Construction: Sewer System Infiltration Rehabilitation (Contract No. 07-1) construction complete. Warranty retesting scheduled for May 2009 (MWRA WRA-P6-32-3-623). Estimated peak infiltration reduction is 118,800 gpd. Town-Wide (Year 3) Sewer Rehabilitation Evaluation study ongoing.

Reporting Period Activity: Sewer extensions (Anderson Road / Ash Street / Buckley Road / Fitzpatrick Road / Pearl Street / Pondview Village / Poskus Street / Sumner Street / Swallow Lane / West Street / Young Way) added 13,300 LF of gravity sewer to the sanitary system. Sewer main replacements at Morton Street and Pleasant Street.

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 \$2,276,900 allotted through the Program's Phases 1-6, the community has \$640,000 remaining in funding assistance.

33. WAKEFIELD: North System

Background Information:

- Miles of Sewer: 93
- Sewered Population: 23,592
- Two Year ('06 - '07) Annual Average I/I: 2.80 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: Colonial Hilton is eliminating roof drains and parking area inflow entering the sewer system. Americal Civic Center (Main Street) roof drain removal is ongoing. Town continues to receive 4 to 1 removal from completed subdivisions/developments.

I/I Rehabilitation Projects in Design or Construction: 100-year Flood Zone Manhole Rehabilitation Project (Contract No. 07-S2-1316 / MWRA Project No. WRA-P6-33-3-622) began December 2007. Project work included rehabilitation of 45 manholes. The Town approved additional rehabilitation of 32 manholes under this contract to be included as Change Order No. 1. Manhole rehabilitation was completed February 2008. An estimated 137,700 gpd of infiltration was removed.

Included as Bid Alternate No. 2 for the 100-year Flood Zone Manhole Rehabilitation Project, the installation of 9 water-tight frames/covers was completed April 2008. Also installed two locking covers on Mill River trunk sewer to prevent unauthorized discharge.

Reporting Period Activity: As part of the Town's ongoing efforts to locate/remove I/I, inspections were performed (May 2008) throughout the Town to identify suspected I/I defects. Work included topside manhole inspections to determine the status (covered/open) of underdrain access ports at the intersection of Main Street, Nahant Street, North Avenue, and Broadway; the existing sewer system at the end of Audubon Road; the unknown source of water entering the end manhole at the Teal Road cul-de-sac; and the unknown source of water entering a service connection lateral from a buried manhole on Audubon Road.

Major grease cleaning and inspection of Mill River trunk sewer from New Salem Street to Water Street was undertaken. Assistance was provided by MWRA maintenance staff.

The Final Report on the Subarea 7 Infiltration Investigations (Flow Isolation, Television Inspection and Manhole Inspection) submitted November 2007 and revised March 2008 was approved by MWRA in March 2008. A report copy was submitted to DEP.

The Final Report on the Subarea 7 Inflow Investigations (Smoke Testing and Dyed Water Testing) submitted May 2008 and revised July 2008 was approved by MWRA in July 2008. A report copy was submitted to DEP.

In August 2007, funds were distributed for the review/analysis of the TV inspection of the 28" x 48" Brick Trunk Sewer Interceptor Outfall. TV inspection of the Brick Trunk Outfall Sewer was performed by the MWRA in February/March 2007. A summary and engineering analysis of the TV inspection was presented in a Draft Report dated May 2008 (MWRA Project No. WRA-P6-33-1-625).

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 \$2,880,900 allotted through the Program's Phases 1-6, the community has \$335,900 remaining in funding assistance.

34. WALPOLE: South System

Background Information:

- Miles of Sewer: 59
- Sewered Population: 14,864
- Two Year ('06 - '07) Annual Average I/I: 1.30 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Removal Program: Year 2 (Ongoing)

Private Source Inflow Removal Program: Town includes house-to-house inspection program as part of its water meter replacement program. During FY08, one (1) sump pump was identified as connected to the sewer system.

I/I Rehabilitation Projects in Design or Construction: Under Engineering Contract 2005-23, 58,000 LF of sewer and 250 manholes were inspected in Subareas 1/2. Resultant data analysis and rehabilitation design completed March 2008 (MWRA Project No. WRA-P6-34-2-602).

Year 2 Rehabilitation (Contract 2008-32 / MWRA Project No. WRA-P6-34-3-641) work includes 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 manhole; 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 scheduled for completion May 2009.

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

Reporting Period Activity: An out-of-community automobile dealership was connected to the Walpole sanitary system in accordance with all applicable permits/legislation. An inflow reduction mitigation plan was approved in conjunction with project.

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 \$1,759,000 allotted through the Program's Phases 1-6.

35. WALTHAM: North System

Background Information:

- Miles of Sewer: 138
- Sewered Population: 59,496
- Two Year ('06 - '07) Annual Average I/I: 5.38 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-IN004 (March 16, 2005)

Latest I/I or SSES Report: Infiltration/Inflow Investigation Report for the Warrendale Area (Updated July 2008)

Private Source Inflow Removal Program: The City advertised a RFP for private inflow removal. Proposals were due August 15, 2007. The Selection Committee chose Environmental Partners Group (EPG), Inc. for this project. EPG has made measurable progress with advertising the amnesty program; inspections in the pilot area (100 house inspections to date; 55 not in compliance, i.e. sump pumps connected to sewer); flow metering; and drafting changes to the existing sewer use ordinance. EPG expects to advance the amnesty program to the remaining target areas later this year and submit a report on initial investigations to DEP by May 30, 2009.

I/I Rehabilitation Projects in Design or Construction:

- Benefit Street Sewer Reconstruction completed April 2008 (3,380 gpd Inflow removed, estimate by Engineering Department);
- Chestnut Street Sewer Reconstruction completed;
- Claremont Street Sewer Reconstruction completed;

- Farnsworth Avenue Sewer Reconstruction completed September 2007 (4,105 gpd I/I removed, calculated in-house based on water usage);
- First Avenue Sewer Reconstruction completed November 2007 (15,843 gpd inflow removed, estimate by Engineering Department);
- Main Street Sewer Emergency Project ongoing (gpd to be calculated);
- Wheelock Road and Terrace Sewer Reconstruction completed August 2007 (5,705 gpd I/I removed, calculated in-house based on water usage);
- Candace Avenue Sewer & Drain Reconstruction ongoing;
- Warrendale Area Sewer Rehabilitation (cleaning & lining) Project ongoing;
- Farnum Road Sewer & Drain Project (to be bid 2008).

Reporting Period Activity: I/I Mitigation was also performed by private developers at various locations throughout the City as listed below:

- Various small projects throughout City (356,626 gpd removed);
- Warrendale Outlet along Railroad property completed Spring 2007 (800,000 gpd removed);
- Totten Pond Road Phase V Area Study ongoing, construction slated for fall 2008. (800,000 gpd to be removed);
- Linden Street Project (Creonte Tire Inflow) completed July 2007 (871,467 gpd inflow removed)
- Boston Properties (approximately 250,000 gpd removed)
- Related Development (1265 Main Street) approximately 800,000 gpd removed
- 610 Lincoln Street (TBD)
- One Moody Street mixed use development (TBD)
- 40 Sylvan Road Marcus development building 2 (TBD)
- 62 Elm Street / 415-427 River Street (TBD)

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 \$6,580,400 allotted through the Program's Phases 1-6, the community has \$2,368,000 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:

- Miles of Sewer: 75
- Sewered Population: 32,303
- Two Year ('06 - '07) Annual Average I/I: 1.73 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004

Latest I/I or SSES Report: TV Inspection Report (Cottage Street Easement/Spring Street Sewers)
(Draft July 2007)

Private Source Inflow Removal Program: The Town performed 30 building inspections for potential I/I sources and/or illicit discharges.

I/I Rehabilitation Projects in Design or Construction: Design for the sewer rehabilitations as recommended by the draft TV Inspection Report was completed. Contract Documents for Contract #08-1 (CIP Liner Installation) and Contract #08-2 (Sewer Replacement) in the Cottage Street easement and Spring Street were completed January 2008. Bid Opening for these two contracts occurred May 2008. Construction to begin on both projects August 2008.

The Town performed in-house cleaning of approximately 22,532 LF of sewer and 11,802 LF of TV inspection.

Replaced 660 LF of 6-inch sanitary sewer on Belmont Street (between Arlington Street and Prentiss Street).

Sewer System repairs for the last year included: 13 sewer services repaired or replaced; 4 sewer main repairs; and 5 sewer manholes repaired.

Reporting Period Activity: See above work description.

In May 2008, funds were distributed for: (1) Additional I/I Investigations in Subsystem #6, Nichols Avenue and Boylston Street and (2) Design/Construction of Sewer Rehabilitations in Howard Street, Pleasant Street, Nichols Avenue and Boylston Street. (MWRA Project No. WRA-P6-36-3-648)

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I investigation projects through the Authority's funding assistance program. Of the \$3,113,800 allotted through the Program's Phases 1-6, the community has \$2,626,400 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:

- Miles of Sewer: 130
- Sewered Population: 25,648
- Two Year ('06 - '07) Annual Average I/I: 2.04 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.

I/I Rehabilitation Projects in Design or Construction: The first year of the three year Wellesley Sewer Rehabilitation Project (Contract No. 07C-50-22 / MWRA Project No. WRA-P6-37-3-644) was completed June 2008. Project work included the cleaning and television inspection of 51,314 LF of sewer; testing 7806 joints and sealing 3837 joints. Estimated annual I/I reduction is approximately 26,300 gpd.

Earle Road Area Sewer System Rehabilitation Project was completed May 2007 (MWRA Project No. WRA-P6-37-3-644). Thackeray Road Area Sewer System Improvements (Contract No. 07C-50-24 / MWRA Project No. WRA-P6-37-3-644) was completed June 2007.

Reporting Period Activity: Cochituate Aqueduct Sanitary Sewer Rehabilitation (City of Newton Bid # 08-10 / MWRA Project No. WRA-P6-37-3-644): The objective of this intermunicipal sewer rehabilitation project is to eliminate infiltration into a portion of the 48-inch reinforced concrete interceptor known as the Cochituate Aqueduct Sanitary Sewer. Rehabilitation work includes installation of 1105 LF of 48-inch CIP sewer pipe liner (Manhole CA-10 to Manhole CA-11); epoxy lining of Manhole CA-12; and cutting of one protruding service connection.

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 \$2,779,700 allotted through the Program's Phases 1-6, the community has \$1,295,453 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:

- Miles of Sewer: 77
- Sewered Population: 13,407
- Two Year ('06 - '07) Annual Average I/I: 0.66 mgd
- Massachusetts DEP Administrative Order: No. 578 (Issued May 23, 1985)

Latest I/I or SSES Report: SSES Phases 1 and 2 (January 1991)

Private Source Inflow Removal Program: House-to-house inspection survey, as part of the FY08 Annual Inspection Program, has been completed. The survey included inspection of 1889 residences and identified 135 sump pumps.

I/I Rehabilitation Projects in Design or Construction: The FY08 maintenance program has been completed. The program included cleaning and television inspection of 98,000 LF of sewer and house-to-house inspection surveys to identify illicit connections to the sewer system.

Reporting Period Activity: Private subdivision work to include the installation of 1700 LF of sewer extensions (July 2008).

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 \$1,209,300 allotted through the Program's Phases 1-6, the community has \$170,000 remaining in funding assistance.

39. WEYMOUTH: South System

Background Information:

- Miles of Sewer: 238
- Sewered Population: 51,855
- Two Year ('06 - '07) Annual Average I/I: 4.02 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 Investigation Study - Subareas C-8 / C-10 (Ongoing)
Town-Wide Sewer Investigation – Year 1 (Ongoing)
Sewer System Hydraulic Model / Evaluation (Ongoing)

Private Source Inflow Removal Program: The Town has completed the redirection of 318 sump pumps (for an estimated 159,000 gpd of inflow removal). Four (4) sump pumps were redirected during FY08.

I/I Rehabilitation Projects in Design or Construction: Sewer System CIP Contract 1, Winter Street to Essex Street Sewer Replacement complete. Approximately 123,900 gpd of infiltration removed from sewer system. Mill River/North Weymouth Infiltration Rehabilitations (Contract S05-1) complete. Approximately 509,500 gpd of infiltration removed from sewer system.

Reporting Period Activity: 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. Sewer extensions (Seabury Street / Martin Street / Performance Drive / Golden Bear Lane / Libbey Parkway / Winter Street) added 3,320 LF of gravity sewer to the sewer system.

MWRA I/I Local Financial Assistance Program: The community has financed fourteen (14) I/I reduction projects through the Authority's funding assistance program. Of the \$5,561,900 allotted through the Program's Phases 1-6, the community has \$1,032,000 remaining in funding assistance.

40. WILMINGTON: North System

Background Information:

- Miles of Sewer: 20
- Sewered Population: 3,951
- Two Year ('06 - '07) Annual Average I/I: 0.40 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: Phase 2 of the Sewer System Rehabilitation project was completed January 2007. An estimated 285,500 gpd was removed through this sewer rehabilitation contract. This contract also included additional CCTV inspection and sewer rehabilitation recommendations. The Warranty Re-inspection was completed Spring 2008 with Final Payment being made July 2008.

Reporting Period Activity: The Town is continuing with the next phase of their Infrastructure Maintenance and Management Program (IMMP). This will include another sewer rehabilitation contract or work order using the existing contract. The sewer rehabilitation work will be based on the recommendations from the IMMP – Phase II Report of March 2005.

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 \$1,180,000 allotted through the Program's Phases 1-6, the community has \$212,000 remaining in funding assistance.

41. WINCHESTER: North System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 21,160
- Two Year ('06 - '07) Annual Average I/I: 1.32 mgd
- Massachusetts DEP Administrative Order: Draft ACO in 2001.

Latest I/I or SSES Report: West Side Smoke and Dye Testing Draft Report (April 2008)

Private Source Inflow Removal Program: The Town's Private Inflow Source Removal Program is on-going. Over 135 private inflow sources have been disconnected to date.

I/I Rehabilitation Projects in Design or Construction: No design work is currently being prepared. No sewer rehabilitation work is ongoing.

Reporting Period Activity: Letter Report on review and analysis of wastewater flow at MWRA Meter WC-1C was completed June 2007 and approved by MWRA in September 2007. This report concluded that I/I was excessive and recommended a smoke testing and building inspection program.

A draft report on the West Side Smoke and Dye Testing was completed in April 2008. MWRA recently received a copy of this report for review.

The recommended building inspection program is ongoing.

A capacity evaluation of the sewer system upstream of MWRA Meter WC-1C is being performed related to the Hamilton Farms Development Project. The project includes a hydraulic sewer model, I/I evaluation and physical inspection of 13,000 LF of sewer.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. Of the \$2,072,000 allotted through the Program's Phases 1-6, the community has \$1,119,700 remaining in funding assistance.

42. WINTHROP: North System

Background Information:

- Miles of Sewer: 36
- Sewered Population: 21,160
- Two Year ('06 - '07) Annual Average I/I: 1.13 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: The Sewer System Infrastructure Improvements Project – Contract No. 1 which was bid November 2006 and completed August 2007. Project work included cleaning, TV inspection, testing/sealing of approximately 15,000 LF of 8, 10 and 12-inch sewer, along with root treatment. I/I removal is estimated to be 0.08 mgd.

Approximately 240 LF of sewer main in Woodside Ave, which was badly deteriorated and failing, was replaced on an emergency basis. I/I removal is estimated to be 0.02 mgd.

The Town is proceeding with the design/construction of sewer replacement in Putnam Street and Putnam Place. 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 and appurtenances. The estimated annual I/I removal is 0.01 mgd. This project is being funded under MWRA I/I Local Financial Assistance Program Project No. WRA-P6-42-3-647.

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 \$1,614,400 allotted through the Program's Phases 1-6, the community has \$614,600 remaining in funding assistance.

43. WOBURN: North System

Background Information:

- Miles of Sewer: 141
- Sewered Population: 35,290
- Two Year ('01 - '03) Annual Average I/I: 6.31 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1005 (August 16, 2001)

Latest I/I or SSES Report: Horn Pond Sanitary Sewer Investigations Interim Report (April 2008)

Private Source Inflow Removal Program: Building inspections to identify sources of private inflow were performed in Sewer Area No. 3. A total of 2590 house-to-house inspections were performed.

I/I Rehabilitation Projects in Design or Construction: Currently there are no ongoing design or construction projects related to sewer rehabilitation.

Reporting Period Activity: In June 2007, funds were distributed for: (1) Horn Pond Sewer Interceptor Investigation; (2) Dix Road and Westside Areas Supplementary Building Inspections; and (3) Sewer Area No. 3 and Arlington Road Areas Building Inspections (MWRA Project No. WRA-P6-43-1-618).

Final Report on the Area #3 Sewer System Evaluation Survey (SSES) Study was completed April 2008.

The Area #3 Building Inspection Final Report was completed and approved April 2008.

The Interim Report on the TV Inspection of the Horn Pond Sewer Interceptor was completed April 2008.

A "Preventative Maintenance Project" is being completed to investigate and repair areas with consistent sewer maintenance needs.

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 \$5,318,500 allotted through the Program's Phases 1-6, the community has \$685,500 remaining in funding assistance.

ATTACHMENT 6
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY08
Reporting Period – July 2007 Through June 2008

CY07 COMMUNITY WASTEWATER FLOW DATA

This attachment contains calendar year 2007 wastewater flow data for the 43 MWRA member sewer communities. There are three separate data tables. The first table (one page) presents the CY07 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 CY07 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.

CY07 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

Community	Total Population	Sewered Population	CY07 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	41,224	40,812	5.66	4.49	6.48	9.37	6.56	4.47	2.99	2.68	2.65				
Ashland	15,551	10,870	1.17	0.94	1.33	1.82	1.30	1.07	0.88	0.87	0.86	0.85	0.90	0.94	1.08	0.3%	1.82	0.4%
Bedford	12,462	11,216	3.16	2.65	3.50	4.90	3.78	2.68	2.22	1.95	1.71	1.75	1.93	2.01	2.69	0.9%	4.90	1.0%
Belmont	23,371	22,927	3.40	2.39	4.86	6.51	4.02	2.72	1.99	1.75	1.79	1.89	2.12	2.79	3.02	1.0%	6.51	1.3%
BWSC	559,034	558,475	87.81	89.29	111.32	122.95	96.56	86.78	83.24	79.34	80.26	80.95	84.97	95.71	91.59	29.6%	122.95	24.2%
Braintree	33,681	33,647	7.34	5.80	8.99	11.09	7.49	5.91	4.45	4.12	3.58	3.67	4.11	5.71	6.02	1.9%	11.09	2.2%
Brookline	55,590	55,479	9.38	8.48	13.24	16.70	12.02	9.45	6.62	6.67	6.70	6.49	7.28	8.77	9.32	3.0%	16.70	3.3%
Burlington	23,299	23,276	3.84	3.03	4.31	5.85	4.56	3.59	2.78	2.53	2.47	2.49	2.64	2.85	3.41	1.1%	5.85	1.2%
Cambridge	100,135	100,035	19.21	18.22	23.52	28.24	24.01	19.99	19.85	16.34	16.78	17.65	17.04	19.49	20.04	6.5%	28.24	5.6%
Canton	21,571	14,021	2.56	1.96	3.51	5.29	2.78	2.27	1.85	1.54	1.64	1.75	1.82	2.29	2.44	0.8%	5.29	1.0%
Chelsea	32,518	32,518	4.19	3.48	5.25	6.27	4.46	3.82	3.56	3.11	3.17	3.36	3.64	4.64	4.08	1.3%	6.27	1.2%
Dedham	23,736	21,505	4.90	4.05	6.21	7.90	6.20	4.76	3.32	2.24	1.98	1.92	2.19	2.85	4.04	1.3%	7.90	1.6%
Everett	36,837	36,837	5.70	4.89	6.73	8.26	6.11	4.95	4.23	3.72	3.80	4.09	4.36	5.57	5.20	1.7%	8.26	1.6%
Framingham	65,060	62,946	7.11	5.73	9.56	12.37	9.18	6.49	5.29	4.98	5.35	5.93	6.06	6.50	7.05	2.3%	12.37	2.4%
Hingham	7,257	6,625	1.60	0.99	2.40	3.03	1.51	0.89	0.55	0.47	0.44	0.40	0.46	0.94	1.14	0.4%	3.03	0.6%
Holbrook	10,775	8,453	0.88	0.79	1.02	1.26	0.96	0.78	0.66	0.59	0.60	0.65	0.67	0.78	0.80	0.3%	1.26	0.2%
Lexington	30,266	29,055	6.10	3.78	7.39	11.22	8.13	5.76	3.90	3.24	2.94	3.15	3.43	3.81	5.24	1.7%	11.22	2.2%
Malden	55,871	55,815	9.74	8.09	11.15	13.63	11.09	8.81	7.05	6.75	6.59	6.48	7.28	9.17	8.82	2.9%	13.63	2.7%
Medford	53,523	53,469	8.94	6.90	10.62	11.53	10.31	7.52	6.27	6.24	6.11	6.14	6.73	8.53	8.00	2.6%	11.53	2.3%
Melrose	26,365	26,339	4.03	3.11	6.09	8.92	6.24	4.27	2.77	2.47	2.37	2.30	2.73	3.72	4.09	1.3%	8.92	1.8%
Milton	26,034	24,212	4.02	3.03	5.58	7.46	4.36	3.10	2.01	1.60	1.54	1.54	1.87	2.87	3.25	1.1%	7.46	1.5%
Natick	31,943	27,535	2.88	2.23	3.66	4.82	3.70	2.54	2.03	1.82	1.87	1.86	1.98	2.24	2.64	0.9%	4.82	0.9%
Needham	28,418	25,718	4.27	3.29	5.40	7.56	5.44	3.98	2.85	2.70	2.41	2.38	2.62	3.07	3.83	1.2%	7.56	1.5%
Newton	83,158	81,827	14.62	11.56	20.07	27.70	18.64	14.74	10.91	8.48	8.35	8.20	9.20	11.23	13.64	4.4%	27.70	5.5%
Norwood	28,478	28,193	5.79	4.88	6.80	8.57	5.78	4.26	3.05	2.83	2.58	2.84	3.28	4.36	4.58	1.5%	8.57	1.7%
Quincy	90,250	90,241	14.80	12.71	17.96	22.03	16.66	14.28	11.77	11.28	10.87	11.08	11.79	13.76	14.09	4.6%	22.03	4.3%
Randolph	30,468	30,438	3.91	3.26	4.71	6.61	4.23	3.23	2.59	2.33	2.31	2.21	2.41	3.05	3.40	1.1%	6.61	1.3%
Reading	23,164	22,098	3.14	2.31	3.78	5.37	4.10	2.79	1.84	1.77	1.73	1.81	2.04	2.36	2.75	0.9%	5.37	1.1%
Revere	45,807	45,761	6.92	5.63	8.82	10.22	8.08	6.37	5.69	5.35	4.89	4.93	5.49	7.04	6.63	2.1%	10.22	2.0%
Somerville	74,963	74,963	10.08	8.05	11.86	15.45	8.85	7.44	6.63	6.08	6.72	7.36	8.10	10.09	8.89	2.9%	15.45	3.0%
Stoneham	21,582	21,258	3.77	2.66	4.55	5.45	4.62	3.37	2.44	2.04	1.89	1.84	2.13	2.77	3.13	1.0%	5.45	1.1%
Stoughton	26,692	17,350	3.76	3.43	4.07	5.11	4.36	3.20	2.42	2.20	2.17	2.14	2.37	2.92	3.18	1.0%	5.11	1.0%
Wakefield	24,575	23,592	4.78	3.25	5.14	7.69	5.45	3.82	2.99	2.49	2.33	2.31	2.69	3.30	3.86	1.2%	7.69	1.5%
Walpole	23,112	15,485	2.47	2.16	2.71	3.54	2.86	2.22	1.76	1.53	1.61	1.63	1.67	1.82	2.16	0.7%	3.54	0.7%
Waltham	59,556	59,496	10.52	8.80	13.18	16.88	12.69	9.77	7.48	6.98	6.83	6.86	7.46	8.44	9.66	3.1%	16.88	3.3%
Watertown	32,303	32,303	4.02	3.34	5.22	6.57	4.81	3.68	2.84	2.62	2.58	2.62	2.77	3.26	3.69	1.2%	6.57	1.3%
Wellesley	26,978	26,169	3.99	3.06	5.51	7.80	5.42	3.61	2.47	2.21	2.21	2.28	2.51	2.91	3.67	1.2%	7.80	1.5%
Westwood	13,900	13,205	1.60	1.26	1.92	2.60	1.79	1.33	0.95	0.86	0.88	0.93	1.03	1.21	1.36	0.4%	2.60	0.5%
Weymouth	53,788	51,583	7.65	6.65	9.72	12.59	7.99	6.45	5.05	4.65	4.61	4.57	5.05	6.82	6.81	2.2%	12.59	2.5%
Wilmington	21,472	3,951	1.15	1.10	1.44	1.78	1.51	1.18	1.04	1.01	1.00	1.04	1.04	1.06	1.20	0.4%	1.78	0.4%
Winchester	21,181	21,160	2.93	2.03	3.49	5.02	3.51	2.39	1.59	1.43	1.29	1.26	1.43	1.71	2.34	0.8%	5.02	1.0%
Winthrop	17,069	17,069	2.28	2.14	2.80	2.99	2.42	1.89	1.80	1.69	1.51	1.49	1.54	1.91	2.04	0.7%	2.99	0.6%
Woburn	37,147	35,290	11.04	9.41	12.39	17.02	11.68	10.20	7.86	6.67	7.21	7.01	7.32	8.08	9.65	3.1%	17.02	3.4%
Total/Average	2,070,164	1,993,217	327.11	285.30	408.26	507.94	376.22	302.82	254.53	232.22	231.18	234.81	251.37	297.30	309.13	100%	507.94	100%

2007 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY07-12 MONTHS)

03-Jun-08

COMMUNITY						2007 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	41,224	40,812	321	106	7	4.60	1.49%	4.23	1.63	35.4%	2.60	56.5%	0.37	8.0%	9.37	1.84%
Ashland	15,551	10,870	2	43	2	1.08	0.35%	1.00	0.20	18.5%	0.80	74.1%	0.08	7.4%	1.82	0.36%
Bedford	12,462	11,216	2	68	2	2.69	0.87%	2.54	1.34	49.8%	1.20	44.6%	0.14	5.2%	4.90	0.96%
Belmont	23,371	22,927	2	78	2	3.02	0.98%	2.69	1.09	36.1%	1.60	53.0%	0.33	10.9%	6.51	1.28%
BWSC (5)	559,034	558,475	234	840	33	91.59	29.63%	78.82	21.82	23.8%	57.00	62.2%	12.78	14.0%	122.95	24.21%
Braintree	33,681	33,647	15	133	7	6.02	1.95%	5.46	2.26	37.5%	3.20	53.2%	0.56	9.3%	11.09	2.18%
Brookline	55,590	55,479	9	102	12	9.32	3.01%	8.42	3.92	42.1%	4.50	48.3%	0.90	9.7%	16.70	3.29%
Burlington	23,299	23,276	0	115	1	3.41	1.10%	3.26	1.26	37.0%	2.00	58.7%	0.15	4.4%	5.85	1.15%
Cambridge (5)	100,135	100,035	116	150	9	20.04	6.48%	17.52	6.52	32.5%	11.00	54.9%	2.52	12.6%	28.24	5.56%
Canton	21,571	14,021	63	62	6	2.44	0.79%	2.17	0.97	39.8%	1.20	49.2%	0.27	11.1%	5.29	1.04%
Chelsea (5)	32,518	32,518	40	41	5	4.08	1.32%	3.20	0.70	17.2%	2.50	61.3%	0.88	21.6%	6.27	1.23%
Dedham	23,736	21,505	25	76	6	4.04	1.31%	3.68	1.88	46.5%	1.80	44.6%	0.36	8.9%	7.90	1.56%
Everett	36,837	36,837	20	57	1	5.20	1.68%	4.69	1.19	22.9%	3.50	67.3%	0.51	9.8%	8.26	1.63%
Framingham	65,060	62,946	4	275	4	7.05	2.28%	6.54	2.04	28.9%	4.50	63.8%	0.51	7.2%	12.37	2.44%
Hingham	7,257	6,625	1	31	1	1.14	0.37%	0.98	0.58	50.9%	0.40	35.1%	0.16	14.0%	3.03	0.60%
Holbrook	10,775	8,453	2	31	2	0.80	0.26%	0.76	0.26	32.5%	0.50	62.5%	0.04	5.0%	1.26	0.25%
Lexington	30,266	29,055	17	151	4	5.24	1.70%	4.93	2.13	40.6%	2.80	53.4%	0.31	5.9%	11.22	2.21%
Malden	55,871	55,815	242	99	6	8.82	2.85%	8.23	3.23	36.6%	5.00	56.7%	0.59	6.7%	13.63	2.68%
Medford	53,523	53,469	71	113	6	8.00	2.59%	7.32	2.82	35.3%	4.50	56.3%	0.68	8.5%	11.53	2.27%
Melrose	26,365	26,339	187	74	5	4.09	1.32%	3.60	1.70	41.6%	1.90	46.5%	0.49	12.0%	8.92	1.76%
Milton	26,034	24,212	45	83	14	3.25	1.05%	2.85	1.45	44.6%	1.40	43.1%	0.39	12.0%	7.46	1.47%
Natick	31,943	27,535	27	107	4	2.64	0.85%	2.45	0.65	0.85%	1.80	68.2%	0.18	6.8%	4.82	0.95%
Needham	28,418	25,718	21	115	2	3.83	1.24%	3.53	1.53	39.9%	2.00	52.2%	0.30	7.8%	7.56	1.49%
Newton	83,158	81,827	51	271	7	13.64	4.41%	12.59	5.99	43.9%	6.60	48.4%	1.06	7.8%	27.70	5.45%
Norwood	28,478	28,193	30	83	6	4.58	1.48%	4.14	1.74	38.0%	2.40	52.4%	0.44	9.6%	8.57	1.69%
Quincy	90,250	90,241	56	202	6	14.09	4.56%	12.94	4.44	31.5%	8.50	60.3%	1.15	8.2%	22.03	4.34%
Randolph	30,468	30,438	2	101	2	3.40	1.10%	3.15	1.15	33.8%	2.00	58.8%	0.25	7.4%	6.61	1.30%
Reading	23,164	22,098	2	86	2	2.75	0.89%	2.57	1.07	38.9%	1.50	54.5%	0.18	6.5%	5.37	1.06%
Revere	45,807	45,761	3	78	1	6.63	2.14%	5.68	1.88	28.4%	3.80	57.3%	0.95	14.3%	10.22	2.01%
Somerville (5)	74,963	74,963	43	107	7	8.89	2.88%	7.11	1.81	20.4%	5.30	59.6%	1.78	20.0%	15.45	3.04%
Stoneham	21,582	21,258	23	63	7	3.13	1.01%	2.88	1.08	34.5%	1.80	57.5%	0.25	8.0%	5.45	1.07%
Stoughton	26,692	17,350	1	60	2	3.18	1.03%	2.97	1.47	46.2%	1.50	47.2%	0.21	6.6%	5.11	1.01%
Wakefield	24,575	23,592	10	82	2	3.86	1.25%	3.64	1.94	50.3%	1.70	44.0%	0.22	5.7%	7.69	1.51%
Walpole	23,112	15,485	1	56	2	2.16	0.70%	1.96	0.76	35.2%	1.20	55.6%	0.21	9.7%	3.54	0.70%
Waltham	59,556	59,496	3	138	3	9.66	3.12%	9.11	3.51	36.3%	5.60	58.0%	0.55	5.7%	16.88	3.32%
Watertown	32,303	32,303	14	75	3	3.69	1.19%	3.47	1.17	31.7%	2.30	62.3%	0.22	6.0%	6.57	1.29%
Wellesley	26,978	26,169	2	130	3	3.67	1.19%	3.36	1.36	37.1%	2.00	54.5%	0.31	8.4%	7.80	1.54%
Westwood	13,900	13,205	3	77	3	1.36	0.44%	1.24	0.44	32.4%	0.80	58.8%	0.12	8.8%	2.60	0.51%
Weymouth	53,788	51,583	17	238	4	6.81	2.20%	6.23	2.43	35.7%	3.80	55.8%	0.58	8.5%	12.59	2.48%
Wilmington	21,472	3,951	2	19	1	1.20	0.39%	1.13	0.33	27.5%	0.80	66.7%	0.06	5.0%	1.78	0.35%
Winchester	21,181	21,160	72	83	7	2.34	0.76%	2.22	1.12	47.9%	1.10	47.0%	0.12	5.1%	5.02	0.99%
Winthrop	17,069	17,069	21	36	6	2.04	0.66%	1.84	0.74	36.3%	1.10	53.9%	0.19	9.3%	2.99	0.59%
Woburn	37,147	35,290	18	141	13	9.65	3.12%	9.12	4.62	47.9%	4.50	46.6%	0.53	5.5%	17.02	3.35%
Totals/Averages	2,070,164	1,993,217	1,840	5,076	234	309.13	100.00%	276.22	100.22	32.4%	176.00	56.9%	32.88	10.6%	507.94	100.00%

FOOTNOTES:

- (1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2007.
- (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 2007 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

2007 Final Community Wastewater Flow Component Estimates (Alphabetical Detail page 1 of 3)

27-May-08

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	40,812	106	896	4.60	1.63	0.37	2.60	5,134	2,232	1,819	413	3,483	64
Ashland	10,870	43	390	1.08	0.20	0.08	0.80	2,769	718	513	205	1,865	74
Bedford	11,216	68	552	2.69	1.34	0.14	1.20	4,873	2,681	2,428	254	2,059	107
Belmont	22,927	78	708	3.02	1.09	0.33	1.60	4,266	2,006	1,540	466	4,253	70
BWSC	558,475	840	14,024	91.59	21.82	12.78	57.00	6,531	2,467	1,556	911	15,212	102
Braintree	33,647	133	1,215	6.02	2.26	0.56	3.20	4,955	2,321	1,860	461	4,224	95
Brookline	55,479	102	1,090	9.32	3.92	0.90	4.50	8,550	4,422	3,596	826	8,865	81
Burlington	23,276	115	1,042	3.41	1.26	0.15	2.00	3,273	1,353	1,209	144	1,304	86
Cambridge	100,035	150	2,344	20.04	6.52	2.52	11.00	8,549	3,857	2,782	1,075	16,798	110
Canton	14,021	62	567	2.44	0.97	0.27	1.20	4,303	2,187	1,711	476	4,357	86
Chelsea	32,518	41	618	4.08	0.70	0.88	2.50	6,602	2,557	1,133	1,424	21,271	77
Dedham	21,505	76	712	4.04	1.88	0.36	1.80	5,674	3,146	2,640	506	4,714	84
Everett	36,837	57	686	5.20	1.19	0.51	3.50	7,580	2,478	1,735	743	8,877	95
Framingham	62,946	275	2,519	7.05	2.04	0.51	4.50	2,799	1,012	810	202	1,855	71
Hingham	6,625	31	270	1.14	0.58	0.16	0.40	4,222	2,741	2,148	593	5,161	60
Holbrook	8,453	31	312	0.80	0.26	0.04	0.50	2,564	962	833	128	1,290	59
Lexington	29,055	151	1,487	5.24	2.13	0.31	2.80	3,524	1,641	1,432	208	2,052	96
Malden	55,815	99	876	8.82	3.23	0.59	5.00	10,068	4,361	3,687	674	5,942	90
Medford	53,469	113	982	8.00	2.82	0.68	4.50	8,147	3,564	2,872	692	6,005	84
Melrose	26,339	74	635	4.09	1.70	0.49	1.90	6,441	3,449	2,677	772	6,662	72
Milton	24,212	83	680	3.25	1.45	0.39	1.40	4,779	2,706	2,132	574	4,698	58
Natick	27,535	107	954	2.64	0.65	0.18	1.80	2,767	870	681	189	1,682	65
Needham	25,718	115	1,075	3.83	1.53	0.30	2.00	3,563	1,702	1,423	279	2,607	78
Newton	81,827	271	2,579	13.64	5.99	1.06	6.60	5,289	2,734	2,323	411	3,911	81
Norwood	28,193	83	763	4.58	1.74	0.44	2.40	6,003	2,857	2,280	577	5,313	85
Quincy	90,241	202	1,956	14.09	4.44	1.15	8.50	7,203	2,858	2,270	588	5,693	94
Randolph	30,438	101	1,138	3.40	1.15	0.25	2.00	2,988	1,230	1,011	220	2,475	66
Reading	22,098	86	747	2.75	1.07	0.18	1.50	3,681	1,673	1,432	241	2,094	68
Revere	45,761	78	832	6.63	1.88	0.95	3.80	7,969	3,401	2,260	1,142	12,179	83
Somerville	74,963	107	1,523	8.89	1.81	1.78	5.30	5,837	2,357	1,188	1,169	16,569	71
Stoneham	21,258	63	517	3.13	1.08	0.25	1.80	6,054	2,573	2,089	484	3,968	85
Stoughton	17,350	60	621	3.18	1.47	0.21	1.50	5,121	2,705	2,367	338	3,523	86
Wakefield	23,592	82	842	3.86	1.94	0.22	1.70	4,584	2,565	2,304	261	2,675	72
Walpole	15,485	56	577	2.16	0.76	0.21	1.20	3,744	1,681	1,317	364	3,750	77
Waltham	59,496	138	1,289	9.66	3.51	0.55	5.60	7,494	3,150	2,723	427	3,982	94
Watertown	32,303	75	616	3.69	1.17	0.22	2.30	5,990	2,256	1,899	357	2,931	71
Wellesley	26,169	130	1,271	3.67	1.36	0.31	2.00	2,887	1,314	1,070	244	2,385	76
Westwood	13,205	77	627	1.36	0.44	0.12	0.80	2,169	893	702	191	1,558	61
Weymouth	51,583	238	2,272	6.81	2.43	0.58	3.80	2,997	1,325	1,070	255	2,437	74
Wilmington	3,951	19	259	1.20	0.33	0.06	0.80	4,633	1,506	1,274	232	3,176	202
Winchester	21,160	83	633	2.34	1.12	0.12	1.10	3,697	1,959	1,769	190	1,446	52
Winthrop	17,069	36	309	2.04	0.74	0.19	1.10	6,602	3,010	2,395	615	5,319	64
Woburn	35,290	141	1,393	9.65	4.62	0.53	4.50	6,927	3,697	3,317	380	3,758	128
Total	1,993,217	5,076	55,398	309.12	100.22	32.88	176.00	223,805	101,177	80,277	20,899	224,382	3,554
Average	46,354	118	1,288	7.19	2.33	0.76	4.09	5,205	2,353	1,867	486	5,218	83

2007 Final Community Wastewater Flow Component Estimates (Ranked Detail page 2 of 3)

Sewered		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)	
Community	Population	Community	Sewers	Community	Sewers	Community	(MGD)	Community	(MGD)	Community	(MGD)	Community	(MGD)
BWSC	558,475	BWSC	840	BWSC	14,024	BWSC	91.59	BWSC	21.82	BWSC	12.78	BWSC	57.00
Cambridge	100,035	Framingham	275	Newton	2,579	Cambridge	20.04	Cambridge	6.52	Cambridge	2.52	Cambridge	11.00
Quincy	90,241	Newton	271	Framingham	2,519	Quincy	14.09	Newton	5.99	Somerville	1.78	Quincy	8.50
Newton	81,827	Weymouth	238	Cambridge	2,344	Newton	13.64	Woburn	4.62	Quincy	1.15	Newton	6.60
Somerville	74,963	Quincy	202	Weymouth	2,272	Waltham	9.66	Quincy	4.44	Newton	1.06	Waltham	5.60
Framingham	62,946	Lexington	151	Quincy	1,956	Woburn	9.65	Brookline	3.92	Revere	0.95	Somerville	5.30
Waltham	59,496	Cambridge	150	Somerville	1,523	Brookline	9.32	Waltham	3.51	Brookline	0.90	Malden	5.00
Malden	55,815	Woburn	141	Lexington	1,487	Somerville	8.89	Malden	3.23	Chelsea	0.88	Brookline	4.50
Brookline	55,479	Waltham	138	Woburn	1,393	Malden	8.82	Medford	2.82	Medford	0.68	Framingham	4.50
Medford	53,469	Braintree	133	Waltham	1,289	Medford	8.00	Weymouth	2.43	Malden	0.59	Medford	4.50
Weymouth	51,583	Wellesley	130	Wellesley	1,271	Framingham	7.05	Braintree	2.26	Weymouth	0.58	Woburn	4.50
Revere	45,761	Needham	115	Braintree	1,215	Weymouth	6.81	Lexington	2.13	Braintree	0.56	Revere	3.80
Arlington	40,812	Burlington	115	Randolph	1,138	Revere	6.63	Framingham	2.04	Waltham	0.55	Weymouth	3.80
Everett	36,837	Medford	113	Brookline	1,090	Braintree	6.02	Wakefield	1.94	Woburn	0.53	Everett	3.50
Woburn	35,290	Somerville	107	Needham	1,075	Lexington	5.24	Dedham	1.88	Everett	0.51	Braintree	3.20
Braintree	33,647	Natick	107	Burlington	1,042	Everett	5.20	Revere	1.88	Framingham	0.51	Lexington	2.80
Chelsea	32,518	Arlington	106	Medford	982	Arlington	4.60	Somerville	1.81	Melrose	0.49	Arlington	2.60
Watertown	32,303	Brookline	102	Natick	954	Norwood	4.58	Norwood	1.74	Norwood	0.44	Chelsea	2.50
Randolph	30,438	Randolph	101	Arlington	896	Melrose	4.09	Melrose	1.70	Milton	0.39	Norwood	2.40
Lexington	29,055	Malden	99	Malden	876	Chelsea	4.08	Arlington	1.63	Arlington	0.37	Watertown	2.30
Norwood	28,193	Reading	86	Wakefield	842	Dedham	4.04	Needham	1.53	Dedham	0.36	Burlington	2.00
Natick	27,535	Milton	83	Revere	832	Wakefield	3.86	Stoughton	1.47	Belmont	0.33	Needham	2.00
Melrose	26,339	Winchester	83	Norwood	763	Needham	3.83	Needham	1.45	Lexington	0.31	Randolph	2.00
Wellesley	26,169	Norwood	83	Reading	747	Watertown	3.69	Wellesley	1.36	Wellesley	0.31	Wellesley	2.00
Needham	25,718	Wakefield	82	Dedham	712	Wellesley	3.67	Bedford	1.34	Needham	0.30	Melrose	1.90
Milton	24,212	Revere	78	Belmont	708	Burlington	3.41	Burlington	1.26	Canton	0.27	Dedham	1.80
Wakefield	23,592	Belmont	78	Everett	686	Randolph	3.40	Everett	1.19	Randolph	0.25	Natick	1.80
Burlington	23,276	Westwood	77	Milton	680	Milton	3.25	Watertown	1.17	Stoneham	0.25	Stoneham	1.80
Belmont	22,927	Dedham	76	Melrose	635	Stoughton	3.18	Randolph	1.15	Wakefield	0.22	Wakefield	1.70
Reading	22,098	Watertown	75	Winchester	633	Stoneham	3.13	Winchester	1.12	Watertown	0.22	Belmont	1.60
Dedham	21,505	Melrose	74	Westwood	627	Belmont	3.02	Belmont	1.09	Stoughton	0.21	Reading	1.50
Stoneham	21,258	Bedford	68	Stoughton	621	Reading	2.75	Stoneham	1.08	Walpole	0.21	Stoughton	1.50
Winchester	21,160	Stoneham	63	Chelsea	618	Bedford	2.69	Reading	1.07	Winthrop	0.19	Milton	1.40
Stoughton	17,350	Canton	62	Watertown	616	Natick	2.64	Canton	0.97	Canton	0.18	Bedford	1.20
Winthrop	17,069	Stoughton	60	Walpole	577	Canton	2.44	Walpole	0.76	Reading	0.18	Canton	1.20
Walpole	15,485	Everett	57	Canton	567	Winchester	2.34	Winthrop	0.74	Hingham	0.16	Walpole	1.20
Canton	14,021	Walpole	56	Bedford	552	Walpole	2.16	Chelsea	0.70	Burlington	0.15	Winchester	1.10
Westwood	13,205	Ashland	43	Stoneham	517	Winthrop	2.04	Natick	0.65	Bedford	0.14	Winthrop	1.10
Bedford	11,216	Chelsea	41	Ashland	390	Westwood	1.36	Hingham	0.58	Westwood	0.12	Ashland	0.80
Ashland	10,870	Winthrop	36	Holbrook	312	Wilmington	1.20	Westwood	0.44	Winchester	0.12	Westwood	0.80
Holbrook	8,453	Hingham	31	Winthrop	309	Hingham	1.14	Wilmington	0.33	Ashland	0.08	Wilmington	0.80
Hingham	6,625	Holbrook	31	Hingham	270	Ashland	1.08	Holbrook	0.26	Wilmington	0.06	Holbrook	0.50
Wilmington	3,951	Wilmington	19	Wilmington	259	Holbrook	0.80	Ashland	0.20	Holbrook	0.04	Hingham	0.40
Total	1,993,217	Total	5,076	Total	55,398	Total	309	Total	100	Total	33	Total	176
Average	46,354	Average	118	Average	1,288	Average	7	Average	2	Average	1	Average	4

2007 Final Community Wastewater Flow Component Estimates (Ranked Detail page 3 of 3)

Community	ADF (GPD Per IDM)	Community	II (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	10,068	Brookline	4,422	Malden	3,687	Chelsea	1,424	Chelsea	21,271	Wilmington	202
Brookline	8,550	Malden	4,361	Brookline	3,596	Somerville	1,169	Cambridge	16,798	Woburn	128
Cambridge	8,549	Cambridge	3,857	Woburn	3,317	Revere	1,142	Somerville	16,569	Cambridge	110
Medford	8,147	Woburn	3,697	Medford	2,872	Cambridge	1,075	BWSC	15,212	Bedford	107
Revere	7,969	Medford	3,564	Cambridge	2,782	BWSC	911	Revere	12,179	BWSC	102
Everett	7,580	Melrose	3,449	Waltham	2,723	Brookline	826	Everett	8,877	Lexington	96
Waltham	7,494	Revere	3,401	Melrose	2,677	Melrose	772	Brookline	8,865	Braintree	95
Quincy	7,203	Waltham	3,150	Dedham	2,640	Everett	743	Melrose	6,662	Everett	95
Woburn	6,927	Dedham	3,146	Bedford	2,428	Medford	692	Medford	6,005	Quincy	94
Chelsea	6,602	Winthrop	3,010	Winthrop	2,395	Malden	674	Malden	5,942	Waltham	94
Winthrop	6,602	Quincy	2,858	Stoughton	2,367	Winthrop	615	Quincy	5,693	Malden	90
BWSC	6,531	Norwood	2,857	Newton	2,323	Hingham	593	Winthrop	5,319	Stoughton	86
Melrose	6,441	Hingham	2,741	Wakefield	2,304	Quincy	588	Norwood	5,313	Burlington	86
Stoneham	6,054	Newton	2,734	Norwood	2,280	Norwood	577	Hingham	5,161	Canton	86
Norwood	6,003	Milton	2,706	Quincy	2,270	Milton	574	Dedham	4,714	Norwood	85
Watertown	5,990	Stoughton	2,705	Revere	2,260	Dedham	506	Milton	4,698	Stoneham	85
Somerville	5,837	Bedford	2,681	Hingham	2,148	Stoneham	484	Canton	4,357	Medford	84
Dedham	5,674	Stoneham	2,573	Milton	2,132	Canton	476	Belmont	4,253	Dedham	84
Newton	5,289	Wakefield	2,565	Stoneham	2,089	Belmont	466	Braintree	4,224	Revere	83
Arlington	5,134	Chelsea	2,557	Watertown	1,899	Braintree	461	Waltham	3,982	Brookline	81
Stoughton	5,121	Everett	2,478	Braintree	1,860	Waltham	427	Stoneham	3,968	Newton	81
Braintree	4,955	BWSC	2,467	Arlington	1,819	Arlington	413	Newton	3,911	Needham	78
Bedford	4,873	Somerville	2,357	Winchester	1,769	Newton	411	Woburn	3,758	Walpole	77
Milton	4,779	Braintree	2,321	Everett	1,735	Woburn	380	Walpole	3,750	Chelsea	77
Wilmington	4,633	Watertown	2,256	Canton	1,711	Walpole	364	Stoughton	3,523	Wellesley	76
Wakefield	4,584	Arlington	2,232	BWSC	1,556	Watertown	357	Arlington	3,483	Weymouth	74
Canton	4,303	Canton	2,187	Belmont	1,540	Stoughton	338	Wilmington	3,176	Ashland	74
Belmont	4,266	Belmont	2,006	Lexington	1,432	Needham	279	Watertown	2,931	Melrose	72
Hingham	4,222	Winchester	1,959	Reading	1,432	Wakefield	261	Wakefield	2,675	Wakefield	72
Walpole	3,744	Needham	1,702	Needham	1,423	Weymouth	255	Needham	2,607	Framingham	71
Winchester	3,697	Walpole	1,681	Walpole	1,317	Bedford	254	Randolph	2,475	Watertown	71
Reading	3,681	Reading	1,673	Wilmington	1,274	Wellesley	244	Weymouth	2,437	Somerville	71
Needham	3,563	Lexington	1,641	Burlington	1,209	Reading	241	Wellesley	2,385	Belmont	70
Lexington	3,524	Wilmington	1,506	Somerville	1,188	Wilmington	232	Reading	2,094	Reading	68
Burlington	3,273	Burlington	1,353	Chelsea	1,133	Randolph	220	Bedford	2,059	Randolph	66
Weymouth	2,997	Weymouth	1,325	Wellesley	1,070	Lexington	208	Lexington	2,052	Natick	65
Randolph	2,988	Wellesley	1,314	Weymouth	1,070	Ashland	205	Ashland	1,865	Winthrop	64
Wellesley	2,887	Randolph	1,230	Randolph	1,011	Framingham	202	Framingham	1,855	Arlington	64
Framingham	2,799	Framingham	1,012	Holbrook	833	Westwood	191	Natick	1,682	Westwood	61
Ashland	2,769	Holbrook	962	Framingham	810	Winchester	190	Westwood	1,558	Hingham	60
Natick	2,767	Westwood	893	Westwood	702	Natick	189	Winchester	1,446	Holbrook	59
Holbrook	2,564	Natick	870	Natick	681	Burlington	144	Burlington	1,304	Milton	58
Westwood	2,169	Ashland	718	Ashland	513	Holbrook	128	Holbrook	1,290	Winchester	52
Total	223,805	Total	101,177	Total	80,277	Total	20,899	Total	224,382	Total	3,554
Average	5,205	Average	2,353	Average	1,867	Average	486	Average	5,218	Average	83