

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

August 30, 2007

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 2007**

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 2007.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan  
Attachment 2 – MWRA Regional I/I Reduction Plan - FY07 Progress Update and Detailed Implementation Schedule for FY08 Activities  
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY07  
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 – CY06 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 29, 2007) the information required prior to September 1, 2007.

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 FY07  
Reporting Period – July 2006 Through June 2007

## 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 FY07  
Reporting Period – July 2006 Through June 2007

**MWRA REGIONAL I/I REDUCTION PLAN -  
FY07 PROGRESS UPDATE AND DETAILED  
IMPLEMENTATION SCHEDULE FOR FY08 ACTIVITIES**

This document provides a progress update for FY07 accomplishments and a description of the activities to be accomplished during FY08 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 FY07, MWRA properly operated and maintained the MWRA-owned interceptor system. Annual performance targets and ongoing accomplishments are tracked as part of the Authority's electronic MAXIMO maintenance database and are reported monthly to MWRA senior management. Specific activities undertaken by MWRA for FY07 are detailed in Attachment 3. Additional information on MWRA's FY07 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.**

**During FY08, 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)

**MWRA's work on this strategy is awaiting follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database (see Strategy A above).**

**During FY07, MWRA continued its ongoing priority program to inspect all inverted siphons using the sonar camera. Follow-up siphon cleaning and reinspection is expected to minimize potential SSOs upstream of siphons and reduce the risk of**

**hydraulic limitations and/or blockage from debris buildup in siphon barrels. This inspection program will continue in FY08.**

**MWRA's new/updated GIS mapping information was rolled-out in FY06. MWRA reviewed existing SSO sites based on rainfall events over the last few years. The specific SSO sites were verified with MWRA field Operations staff and updated site identification information was developed. As discussed at a joint DEP/MWRA meeting on July 7, 2006, MWRA is now utilizing DEP's Sanitary Sewer Overflow/Bypass/Backup Notification Form to report SSOs from MWRA's collection system. In a July 27, 2007 submittal to DEP, MWRA provided detailed GIS location maps for the twelve MWRA SSOs reported under cover letter dated April 20, 2007. MWRA will continue to utilize DEP's Sanitary Sewer Overflow/ Bypass/Backup Notification Form to report SSOs from MWRA's collection system during FY08.**

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

**MWRA's work on this strategy is awaiting follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database (see Strategy A above).**

**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. As part of this distribution, MWRA again offered to provide technical assistance to member communities regarding their local programs.**

*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)

**MWRA's new/updated GIS mapping information was rolled-out in FY06. MWRA reviewed existing SSO sites based on rainfall events over the last few years. The specific SSO sites were verified with MWRA field Operations staff and updated site identification information was developed. As discussed at a joint DEP/MWRA meeting on July 7, 2006, MWRA is now utilizing DEP's Sanitary Sewer Overflow/Bypass/Backup Notification Form to report SSOs from MWRA's collection system. In a July 27, 2007 submittal to DEP, MWRA provided detailed GIS location maps for the**

**twelve MWRA SSOs reported under cover letter dated April 20, 2007. MWRA will continue to utilize DEP's Sanitary Sewer Overflow/ Bypass/Backup Notification Form to report SSOs from MWRA's collection system during FY08.**

**See update on status/evaluation of SSO sites under Strategies E and F, below.**

*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)

**During FY07, MWRA continued ongoing planning/design/construction on a variety of relief sewer and sewer rehabilitation projects that will reduce existing SSOs. Of particular note are the Braintree/Weymouth Relief Facilities, the Upper Neponset Valley Replacement Sewer, and the Cummingsville Replacement Sewer projects. Progress on these projects is detailed in Attachment 3.**

**This paragraph provides an update on status/evaluation of SSO sites in MWRA's South Collection System and review of appropriate I/I reduction and/or relief sewer projects that may eliminate (or minimize) SSOs.**

- **On MWRA Sewer Section 570 (Station 10+89) in Boston/Roslindale, MWRA has reported SSOs from an emergency directed discharge (via two gate valves) to the Stony Brook Conduit which ultimately discharges to the Charles River. MWRA has no plans for a relief sewer project in this area. The long-term plan to minimize this SSO is continued coordination with member communities to reduce I/I from local collection systems.**
- **On MWRA Sewer Section 626 (Station 54+06) in Braintree, MWRA has reported SSOs from the upstream headhouse of the Smelt Brook Siphon that discharges directly to Smelt Brook. MWRA is nearing completion of the Braintree/Weymouth Relief Facilities Project that included construction of a new Intermediate Pump Station (IPS) in Weymouth that increased sewer capacity. This \$221 million project will help to minimize SSOs in the Braintree/Weymouth system. In the long-term, continued coordination with member communities to reduce I/I from local collection systems will further minimize this SSO.**
- **On MWRA Sewer Section 628 (Station 13+73) in Braintree, MWRA has reported SSOs from an emergency pumped discharge to the Monatiquot River from a manhole just downstream of the Pearl Street Siphon. MWRA's Wastewater Master Plan includes a long-term Randolph Trunk Sewer Relief Study to identify system improvements that may reduce sanitary sewer overflows. Continued coordination with member communities to reduce I/I from local collection systems will also help to minimize this SSO.**

- **On MWRA Sewer Section 530 (Station 52+13) in Newton, MWRA has reported SSOs from the upstream end of the Upper Neponset Valley Sewer that discharges to Saw Mill Brook. MWRA is nearing completion of the \$54 million Upper Neponset Valley Replacement Sewer Project that will increase sewer capacity, reduce I/I, and minimize SSOs in the Brookline, Newton, West Roxbury area. In the long-term, continued coordination with member communities to reduce I/I from local collection systems will further minimize this SSO.**

**During FY08, work on this Strategy will continue.**

*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)

**This paragraph provides an update on status/evaluation of SSO sites in MWRA's South Collection System and review of interim measures to relocate or otherwise mitigate the impact of existing overflows on human and natural resources.**

- **On MWRA Sewer Section 570 (Station 10+89) in Boston/Roslindale, MWRA has reported SSOs from an emergency directed discharge (via two gate valves) to the Stony Brook Conduit which ultimately discharges to the Charles River. If activated during extreme storm conditions, this directed discharge will minimize the potential for health and environmental impacts to homes, businesses, streets, and playground areas in the immediate low lying area that could potentially be inundated by an SSO in the vicinity of this location.**
- **On MWRA Sewer Section 626 (Station 54+06) in Braintree, MWRA has reported SSOs from the upstream headhouse of the Smelt Brook Siphon that discharges directly to Smelt Brook. If activated during extreme storm conditions, this SSO location will minimize the potential for health and environmental impacts to homes, businesses, streets, and a nearby train station in the immediate low lying area that could potentially be inundated by an SSO in the vicinity of this location.**
- **On MWRA Sewer Section 628 (Station 13+73) in Braintree, MWRA has reported SSOs from an emergency pumped discharge to the Monaquot River from a manhole just downstream of the Pearl Street Siphon. If activated during extreme storm conditions, this directed discharge will minimize the potential for health and environmental impacts to homes (specifically in the vicinity of 425 Pearl Street) in the immediate low lying area near the Pearl Street Siphon that could potentially be inundated by an SSO in the vicinity of this location.**

**During FY08, 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 Program (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 FY07, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY06 is included as Attachment 6. These flow data tables were distributed to all MWRA member sewer communities on August 8, 2007. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis.**

**During FY08, 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)

**MWRA's Wastewater Meter Replacement project was completed in FY06. During FY07 the system was again 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 phase of MWRA's Wastewater Central Monitoring (SCADA) Project is planned for the FY08-09 time period. This phase will include decision making on the benefits of adding SCADA-type meters at key locations in the collection system. This Strategy will be reexamined following completion of the SCADA Project.**

*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 FY07, MWRA staff continued to meet with community representatives to provide technical assistance and discuss local programs. Communities are often interested in progress reports on what specific actions other communities are pursuing. All member sewer communities are actively participating in MWRA's I/I Local Financial Assistance Program (see Attachment 4). Community I/I reduction programs are generally being conducted by local engineering consultants under contract to the communities. These projects generally utilize standards established in DEP's January 1993 I/I Guidelines. This work will continue in FY08.**

*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, through July 2006, over 30 of MWRA's 43 sewer 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 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 in financial assistance funds became available to the communities in FY07. During FY07, 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 FY07. Since inception of the program in May 1993, \$156 million has been distributed to fund 326 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 FY08, MWRA will continue to distribute funds and assist communities in the management of projects under the I/I Local Financial Assistance Program. MWRA's financial assistance funds that have not yet been distributed to communities 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 FY07, MWRA continued to provide emergency assistance to member communities, as requested. These efforts included internal TV inspection of 3 miles of local sewers, as well as, other emergency assistance. During FY08, 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 FY07, MWRA distributed technical information to member community Public Works Directors and local wastewater system operators, including:**

- 1. March 2007 I/I Local Financial Assistance Program Funding Update.**

2. **April and June 2007, I/I Local Financial Assistance Program reminders to the three remaining communities that had not utilized their entire Phase 3 funding that the Phase 3 sunset date for the grant portion of financial assistance is June 30, 2008.**
3. **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.**

**During FY08, MWRA will continue to distribute information on I/I and SSO issues.**

*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 FY07, DEP and MWRA had no discussions on organizing additional joint workshops. During FY08, 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.**

**During FY07, in conjunction with 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.**

*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)

**During FY07, no specific actions were required under this Strategy. Communities actively involved with private inflow removal programs have generally been developing public education information related to their specific project and/or utilizing information already available via local engineering consultants. Also see update provided under Strategy I, below.**

*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 no longer needed and it is considered complete. During FY07, MWRA continued to revise and upgraded its web site [mwra.com](http://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 FY07, no assistance from MWRA was requested by MADEP. During FY08, any 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 FY07, the Town of Holbrook, through their engineering consultant (CDM), requested sample public education materials from MWRA. In March 2007, MWRA provided Holbrook sample public education information including: Newton I/I reduction pamphlet, Weymouth I/I reduction tape used on local cable TV, BWSC downspout disconnect program information, and WEF sewer system pamphlets. During FY08, MWRA will continue to respond to community requests.**

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)

**MWRA's work under this strategy is on hold pending future issuance of EPA's SSO Rules, including CMOM Regulations, that may impact local sewer use regulations.**

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

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

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

ATTACHMENT 3  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY07  
Reporting Period – July 2006 Through June 2007

## MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY07

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 32 miles of Authority-owned interceptors and more than 3 miles of community-owned sewers, internally sonar inspected 35 inverted siphon barrels, and physically inspected over 2250 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.) during FY07. 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 FY07, maintenance work included hydraulic/mechanical cleaning of 33 miles of sewer pipelines and 70 siphon barrels, as well as, replacement of 138 manhole frames and covers. Potential structural problems and infiltration sources identified during the inspection process are referred to engineering staff for follow-up review and analysis of cost-effective repairs.

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

1. During FY07, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. A \$0.4 million rehabilitation of Sewer Sections 80/83 is ongoing and will be completed in FY07. A \$2 million Mystic Valley Sewer (Section 160) in Winchester/Medford evaluation/rehabilitation project is scheduled for construction during FY07-08. As part of this project, a \$1.6 million construction contract for 9,500 feet of cured-in-place liner and associated bypass pumping was awarded in April 2007. Each of these projects will provide structural repairs for the pipelines and reduce I/I entering the MWRA interceptor system.
2. MWRA's \$221 million Braintree/Weymouth Relief Facilities Project is nearing completion. The last phase of the project, construction of the Braintree-Weymouth Replacement Pump Station began in January 2005 and is scheduled to be completed in March 2008. The new facilities will provide additional sewer capacity in the Braintree/Weymouth system to reduce sanitary sewer overflows (SSOs).
3. MWRA's \$54 million Upper Neponset Valley Sewer Project began construction in FY05 and is scheduled to be completed in 2008. This project will provide 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 will be reduced.



4. MWRA's \$9.3 million Cummingsville Replacement Sewer Project began construction in FY05 and 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.
5. MWRA's \$76 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 FY06-10.
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. MWRA's \$812 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 FY07  
Reporting Period – July 2006 Through June 2007

**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 FY07, \$156 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 community. Distribution of the remaining \$65 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 2007**

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	\$2,998,500	72%	\$1,190,500
Ashland	\$930,500	\$550,500	59%	\$380,000
Bedford	\$1,691,600	\$957,300	57%	\$734,300
Belmont	\$2,556,100	\$1,292,400	51%	\$1,263,700
Boston	\$62,946,200	\$42,181,051	67%	\$20,765,149
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	\$1,949,800	82%	\$440,000
Cambridge	\$11,347,100	\$6,656,655	59%	\$4,690,445
Canton	\$2,013,900	\$1,645,900	82%	\$368,000
Chelsea	\$3,005,100	\$2,469,100	82%	\$536,000
Dedham	\$2,945,000	\$2,183,000	74%	\$762,000
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	\$7,251,200	72%	\$2,838,200
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	\$1,736,100	82%	\$380,000
Revere	\$4,582,900	\$4,582,900	100%	\$0
Somerville	\$7,459,800	\$5,723,790	77%	\$1,736,010
Stoneham	\$2,451,900	\$2,043,900	83%	\$408,000
Stoughton	\$2,276,900	\$1,436,900	63%	\$840,000
Wakefield	\$2,880,900	\$2,534,500	88%	\$346,400
Walpole	\$1,759,000	\$1,447,000	82%	\$312,000
Waltham	\$6,580,400	\$4,212,400	64%	\$2,368,000
Watertown	\$3,113,800	\$952,600	31%	\$2,161,200
Wellesley	\$2,779,700	\$1,098,947	40%	\$1,680,753
Westwood	\$1,209,300	\$733,300	61%	\$476,000
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	\$516,800	32%	\$1,097,600
Woburn	\$5,318,500	\$4,633,000	87%	\$685,500
Totals	\$220,750,000	\$155,734,128	71%	\$65,015,872

## 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-two 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:	\$ 16.9	\$ 10.3	\$ 27.2 (17%)
Design:	4.2	3.3	7.5 (5%)
Construction:	71.6	40.8	112.4 (72%)
Eng. Services During Const.:	5.2	2.4	8.6 (6%)
<b>TOTAL</b>	<b>\$ 97.9 (63%)</b>	<b>\$ 57.8 (37%)</b>	<b>\$ 155.7 (100%)</b>

## Estimated I/I Removal

The estimated average daily flow reduction associated with all MWRA funded I/I reduction projects that have been completed is about 61 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 estimate the average I/I reduction. The estimated I/I removals noted here represent groundwater and stormwater that no longer enter the collection system. 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 offset I/I reductions.

Recognizing the limitations noted above for analysis of regional flow data, and accounting for varying annual rainfall, MWRA historical flow data show a general decreasing trend in community wastewater flows for the regional system.

## Projects Funded During FY07

Local projects are funded quarterly by MWRA. Funding summaries for the four quarterly funding distributions during FY07: August 2006 (no communities funded), November 2006 (five communities funded), February 2007 (five communities funded), and May 2007 (seven communities funded) are available from MWRA in hard copy.

ATTACHMENT 5  
TO  
MWRA ANNUAL I/I REDUCTION REPORT FOR FY07  
Reporting Period – July 2006 Through June 2007

**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 FY07, MWRA has distributed \$156 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: 41,903
- Three Year ('01 - '03) Annual Average I/I: 3.16 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sewer System Evaluation Study (Year 1) Final Report (September 2006). Approximately 50,000 gpd of infiltration and 7000 gpd of peak inflow were found to be excessive/value effective to remove. Sewer System Evaluation Study (Year 2) Report is 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: Sewer Improvements on Hemlock Street, Pine Street and Lansdowne Road (Contract No. 05-05) were bid April 2005 and completed in July 2006. The sewer rehabilitation design recommended by the Year 1 Sewer System Evaluation Survey Report is being completed with draft Contract Documents being submitted to MWRA in July 2007.

Reporting Period Activity:

1. The Sewer System Investigation Planning Program (SSIPP) Report was approved by MWRA in October 2006. A report copy was forwarded to DEP.
2. The Year 1 Sewer System Evaluation Survey Report was approved by MWRA in September 2006. A report copy was forwarded to DEP.
3. In November 2006, funds were distributed for the construction of sewer rehabilitations as recommended in the Year 1 SSES Report; the design of the sewer rehabilitations as recommended in the Year 2 SSES Report; and for Year 3 SSES Report preparation (MWRA Project No. WRA-P6-01-3-605).

MWRA I/I Local Financial Assistance Program: The community has financed eleven (11) 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 \$1,190,500 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 43
- Sewered Population: 11,606
- Three Year ('01 - '03) Annual Average I/I: 0.53 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): May 2007

Private Source Inflow Removal Program: The Town is performing sump pump investigations of residential/commercial properties in Sub-Basins III / IV. Once Sub-Basins 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. Prepared I/I Investigation/Repair Summary Report for Sub-Basins I – IV.

Reporting Period Activity: Hawthorne Road Extension added 250 LF of 8-inch PVC sewer and three sewer connections. Shadow Creek (Senior Residential) added 2500 LF of 8-inch PVC sewer and eight sewer connections. Evergreen Estates added 700 LF of 8-inch PVC sewer and fourteen sewer connections. Americas Way Condominiums added eighty sewer connections.

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 \$930,500 allotted through the Program's Phases 1-6, the community has \$380,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 68
- Sewered Population: 11,576
- Three Year ('01 - '03) Annual Average I/I: 1.73 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: SSES, July 2006

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.

Reporting Period Activity: The SSES study was conducted on approximately 60,000 LF of sanitary sewer in Sewer Subareas 3 / 9 and portions of Walsh Road, Ashby Road and Great Road. Study finalized/approved by MWRA in December 2006. The report concluded that approximately 250,000 gpd of infiltration and 7,000 gpd of peak inflow was excessive/value effective to be removed. A report copy was forwarded to DEP in December 2006.

In May 2007, funds were distributed for: (1) design of sewer rehabilitations recommended by the 2005 SSES; (2) performing a SSES in areas not included in the 2005 SSES report; and (3) assistance in setting I/I removal criteria for private developers (MWRA Project No. WRA-P6-03-2-617).

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 \$1,691,600 allotted through the Program's Phases 1-6, the community has \$734,300 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 78
- Sewered Population: 23,358
- Three Year ('01 - '03) Annual Average I/I: 2.09 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Detailed House Survey Report (March 2000)

Private Source Inflow Removal Program: The first contract for connecting private inflow sources to the town's storm drain system is scheduled to be completed this Summer 2007.

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 in February 2004 and has been substantially completed. Only punch lists items remain. This project, which is expected to be completed Fall 2007, will remove 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 is scheduled to be completed September 2007.

Reporting Period Activity: See previous comments. In January 2007, the Preliminary Hydraulic Report, which involved the development of a hydraulic model of the sewer and drain systems, was completed. MWRA has issued comments. In Spring 2007, a new I/I Study commenced. Report on this study is expected by late Summer or early Fall 2007.

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
- Three Year ('01 - '03) Annual Average I/I: 45.65 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

Private Source Inflow Removal Program: Since 1994, the Downspout Disconnection Program has conducted approximately 36,000 building surveys and 10,000 dye water tests. Approximately 20,000 downspouts have been disconnected. During CY05/06, 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 (60) projects have received funding through the MWRA I/I Local Financial Assistance Program. In CY06/07, 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 four 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 (60) 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 \$20,765,149 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 133
- Sewered Population: 33,694
- Three Year ('01 - '03) Annual Average I/I: 4.45 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: 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 completed December 2006. 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: 56,585
- Three Year ('01 - '03) Annual Average I/I: 5.81 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.

I/I Rehabilitation Projects in Design or Construction: Sewer Rehabilitation Project No. 4, which includes various Townwide locations, lined 11,575 LF of sewer and lined/sealed 80 manholes. The project has removed approximately 200,000 gpd of infiltration.

Sewer Rehabilitation Project No. 5 (Contract No. PW/06-16), which includes the cured-in-place lining of 10,400 LF of various size of sewer and 950 VF of manholes in various locations in the southern portion of Town, was bid April 2006. Construction was completed June 2007. An estimated 100,000 gpd of peak infiltration is to be removed.

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: 22,643
- Three Year ('01 - '03) Annual Average I/I: 2.17 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1004 (7/25/01)

Latest I/I or SSES Report: 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: Construction associated with the "Sewer System Rehabilitation Program" as recommended by the SSES Report of January 2003 has been completed.

Reporting Period Activity: See above work description. Sewer system investigations for I/I in Phase 3 Area have been completed. Town has selected a consultant to develop the Contract Documents for the Phase 3 I/I Removal Project. Bidding is expected to take place late Summer/early Fall 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 \$2,389,800 allotted through the Program's Phases 1-6, the community has \$440,000 remaining in funding assistance.

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

### Background Information:

- Miles of Sewer: 148
- Sewered Population: 101,485
- Three Year ('01 - '03) Annual Average I/I: 9.45 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 is being scheduled over the next year for future design of improvements in the CAM 017 tributary area. The City recently adopted a zoning change in the Concord Avenue / Alewife Brook area that includes a required flow reduction program.

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 their sites by 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 is currently under construction and is scheduled for completion in December 2007. The project includes 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 is ongoing and should be completed in the Fall of 2007. This project includes 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 2008.

*Common Manhole Removal Contract No. 6.* This project will separate sixteen common manholes in the Normandy Terrace area of the City. The project is scheduled to be advertised for construction in Fall 2007 and to be completed by mid 2008.

*Common Manhole Removal Contract No 4a.* This project includes the separation of eight common manholes along the south side of Massachusetts Avenue in Central Square. The design of the project is underway. The project is scheduled to be advertised in October 2007 with construction completed by mid 2008.

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 \$11,347,100 allotted through the Program's Phases 1-6, the community has \$4,690,445 remaining in funding assistance.

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

### Background Information:

- Miles of Sewer: 62
- Sewered Population: 15,634
- Three Year ('01 - '03) Annual Average I/I: 1.93 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 completion is scheduled for September 2007. Work includes 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) to be bid Fall 2007. Work includes cleaning/testing/sealing approximately 30,000 LF of pipe and 30 manholes within Subsystems 1-5 / 11. Design of Green Lodge Interceptor Replacement on-going. Project to be advertised late Fall 2007.

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: 34,106
- Three Year ('01 - '03) Annual Average I/I: 1.78 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: Construction of the Highland Street Drainage Outfall under Phase 1 of the CHE007 Tributary Area Sewer Separation Plan is ongoing with construction expected to be completed by late Summer 2007.

Construction of approximately 2,300 LF of storm drain to separate approximately eight acres of storm drain in the Eastern Avenue area is ongoing. The construction of the Spruce Street Roadway and Utility Project is underway. This project, which involves construction of 560 LF of 48-inch storm drain line on Spruce Street and construction of a new storm drain line on Sixth Street to allow sewer separation, is expected to be completed Fall 2007.

The Library Street Area Sewer and Drainage Improvement project, which involves the installation of new sewers and drains is ongoing and should be completed by Fall 2007. Under the project, one catch basin (estimated 140,580 gpd of peak inflow) will be disconnected and a drainage outlet from the area will be installed which will allow for the separation of seven additional catch basins (an estimated 861,053 gpd of peak inflow) under a subsequent project.

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

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 \$536,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 88
- Sewered Population: 21,849
- Three Year ('01 - '03) Annual Average I/I: 3.70 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: A revised Sewer By-Law was 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 (February 2007) replacement of 1100 LF of sewer main under the East Street and Washington Street Sewer Replacement Project (Contract No. 2005-1 / MWRA Project No. WRA-P5-12-3-549).

The Town of Dedham developed plans and specifications for a 2007 I/I Inspection Project. Project scope included approximately 120,920 LF of light cleaning/television inspection of 6 to 24-inch sanitary sewer and top-side inspection of approximately 871 sanitary sewer manholes. The project was awarded January 2007. As of July 2007, approximately 113,400 LF of sanitary sewer had been inspected. Project completion is anticipated during September 2007. The community solicited engineering design proposals for resultant I/I rehabilitation. A notice of award was issued to perform design work for rehabilitation and prioritization of approximately 95,000 LF of sanitary sewer main and 600 sanitary sewer manholes found to contain I/I. Design work anticipated to be complete by December 2007. The community plans on publicly bidding the I/I rehabilitation work in December 2007 with construction taking place between January 2008 and July 2008.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed eleven (11) I/I reduction projects through the Authority's funding assistance program. Of the \$2,945,000 allotted through the Program's Phases 1-6, the community has \$762,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 57
- Sewered Population: 37,540
- Three Year ('01 - '03) Annual Average I/I: 3.64 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 the sewer rehabilitations that were completed in 2001. MWRA funds were distributed in May 2006 for the design and construction associated with this project. It is anticipated that an estimated 300,000 gpd of annual infiltration will be removed by this project. The design was completed in August 2006 with bidding taken place in September 2006. Construction commenced in November 2006 and is expected to be completed Fall 2007.

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
- Three Year ('01 - '03) Annual Average I/I: 2.52 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)

Private Source Inflow Removal Program: The SSES included a house-to-house inspection component initiating at properties along the Howard Street Sewer Rehabilitation Project. Three basement sump pumps were identified and are scheduled for removal. Also as part of the SSES, approximately 500 homes and businesses (within Sub-areas CC / Q / EE) are being targeted for basement plumbing inspections during Summer/Fall 2007.

The Town is also undertaking a Storm Water Management Study that will provide mapping of the town-wide sewer (completed April 2004) and storm water drainage (on-going) 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 using the Town's recently drafted illicit connection policy (required by DEP's ACO).

I/I Rehabilitation Projects in Design or Construction: Rehabilitation of approximately 3000 LF of sewer in the Howard Street area was completed in December 2005. Rehabilitation of approximately 5300 LF of sewer near Franklin Street (between Mt. Wayte Avenue and Main Street) was completed in December 2005.

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 is scheduled to be 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. Project awarded June 2007.



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. Project awarded June 2007.

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 20,000 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
- Three Year ('01 - '03) Annual Average I/I: 0.85 mgd
- Massachusetts DEP Administrative Order: No. 536 (Issued November 15, 1985)

Latest I/I or SSES Report: Comprehensive Wastewater Management Plan (On-going);  
I/I Investigation (On-going)

Private Source Inflow Removal Program: The house-to-house sump pump inspection and roof leader disconnection programs continue. Sixty residences were inspected in FY07. Based on these inspections, one roof leader was located and redirected.

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 currently being prepared.

Reporting Period Activity: 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 on-going I/I Investigation and Comprehensive Wastewater Management Study. Ten new sewer connections were added during FY07.

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
- Three Year ('01 - '03) Annual Average I/I: 0.46 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-1001  
(Signed January 7, 2005; Amended July 24, 2007)

Latest I/I or SSES Report: I/I Inspections Report (7/06); DEP ACO Progress Report (2/07)

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 illicit 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: Fall 2006 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) during August 2006. Smoke testing was conducted on 69,500 LF of pipe in Sub-areas B/H(7)/I and a portion of Sub-area A during August/September 2006.

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: 30,563
- Three Year ('01 - '03) Annual Average I/I: 3.36 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sewer System GPS Mapping (April 2002)

Private Source Inflow Removal Program: Inspections were performed by two Town Departments. For all buildings that have been issued Town work permits, the Building Division inspectors check basements for the presence of floor drains and sump pumps. During the past year, no sump pumps were ordered to be removed. The Public Works Department also checks homes during routine business. Town staff have developed draft stormwater bylaws and are beginning to discuss the bylaw with town senior managers. Every effort will be made to pass the bylaw at Town Meeting in Spring 2008.

I/I Rehabilitation Projects in Design or Construction: No projects are currently being designed or constructed. Town still in the planning phase. See Reporting Period Activity below.

Reporting Period Activity: Under the contract with Tutela Engineering Associates for a comprehensive evaluation of the sewer system, flow measurements were completed in April 2007. The scope of the work involves: installation of temporary meters; collection/analysis of flow data; developing hydraulic model; identifying and inspecting sewer system deficiencies and making recommendations; internal TV inspections; and summary report preparation. The Report is expected to be completed by late Summer 2007.

During the installation of the flow meters, Manhole SMH 2-219 was found to be a source of considerable infiltration. The cone and cover were dislodged and a surface stream had found its way to the open structure. A repair was made immediately. The estimated flow entering this manhole was 400,000 gpd. This was observed during the Spring at a time of snow melt and high surface runoff.

Concurrent with the consultant's study, the Town's engineering staff revisited videotapes of problem areas in the sewer system from investigations performed during CY02/03. The Town acted to clear debris in a trunk sewer in an easement near SMH 10-180.

TV inspection disclosed cracked and quartered pipe in School Street near Marrett Road. A contract for replacement of approximately 2,000 LF of 8-inch sewer and laterals in this area is being prepared. Bidding in August and award in September is planned for construction next spring.

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: 55,760
- Three Year ('01 - '03) Annual Average I/I: 5.58 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: Design of the sewer rehabilitations as recommended by the Sewer System Survey II – Phase II began in May 2007. It is anticipated that this Contract No. 2007-S-1 will be bid Fall 2007. 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 was submitted in June 2007. 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: 54,679
- Three Year ('01 - '03) Annual Average I/I: 5.11 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 during this period.

I/I Rehabilitation Projects in Design or Construction: Construction of the Sydney Street Inflow Removal and Drainage Improvement Project is 98% complete with only final startup, training and minor punch list items remaining. Once operational, this project is estimated to remove 7.0 mgd of peak inflow.

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: 26,757
- Three Year ('01 - '03) Annual Average I/I: 2.64 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: The design of two sewer rehabilitation projects (Contract Nos. 07-1 / 07-2) was completed. Both projects have been bid/ awarded. These designs involve additional areas identified during Construction Contract No. 05-1. Contract No. 07-1, awarded to New England Pipe Cleaning Co., involves cleaning, inspecting testing and sealing of 6, 8, 10, 12 and 20-inch sewers; chemical root treatment; various manhole rehabilitations; various liner installations; and TV inspecting, testing and grouting of service connections. Contract length is tentatively scheduled for August to November 2007. Contract No. 07-2, awarded to Aqua Line Utility Inc., involves a series of open cut spot repairs of sewers in Ardsmoor Road, Leonard Road, Irving Street, Harvard Street, and easement between Harvard Street and Lebanon Street. Project construction began July 2007 and is scheduled to continue through September 2007. Another design project, which is proceeding, involves sewer rehabilitations within the area tributary to the Upham Street Pump Station. These rehabilitations were identified in the "Upham St. 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
- Three Year ('01 - '03) Annual Average I/I: 2.70 mgd
- Massachusetts DEP Administrative Order: No. 580 (Issued June 13, 1985)

Latest I/I or SSES Report: Town-Wide Sewer System Evaluation - Year 5 (On-going)

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 2007. Estimated infiltration reduction is 122,760 gpd. Town-Wide Sewer Evaluation Program - Year 5 I/I Rehabilitation construction has begun and will be completed Spring/Summer 2008.

Reporting Period Activity: See description above.

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
- Three Year ('01 - '03) Annual Average I/I: 1.75 mgd
- Massachusetts DEP Administrative Order: No. 593 (Issued November 15, 1985)

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

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. Replaced 3810 LF of 8, 15 and 24-inch sewer on Park Avenue. Project completed January 2007. Estimated peak infiltration removed is 0.05 mgd. Replaced 4673 LF of 18-inch sewer on Speen Street. Project completed January 2007. 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.

Reporting Period Activity: Town-Wide SSES on-going. Ice House Lane (8 homes) sewer extension added 870 LF of 8-inch PVC sewer. Saddlebrook Road / Clubhouse Lane (18 homes) sewer extension added 144 LF of 8-inch PVC sewer and 2000 LF of 2-inch HDPE low pressure force main.

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
- Three Year ('01 - '03) Annual Average I/I: 3.33 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.

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. 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: 82,637
- Three Year ('01 - '03) Annual Average I/I: 8.83 mgd
- Massachusetts DEP Administrative Order: ACO-NE-00-1001

Latest I/I or SSES Report: 2006 Underdrain TV Inspection Report (July 2007)

Private Source Inflow Removal Program: The City continues to conduct home inspections for illicit connections to the sanitary sewer collection system. The sewer task force that was created to develop and implement a Private Inflow Removal Program has been holding meetings to discuss the 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: Design associated with “Sanitary Sewer/Underdrain Rehabilitation” contract was completed and bidding is scheduled for August 2007. 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.

Reporting Period Activity: The Cheesecake and Laundry Brook Underdrain Access Point Inspections Final Report, which presented the results of the follow up inspections of the rehabilitated sewer/underdrain common manhole access points, was completed and approved by MWRA in July 2006. A copy of this report 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 February 2007, funds were distributed for two studies. The first study is an Infiltration investigation in sewer Subareas B007, B010, B016, B022, B029, B071 (MWRA Project No. WRA-P6-24-1-612). The second study is a sewer and drain evaluation project in the Old Farm Road area (Sewer Area C) with regards to the adequacy of the two systems for the removal of sump pumps (MWRA Project No. WRA-P6-24-1-613). A draft report for this study was completed in July 2007.

In June 2007, funds were distributed for two sewer rehabilitation projects. The first project is for the lining of a portion of the Cochituate Aqueduct sewer. The second project involves separating the underdrain and sewer in six specific areas. (MWRA Project No. WRA-P6-2-1-621)

MWRA I/I Local Financial Assistance Program: The community has financed eighteen (18) 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 \$2,838,200 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 83
- Sewered Population: 28,443
- Three Year (’01 - ’03) Annual Average I/I: 3.85 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. As part of the Norwood Gardens SSES, fifty-six buildings were inspected and 10,000 LF of sewer line was smoke tested.

I/I Rehabilitation Projects in Design or Construction: Meadowbrook Area Sewer Inspection Project, involving Focused Electrode Leak Locator inspection of 6000 LF of 6 to 12-inch sewer in the Norwood Hospital area, was completed August 2006 (MWRA Project No. WRA-P5-25-1-548). Meadowbrook Area Underdrain Access Manhole Project completed June 2007 (Contract No. NPW-07-04 / MWRA Project No. WRA-P6-25-3-610).

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
- Three Year ('01 - '03) Annual Average I/I: 8.59 mgd
- Massachusetts DEP Administrative Order: No. 644 (Issued October 23, 1986)

Latest I/I or SSES Report: Fenno Street / Division Street Areas TV Inspection (May 2004)

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) design complete. Construction to be complete Summer 2007. North Quincy Lateral Sewer Improvements (Phase II) design complete. Fenno Street / Division Street Sewer Improvements design complete. Construction to begin September 2007 with completion targeted for Fall 2008 (MWRA Project No. WRA-P6-26-3-616). Carlisle Street Pump Station / Main Replacement in design phase.

Reporting Period Activity: Edgewater Drive Improvements Project construction on-going. Removed and replaced (with 12-inch PVC pipe) 654 LF of 12-inch PVC and VCR sewer main. Lined 1779 LF of sewer main.

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
- Three Year ('01 - '03) Annual Average I/I: 1.75 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: Amelian Road area house-to-house inspection findings forwarded to DEP.

I/I Rehabilitation Projects in Design or Construction: Sewer System Rehabilitation Project (Sub-areas 1-4/8) design to be complete August 2006. Construction scheduled for completion September 2007 (MWRA Project No. WRA-P5-27-3-551). Root Street Area Sewer System Rehabilitation Project design on-going (MWRA Project No. WRA-P6-27-3-609).

Reporting Period Activity: The Town has developed a sump pump inspection and amnesty program along with expanding its Developer Flow Reduction Plan. The Town is also currently working in conjunction with Roseland Property Company on an I/I removal project 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: 22,311
- Three Year ('01 - '03) Annual Average I/I: 1.23 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: The House-to-House Inspection Program is complete (Illicit Sewer System Inflow Building Inspection Program Final Report). Under this program, 6289 of the 7557 buildings in the Town were inspected. Information was collected on another 606 buildings. To date, the program has found a total of 151 sump pumps and 16 interior/exterior drains connected to the sewer. Letters have been sent to 149 of the homeowners. These homeowners will have the option of applying for reimbursement of up to \$1,000 under the Reading Inflow Removal Program. Working with the affected property owners, the Town has successfully removed 55 illicit connections, which has removed approximately 43,200 gallons of inflow per storm event.

I/I Rehabilitation Projects in Design or Construction: Town is continuing with its annual sewer rehabilitation program which involved cleaning/TV inspection of 5706 LF of sewer, testing 1449 joints, sealing 1034 joints, installing 89 cured-in-place spot repairs, rebuilding 4 manhole inverts, sealing of 19 manholes and sealing/testing 4 sewer services laterals throughout the Town.

Reporting Period Activity: See descriptions above.

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 \$380,000 remaining in funding assistance.

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

### Background Information:

- Miles of Sewer: 78
- Sewered Population: 46,955
- Three Year ('01 - '03) Annual Average I/I: 4.06 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: Removed seven illegal sump pump connections discharging to the sewer.

I/I Rehabilitation Projects in Design or Construction: Lined 5427 LF of 8-inch sewer, 680 LF of 10-inch sewer and 278 LF of 12-inch sewer. Completed short liner repairs of sewer at 59 locations.

Reporting Period Activity: Cleaned and televised 10,843 LF of sewer as part of an overall cleaning/television project which includes approximately 107,500 LF. Currently designing in-house the replacement of approximately 530 LF of 18-inch sewer along Revere Beach Boulevard between Manhole No. 18-40 and Manhole No. 17-06. The replacement of this sewer is necessary due to the poor condition of the vitrified clay pipe and the amount of infiltration detected during inspection by DPW personnel.

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: 75,533
- Three Year ('01 - '03) Annual Average I/I: 6.19 mgd
- Massachusetts DEP Administrative Order: NON-NE-00-1006 (Issued January 21, 2000)

Latest I/I or SSES Report: Tannery Brook Drain Separation Preliminary Design Interim Report (December 2005)

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

I/I Rehabilitation Projects in Design or Construction: Replaced sewer and storm drain on Woodstock Street, Victoria Street, Hooker Avenue and Garrison Avenue Total length of sewer replacement was 1970 LF of 8 and 12-inch. Estimated I/I reduction was 13,000 gpd. Numerous sewer rehabilitation projects are in the design and/or construction phase. The Somerville Avenue cured-in-place sewer lining, associated with the Mass Highway Somerville Avenue Reconstruction Project, was bid December 2006. The construction of this overall project began in Spring 2007.

Reporting Period Activity: See above work description. The Citywide Sewer Assessment Report is nearing completion. Also, in May 2007, funds were distributed for the design and construction associated with two rehabilitation projects: (1) Pearson Avenue Sewer and Stormwater Drainage Rehabilitation and (2) Josephine Street Sewer Rehabilitation and Stormwater Drainage Separation (MWRA Project No. WRA-P6-30-3-619).

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: 21,581
- Three Year ('01 - '03) Annual Average I/I: 1.42 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Manhole/CCTV Inspection in Marble/Main Streets Area Draft Report (September 2006)

Private Source Inflow Removal Program: Continuing to inspect buildings on a limited basis. I/I Rehabilitation Projects in Design or Construction: Design was completed for the "Marble Street/Main Street Area Sanitary Sewer System Rehabilitation and the contract was awarded in March 2007. This project involved performing rehabilitation of sewer lines and manholes in two areas of the Town. Area One included Marble, Lincoln, Congress, Warren Wright, Hancock, Benton and Winthrop Streets. Area Two included Main Street, Fells, Middlesex and Peabody Roads.

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

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 \$2,451,900 allotted through the Program's Phases 1-6, the community has \$408,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 60
- Sewered Population: 17,611
- Three Year ('01 - '03) Annual Average I/I: 2.30 mgd
- Massachusetts DEP Administrative Order: No. 538 (Issued June 17, 1984)

Latest I/I or SSES Report: Phase VI SSES (February 2003)

Private Source Inflow Removal Program: Town in process of adopting new sewer use regulations which address private inflow removal. TV inspection of service connections ongoing.

I/I Rehabilitation Projects in Design or Construction: Sewer System Infiltration Rehabilitation (Contract No. 07-1) construction to begin October 2007 (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.

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 \$2,276,900 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: 23,881
- Three Year ('01 - '03) Annual Average I/I: 3.05 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sewer Manhole Inspections in 100-Year Flood Zone Area Report (Draft-March 2007)

Private Source Inflow Removal Program: Negotiating with Colonial Hilton for the removal of roof drains and sump pumps. Receiving 4 to 1 removal from completed subdivisions/developments.

I/I Rehabilitation Projects in Design or Construction: Manhole rehabilitation was performed at various locations around Town. These manholes were identified to have excessive infiltration, (observed during the Underdrain Manhole Inspection Program). National Water Main Cleaning Company performed sixteen manhole rehabilitations between November 27, 2006 and December 14, 2006. An estimated 29,300 gpd of infiltration were removed by performing the manhole rehabilitation.

Underdrain access port sealings were performed at various locations around Town. These manholes were actively leaking or had missing access port covers and flow was observed in the underdrain. National Water Main Cleaning company performed eleven underdrain sealings between November 27, 2006 and December 14, 2006. An estimated 12,960 gpd were removed by performing the sealings.

Reporting Period Activity: Subarea 7 Infiltration Investigations were performed between April and May 2007. Approximately 50,000 LF of flow isolation and approximately 265 manhole inspections. Following the flow isolation, approximately 13,000 LF of sewer was TV inspected. A draft report of the summary of the investigations will be drafted August 2007.

The final letter report for the 100-year flood plain area manhole inspections summarized that approximately 121,500 gpd of removable infiltration is cost effective to remove from 108 manholes. Weston and Sampson is performing the design, bid and award, and construction services for cost-effective rehabilitations of manholes that are leaking between 1000 gpd to greater than 5000 gpd within the 100-year flood zone. The rehabilitations will be assembled into a bid package containing contract drawings and specifications for public bidding as a Base Bid and Alternate Bid No. 1 and 2 scope of work. The scope of work included in the Base Bid will be the rehabilitation of approximately 22 manholes leaking an estimated 1500 gpd to greater than 5000 gpd. Alternate Bid No. 1 scope of work will include the rehabilitation of approximately 22 manholes leaking an estimated 1000 gpd to 1500 gpd. Alternate Bid No. 2 scope of work will include repairs to manhole frames and covers. The project is estimated to be advertised by the July 2007 and awarded August 2007.

Subarea 7 Inflow Investigations are scheduled to begin August 2007. Approximately 50,000 LF of sewer will be smoke tested. Following the smoke testing, a dyed water testing program will be performed.

Television inspection for the Brick Trunk Outfall Sewer was performed by the MWRA in February and March 2007. A summary and engineering analysis of the television inspection is scheduled to be drafted August 2007.

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 \$2,880,900 allotted through the Program's Phases 1-6, the community has \$346,400 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 59
- Sewered Population: 14,864
- Three Year ('01 - '03) Annual Average I/I: 1.28 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: SSES Phases 1 and 2 (June 2002)

Private Source Inflow Removal Program: Town includes house-to-house inspection program as part of its water meter replacement program.



I/I Rehabilitation Projects in Design or Construction: Under Contract 2006-21 (MWRA Project No. WRA-P4-34-3-421), 16,000 LF of sewer main was cleaned, TV inspected, joint tested and sealed. Additional work included 950 LF of sewer lining and open cut replacement and the rehabilitation of 34 manholes. Project work completed June 2006. Estimated peak infiltration reduction is 300,000 gpd. Under Engineering Contract 2005-23, 58,000 LF of sewer main and 250 manholes were inspected within Subareas 1/2. Resultant data analysis and rehabilitation design to be complete November 2007 (MWRA Project No. WRA-P6-34-2-602), with construction bidding in January 2008.

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 four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$1,759,000 allotted through the Program's Phases 1-6 the community has \$312,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 138
- Sewered Population: 58,305
- Three Year ('01 - '03) Annual Average I/I: 6.18 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 (August 2006)

Private Source Inflow Removal Program: The City has advertised a Request for Proposal for private inflow removal. Proposals due August 15, 2007. The City was approved for 2007 SRF funding of \$7M for planning, design and construction. The sump pump project will be a turnkey operation by the selected consultant.

I/I Rehabilitation Projects in Design or Construction The Roberts Trunk Sewer Rehabilitation, contract was completed April 2007. River Street Sewer Rehabilitation, which was an extension of the Carter/Felton/Elm Sewer Rehabilitation Project was completed October 2006. The estimated I/I removal was 95,940 gpd.

Reporting Period Activity: See above work description. I/I Mitigation was also performed by private developers at various locations throughout the City. Approximately 91 sewer manholes (Paul Finger Phase II and CHBAW) were rehabilitated with an estimated 532,300 gpd of I/I removed.

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: 32,915
- Three Year ('01 - '03) Annual Average I/I: 1.84 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004

Latest I/I or SSES Report: I/I and SSES Analysis Draft Report (September 2000)

Private Source Inflow Removal Program: The Town performed seven building inspections. The Town is requiring Beacon Properties, a developer, to develop a public education brochure for I/I.

I/I Rehabilitation Projects in Design or Construction: The Town eliminated an illicit connection between the storm drain and sewer at School Street and Mt. Auburn Street, eliminating approximately 275,000 gpd of inflow. Approximately 300 LF of 10-inch sewer was lined on Stanley Avenue and approximately 500 LF of 15-inch sewer was lined on Pleasant Street. Design and construction of sewer rehabilitations in the Cottage Street, Spring Street, Arlington Street areas is ongoing.

Reporting Period Activity: Town cleaned and TV inspected 1246 LF of sewer on Holly Street, Knowles Road, Whitcomb Street, Holt Street and Belmont Street. The Town is proceeding with an SSES Study in those areas (Sub-areas 6/7/8/15/16) which exhibited excessive infiltration during the 1997 flow metering study (I/I Analysis Report of September 2000). This work includes 87,000 LF of flow isolation which was performed by ADS Environmental. Also, TV inspection of 3995 LF of sewer in the Cottage Street easement and Spring Street area was completed. As detailed in the letter report of July 26, 2007, all pipe inspected is recommended for replacement/rehabilitation. The estimated defect based infiltration is approximately 111,000 gpd. The Town is proceeded with the design of these recommended sewer rehabilitations. Draft Contract Documents were prepared July 2007.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) 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 \$2,161,200 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 130
- Sewered Population: 25,648
- Three Year ('01 - '03) Annual Average I/I: 2.52 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: Contract No. 04C-50-05 (Sewer Rehabilitation in the Wellesley Farms Area - Year 3) was completed October 2006. The project included the cleaning and television inspection of approximately 38,150 LF of sanitary sewer, testing 6,600 joints and sealing 2,215 joints. Estimated annual I/I reduction is approximately 14,650 gpd (MWRA Project No. WRA-P6-37-3-615). Earle Street Area Sewer System Rehabilitation Project was completed January 2007 (MWRA Project No. WRA-P6-37-3-615).

Reporting Period Activity: Thackeray Road Sewer System Improvements (Contract No. 06C-50-07) was completed July 2007. Also, a feasibility study to determine if alternatives exist to direct the discharge of the Boulevard Road Pump Station away from an intermunicipal connection with Newton's system is ongoing.

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 \$2,779,700 allotted through the Program's Phases 1-6, the community has \$1,680,753 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 77
- Sewered Population: 13,407
- Three Year ('01 - '03) Annual Average I/I: 1.12 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 FY07 Annual Inspection Program, has been completed. No properties were identified with illicit connections.

I/I Rehabilitation Projects in Design or Construction: The maintenance program for FY07 has been completed. The program included television inspection of fourteen miles of sewer, lining approximately 3000 LF of sewer, testing and sealing of sewer manholes, and house-to-house inspection surveys to identify illicit connections to the sewer system.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$1,209,300 allotted through the Program's Phases 1-6, the community has \$476,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 238
- Sewered Population: 51,855
- Three Year ('01 - '03) Annual Average I/I: 5.16 mgd
- Massachusetts DEP Administrative Order: No. 543 (Issued November 14, 1984)  
(A new ACO was executed in 1999)

Latest I/I or SSES Report: I/I Program Evaluation: Flow Monitoring (February 2006)  
Town-Wide Sewer Investigation/Rehabilitation Program Priority Evaluation Rpt (January 2007)

Private Source Inflow Removal Program: The Town has completed the redirection of 314 sump pumps (for an estimated 157,000 gpd of inflow removal). Four (4) sump pumps were redirected during FY07.

I/I Rehabilitation Projects in Design or Construction: Sewer System CIP Contract 1, Winter Street to Essex Street Sewer Replacement, completed June 2006. Approximately 123,900 gpd of infiltration removed from sanitary system. Mill River/North Weymouth Infiltration Rehabilitations (Contract S05-1) completed June 2006. Approximately 509,500 gpd of infiltration removed from sanitary system.

Reporting Period Activity: Sewer System CIP Contract 3, Libbey Industrial Parkway Pump Station and Influent Gravity Sewer Rehabilitation construction completed October 2006. In August 2006, heavy cleaning and TV inspection of the 12-inch cast iron siphon in the Montcalm Street easement was performed. 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 sanitary 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: 3,997
- Three Year ('01 - '03) Annual Average I/I: 0.74 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 need 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 and sewer rehabilitation recommendations.

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: 21,161
- Three Year ('01 - '03) Annual Average I/I: 1.67 mgd
- Massachusetts DEP Administrative Order: Draft ACO in 2001.

Latest I/I or SSES Report: Sewer Flow Evaluation Report at MWRA Meter No. WC-1C (Draft – April 2007)

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: The Town has awarded the work associated with updating the House-to-House Survey and conducting a Smoke Testing Program. This project is expected to begin late Summer/early Fall 2007.

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: 17,981
- Three Year ('01 - '03) Annual Average I/I: 1.14 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: Design of sewer rehabilitations sewer in the Town Center, Ingelside Park and the Main Street Area was completed. This project (Sewer System Infrastructure Improvements Project – Contract No. 1) was bid November 2006. The scope of work included cleaning, TV inspection, testing/sealing of approximately 15,000 LF of 8, 10 and 12-inch diameter sewer, along with root treatment. I/I removal is estimated to be 70,000 – 80,000 gpd.

Reporting Period Activity: Based upon the results of the TV inspection, the Town is proceeding with the design for sewer replacement on Woodside Avenue.

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 \$1,614,400 allotted through the Program's Phases 1-6, the community has \$1,097,600 remaining in funding assistance.

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

#### Background Information:

- Miles of Sewer: 141
- Sewered Population: 35,919
- Three Year ('01 - '03) Annual Average I/I: 5.59 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1005 (August 16, 2001)

Latest I/I or SSES Report: West Side Sanitary Sewer Rehabilitations Design Report (3/06)

Private Source Inflow Removal Program: Building inspections to identify sources of private inflow are currently being performed in Sewer Area No. 3. Approximately 3100 House-to-House inspections will be performed as part of this project.

I/I Rehabilitation Projects in Design or Construction: Construction associated with the West Side Sewer Rehabilitations Project has been completed. This sewer rehabilitation project consisted of: 42,500 LF of cleaning, TV inspection, joint testing/sealing; 135 VF of cementitious manhole lining; raising of 13 frames/covers; installation of 20 bolted and gasketed frames/covers; 9,600 LF of root treatment; installation of 1000 LF of various liners; TV inspection, testing and grouting of 135 service connections; and open-cut repair of 630 LF of sewer. It is estimated that 412,000 gpd of peak infiltration was removed by this project.

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).

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 FY07  
Reporting Period – July 2006 Through June 2007

**CY06 COMMUNITY WASTEWATER FLOW DATA**

This attachment contains calendar year 2006 wastewater flow data for the 43 MWRA member sewer communities. There are three separate data tables. The first table (one page) presents the CY06 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 CY06 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.



# CY06 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

30-Jul-07

Community	Total Population	Sewered Population	CY06 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	41,546	41,504	6.95	7.40	4.85	4.51	9.77	9.20	4.85	3.99	3.93	3.98	7.26	5.40	5.99	1.7%	9.77	1.8%
Ashland	15,528	12,267	1.58	1.52	1.15	1.10	1.57	1.57	1.81	1.13	0.99	1.01	1.12	1.02	1.25	0.4%	1.81	0.3%
Bedford	12,519	11,643	3.58	3.72	2.63	2.58	4.83	5.48	3.02	2.35	2.11	2.30	3.61	3.39	3.29	0.9%	5.48	1.0%
Belmont	23,604	23,132	5.43	5.06	2.99	2.66	6.56	6.16	3.00	2.36	2.08	2.43	4.49	3.23	3.86	1.1%	6.56	1.2%
BWSC	569,165	568,596	115.61	105.60	85.78	88.79	135.63	143.03	96.11	87.41	83.71	93.06	118.71	93.92	103.88	28.2%	143.03	26.4%
Braintree	33,873	33,839	9.21	8.44	5.60	5.04	9.94	11.37	7.03	5.03	4.48	4.83	9.22	6.83	7.24	2.0%	11.37	2.1%
Brookline	56,188	56,132	13.32	12.38	7.78	7.64	16.73	15.72	9.07	7.33	6.52	6.10	10.14	7.61	10.01	2.9%	16.73	3.1%
Burlington	23,223	23,200	4.67	4.76	3.38	3.23	5.35	5.98	3.92	3.04	3.06	3.16	4.29	3.84	4.05	1.1%	5.98	1.1%
Cambridge	100,771	100,670	21.54	20.93	14.38	15.35	30.16	26.57	19.26	17.22	15.59	18.53	22.88	18.53	20.07	5.1%	30.16	5.6%
Canton	21,505	13,978	5.13	4.37	2.53	2.28	4.06	5.90	2.91	2.17	2.18	2.45	3.90	3.07	3.40	1.0%	5.90	1.1%
Chelsea	33,227	33,227	4.88	4.31	3.30	3.59	5.93	5.74	3.80	3.69	3.63	4.10	5.42	3.72	4.34	1.1%	5.93	1.1%
Dedham	23,225	21,832	7.46	7.12	4.11	3.42	6.74	7.71	4.34	3.05	2.73	2.90	5.28	4.67	4.95	1.6%	7.71	1.4%
Everett	37,195	37,195	6.69	6.60	4.90	4.89	8.62	8.18	5.25	4.68	4.58	4.93	6.78	5.36	5.95	1.6%	8.62	1.6%
Frammingham	65,598	62,777	7.73	7.83	4.94	4.83	9.03	9.63	5.57	5.34	5.28	5.35	7.34	6.53	6.61	1.8%	9.63	1.8%
Hingham	7,186	6,554	1.80	1.58	0.85	0.74	2.15	2.51	1.09	0.64	0.56	0.62	1.41	1.01	1.24	0.4%	2.51	0.5%
Holbrook	10,832	8,494	1.17	1.10	0.82	0.78	1.09	1.19	0.84	0.68	0.69	0.72	0.90	0.84	0.90	0.3%	1.19	0.2%
Lexington	30,419	30,297	8.31	7.74	4.85	4.62	9.95	9.38	4.85	3.68	3.62	3.60	6.07	5.28	5.98	1.8%	9.95	1.8%
Malden	55,340	55,285	11.81	10.74	7.79	7.75	12.74	12.52	8.71	7.60	7.34	7.81	10.79	9.17	9.55	2.7%	12.74	2.3%
Medford	54,197	54,143	12.01	11.37	7.71	7.37	17.17	14.46	8.44	6.84	6.66	7.29	11.23	8.75	9.93	2.7%	17.17	3.2%
Melrose	26,533	26,506	5.40	5.51	2.71	2.61	9.00	7.49	4.33	2.92	2.75	3.00	5.66	4.00	4.61	1.2%	9.00	1.7%
Milton	25,855	24,045	6.48	5.86	3.20	2.71	7.00	8.93	3.86	2.68	2.42	2.60	5.26	3.93	4.56	1.3%	8.93	1.6%
Natick	32,113	27,392	4.04	3.89	2.63	2.45	4.21	4.46	2.26	1.96	1.94	1.92	2.98	2.59	2.94	0.9%	4.46	0.8%
Needham	29,022	27,049	6.88	6.39	4.12	3.68	6.80	8.13	3.99	3.15	3.04	2.99	4.67	4.10	4.81	1.5%	8.13	1.5%
Newton	83,802	82,126	25.00	24.94	14.59	12.84	27.78	30.07	15.56	11.10	11.08	10.73	17.60	14.17	17.90	5.5%	30.07	5.5%
Norwood	28,548	28,263	8.38	7.80	3.98	3.79	8.08	9.46	4.52	3.45	3.21	3.60	6.56	5.58	5.68	1.7%	9.46	1.7%
Quincy	89,909	89,819	17.73	16.63	11.90	11.04	21.14	25.01	15.44	12.44	11.60	11.74	17.97	14.84	15.61	4.1%	25.01	4.6%
Randolph	30,748	30,594	5.53	5.35	3.35	3.07	5.54	6.92	3.84	2.78	2.68	2.73	4.10	3.89	4.14	1.2%	6.92	1.3%
Reading	23,362	22,241	4.51	4.50	2.91	2.62	5.18	5.12	3.00	2.17	2.18	2.31	3.75	3.12	3.44	1.0%	5.18	1.0%
Revere	46,169	46,123	7.34	6.82	5.57	5.52	9.50	9.72	6.57	5.65	5.23	5.84	8.47	6.34	6.88	1.8%	9.72	1.8%
Somerville	75,621	75,621	12.73	11.54	7.61	8.63	19.87	17.82	10.26	8.98	7.76	9.17	12.30	8.28	11.24	2.9%	19.87	3.7%
Stoneham	21,781	21,389	4.94	4.90	2.96	3.03	5.50	5.67	3.34	2.62	2.53	2.68	4.74	3.64	3.87	1.1%	5.67	1.0%
Stoughton	26,902	17,486	4.18	4.33	3.12	3.02	4.18	4.85	3.35	2.72	2.61	2.74	3.73	3.25	3.50	1.0%	4.85	0.9%
Wakefield	24,562	23,678	6.40	6.73	4.14	3.72	8.05	7.66	4.66	3.27	3.16	3.33	5.76	4.84	5.13	1.5%	8.05	1.5%
Walpole	22,518	15,087	3.40	3.35	2.47	2.19	3.09	4.00	2.58	2.14	2.19	2.11	2.73	2.55	2.73	0.8%	4.00	0.7%
Waltham	59,232	59,173	14.04	14.04	10.10	9.31	15.40	14.70	10.02	8.50	8.41	8.70	12.30	10.34	11.30	3.4%	15.40	2.8%
Watertown	32,603	32,603	5.19	4.93	3.33	3.06	5.97	6.24	3.72	3.09	2.97	3.01	4.69	3.80	4.16	1.2%	6.24	1.1%
Wellesley	26,515	25,587	6.00	5.80	3.57	3.45	6.36	6.50	3.33	2.63	2.89	2.92	4.58	3.73	4.30	1.3%	6.50	1.2%
Westwood	14,020	13,319	2.47	2.27	1.53	1.37	2.20	2.53	1.26	1.05	1.03	1.06	1.53	1.54	1.65	0.5%	2.53	0.5%
Weymouth	54,202	51,763	11.08	10.05	6.55	6.23	11.41	13.35	8.09	6.14	5.94	5.83	9.06	7.49	8.42	2.4%	13.35	2.5%
Wilmington	21,568	3,861	1.14	1.14	1.05	1.02	1.69	1.31	1.03	0.97	0.96	0.91	1.03	0.94	1.10	0.3%	1.69	0.3%
Winchester	21,167	21,146	3.69	3.74	2.20	1.96	4.21	3.93	2.09	1.59	1.60	1.73	3.17	2.61	2.70	0.8%	4.21	0.8%
Winthrop	17,461	17,461	2.54	2.44	1.86	1.84	3.62	3.29	2.19	1.83	1.71	1.94	2.51	2.03	2.32	0.6%	3.62	0.7%
Woburn	37,448	35,576	13.76	12.24	9.78	8.90	17.69	15.73	9.46	8.99	8.54	8.61	12.44	11.34	11.45	3.2%	17.69	3.3%
<b>Total/Average</b>	<b>2,086,802</b>	<b>2,012,673</b>	<b>431.71</b>	<b>407.72</b>	<b>285.55</b>	<b>279.20</b>	<b>511.46</b>	<b>525.40</b>	<b>321.93</b>	<b>270.90</b>	<b>258.18</b>	<b>277.36</b>	<b>398.37</b>	<b>321.11</b>	<b>357.98</b>	<b>100%</b>	<b>542.79</b>	<b>100%</b>

# 2006 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY06-12 MONTHS)

11-May-07

COMMUNITY						2006 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	5.99	1.68%	5.15	2.35	39.2%	2.80	46.7%	0.85	14.2%	9.77	1.80%
Ashland	15,551	10,870	2	43	2	1.25	0.35%	1.13	0.33	26.4%	0.80	64.0%	0.12	9.6%	1.81	0.33%
Bedford	12,462	11,216	2	68	2	3.29	0.92%	3.10	2.00	60.3%	1.10	33.4%	0.20	6.1%	5.48	1.01%
Belmont	23,371	22,927	2	78	2	3.86	1.08%	3.18	1.68	43.5%	1.50	38.9%	0.68	17.6%	6.56	1.21%
BWSC (5)	559,034	558,475	234	840	33	103.89	29.11%	83.65	28.65	27.6%	55.00	52.9%	20.24	19.5%	143.03	26.35%
Braintree	33,681	33,647	15	133	7	7.24	2.03%	6.16	3.56	49.2%	2.60	35.9%	1.08	14.9%	11.37	2.09%
Brookline	55,590	55,479	9	102	12	10.01	2.80%	8.33	4.33	43.3%	4.00	40.0%	1.68	16.8%	16.72	3.08%
Burlington	23,299	23,276	0	115	1	4.05	1.13%	3.69	1.89	46.7%	1.80	44.4%	0.36	8.9%	5.98	1.10%
Cambridge (5)	100,135	100,035	116	150	9	20.07	5.62%	16.46	6.46	32.2%	10.00	49.8%	3.61	18.0%	30.16	5.56%
Canton	21,571	14,021	63	62	6	3.40	0.95%	2.84	1.64	48.2%	1.20	35.3%	0.56	16.5%	5.90	1.09%
Chelsea (5)	32,518	32,518	40	41	5	4.34	1.22%	3.34	1.04	24.0%	2.30	53.0%	1.00	23.0%	5.93	1.09%
Dedham	23,736	21,505	25	76	6	4.95	1.39%	4.23	2.73	55.2%	1.50	30.3%	0.72	14.5%	7.71	1.42%
Everett	36,837	36,837	20	57	7	5.95	1.67%	5.31	1.81	30.4%	3.50	58.8%	0.63	10.6%	8.62	1.59%
Framingham	65,060	62,946	4	275	4	6.61	1.85%	5.71	1.31	19.8%	4.40	66.6%	0.90	13.6%	9.63	1.77%
Hingham	7,257	6,625	1	31	1	1.24	0.35%	0.98	0.58	46.8%	0.40	32.3%	0.26	21.0%	2.51	0.46%
Holbrook	10,775	8,453	2	31	2	0.90	0.25%	0.84	0.34	37.8%	0.50	55.6%	0.06	6.7%	1.19	0.22%
Lexington	30,266	29,055	17	151	4	5.98	1.68%	5.36	2.86	47.8%	2.50	41.8%	0.62	10.4%	9.95	1.83%
Malden	55,871	55,815	242	99	6	9.55	2.68%	8.73	4.73	49.5%	4.00	41.9%	0.83	8.7%	12.74	2.35%
Medford	53,523	53,469	71	113	6	9.93	2.78%	8.32	4.42	27.8%	3.90	39.3%	1.61	16.2%	17.17	3.16%
Melrose	26,365	26,339	187	74	5	4.61	1.29%	3.74	2.04	44.3%	1.70	36.9%	0.87	18.9%	9.00	1.66%
Milton	26,034	24,212	45	83	14	4.56	1.28%	3.61	2.01	44.1%	1.60	35.1%	0.96	21.1%	8.93	1.65%
Natick	31,943	27,535	27	107	4	2.94	0.82%	2.69	0.89	30.3%	1.80	61.2%	0.24	8.2%	4.46	0.82%
Needham	28,418	25,718	21	115	2	4.81	1.35%	4.13	2.23	46.4%	1.90	39.5%	0.68	14.1%	8.13	1.50%
Newton	83,158	81,827	51	271	7	17.90	5.01%	15.72	9.22	51.5%	6.50	36.3%	2.18	12.2%	30.08	5.54%
Norwood	28,478	28,193	30	83	6	5.68	1.59%	4.67	2.57	45.2%	2.10	37.0%	1.01	17.8%	9.46	1.74%
Quincy	90,250	90,241	56	202	6	15.61	4.37%	13.87	6.87	44.0%	7.00	44.8%	1.74	11.1%	25.01	4.61%
Randolph	30,468	30,438	2	101	2	4.14	1.16%	3.60	1.60	38.6%	2.00	48.3%	0.53	12.8%	6.92	1.27%
Reading	23,164	22,098	2	86	2	3.44	0.96%	3.03	1.53	44.5%	1.50	43.6%	0.41	11.9%	5.18	0.95%
Revere	45,807	45,761	3	78	1	6.88	1.93%	5.80	2.80	40.7%	3.00	43.6%	1.08	15.7%	9.72	1.79%
Somerville (5)	74,963	74,963	43	107	7	11.24	3.15%	7.77	3.27	29.1%	4.50	40.0%	3.47	30.9%	19.87	3.66%
Stoneham	21,582	21,258	23	63	7	3.87	1.08%	3.36	1.46	37.7%	1.90	49.1%	0.51	13.2%	5.67	1.04%
Stoughton	26,692	17,350	1	60	2	3.50	0.98%	3.14	1.94	55.4%	1.20	34.3%	0.36	10.3%	4.85	0.89%
Wakefield	24,575	23,592	10	82	2	5.13	1.44%	4.51	2.81	54.8%	1.70	33.1%	0.62	12.1%	8.05	1.48%
Walpole	23,112	15,485	1	56	2	2.73	0.76%	2.51	1.41	51.6%	1.10	40.3%	0.22	8.1%	4.00	0.74%
Waltham	59,556	59,496	3	138	3	11.30	3.17%	10.42	5.82	51.5%	4.60	40.7%	0.88	7.8%	15.40	2.84%
Watertown	32,303	32,303	14	75	3	4.16	1.17%	3.71	1.61	38.7%	2.10	50.5%	0.45	10.8%	6.24	1.15%
Wellesley	26,978	26,169	2	130	3	4.30	1.20%	3.55	1.65	38.4%	1.90	44.2%	0.75	17.4%	6.50	1.20%
Westwood	13,900	13,205	3	77	3	1.65	0.46%	1.44	0.54	32.7%	0.90	54.5%	0.21	12.7%	2.53	0.47%
Weymouth	53,788	51,583	17	238	4	8.42	2.36%	7.26	3.86	45.8%	3.40	40.4%	1.16	13.8%	13.35	2.46%
Wilmington	21,472	3,951	2	19	1	1.10	0.31%	0.91	0.21	19.1%	0.70	63.6%	0.19	17.3%	1.69	0.31%
Winchester	21,181	21,160	72	83	7	2.70	0.76%	2.39	1.09	40.4%	1.30	48.1%	0.31	11.5%	4.21	0.78%
Winthrop	17,069	17,069	21	36	6	2.32	0.65%	1.95	0.95	40.9%	1.00	43.1%	0.37	15.9%	3.62	0.67%
Woburn	37,147	35,290	18	141	13	11.45	3.21%	10.12	6.12	53.4%	4.00	34.9%	1.34	11.7%	17.69	3.26%
<b>Totals/Averages</b>	<b>2,070,164</b>	<b>1,993,217</b>	<b>1,840</b>	<b>5,076</b>	<b>234</b>	<b>356.94</b>	<b>100.00%</b>	<b>300.41</b>	<b>137.21</b>	<b>38.4%</b>	<b>163.20</b>	<b>45.7%</b>	<b>56.55</b>	<b>15.8%</b>	<b>542.79</b>	<b>100.00%</b>

**FOOTNOTES:**

- (1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2006.
- (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 2006 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**

2006 Final Community Wastewater Flow Component Estimates (Alphabetical)

30-Jul-07

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	5.99	2.35	0.85	2.80	6,685	3,571	2,623	949	8,001	69
Ashland	10,870	43	390	1.25	0.33	0.12	0.80	3,205	1,154	846	308	2,797	74
Bedford	11,216	68	552	3.29	2.00	0.20	1.10	5,960	3,986	3,623	362	2,941	98
Belmont	22,927	78	708	3.86	1.68	0.68	1.50	5,452	3,333	2,373	960	8,763	65
BWSC	558,475	840	14,024	103.89	28.65	20.24	55.00	7,408	3,486	2,043	1,443	24,092	98
Braintree	33,647	133	1,215	7.24	3.56	1.08	2.60	5,959	3,819	2,930	889	8,145	77
Brookline	55,479	102	1,090	10.01	4.33	1.68	4.00	9,183	5,514	3,972	1,541	16,548	72
Burlington	23,276	115	1,042	4.05	1.89	0.36	1.80	3,887	2,159	1,814	345	3,130	77
Cambridge	100,035	150	2,344	20.07	6.46	3.61	10.00	8,562	4,296	2,756	1,540	24,063	100
Canton	14,021	62	567	3.40	1.64	0.56	1.20	5,996	3,880	2,892	988	9,037	86
Chelsea	32,518	41	618	4.34	1.04	1.00	2.30	7,023	3,301	1,683	1,618	24,172	71
Dedham	21,505	76	712	4.95	2.73	0.72	1.50	6,952	4,846	3,834	1,011	9,428	70
Everett	36,837	57	686	5.95	1.81	0.63	3.50	8,673	3,557	2,638	918	10,966	95
Framingham	62,946	275	2,519	6.61	1.29	0.91	4.40	2,624	873	512	361	3,309	70
Hingham	6,625	31	270	1.24	0.58	0.26	0.40	4,593	3,111	2,148	963	8,387	60
Holbrook	8,453	31	312	0.90	0.34	0.06	0.50	2,885	1,282	1,090	192	1,935	59
Lexington	29,055	151	1,487	5.98	2.86	0.62	2.50	4,022	2,340	1,923	417	4,104	86
Malden	55,815	99	876	9.55	4.73	0.83	4.00	10,902	6,347	5,400	947	8,359	72
Medford	53,469	113	982	9.93	4.42	1.61	3.90	10,112	6,141	4,501	1,640	14,219	73
Melrose	26,339	74	635	4.61	2.04	0.87	1.70	7,260	4,583	3,213	1,370	11,829	65
Milton	24,212	83	680	4.56	2.01	0.96	1.60	6,706	4,368	2,956	1,412	11,563	66
Natick	27,535	107	954	2.94	0.89	0.24	1.80	3,082	1,184	933	252	2,243	65
Needham	25,718	115	1,075	4.81	2.23	0.68	1.90	4,474	2,707	2,074	633	5,909	74
Newton	81,827	271	2,579	17.90	9.22	2.18	6.50	6,941	4,420	3,575	845	8,044	79
Norwood	28,193	83	763	5.68	2.57	1.01	2.10	7,444	4,692	3,368	1,324	12,197	74
Quincy	90,241	202	1,956	15.61	6.87	1.74	7.00	7,981	4,402	3,512	890	8,614	78
Randolph	30,438	101	1,138	4.14	1.60	0.53	2.00	3,638	1,872	1,406	466	5,248	66
Reading	22,098	86	747	3.44	1.53	0.41	1.50	4,605	2,597	2,048	549	4,770	68
Revere	45,761	78	832	6.88	2.80	1.08	3.00	8,269	4,663	3,365	1,298	13,846	66
Somerville	74,963	107	1,523	11.24	3.27	3.47	4.50	7,380	4,425	2,147	2,278	32,300	60
Stoneham	21,258	63	517	3.87	1.46	0.51	1.90	7,485	3,810	2,824	986	8,095	89
Stoughton	17,350	60	621	3.50	1.94	0.36	1.20	5,636	3,704	3,124	580	6,040	69
Wakefield	23,592	82	842	5.13	2.81	0.62	1.70	6,093	4,074	3,337	736	7,538	72
Walpole	15,485	56	577	2.73	1.41	0.22	1.10	4,731	2,825	2,444	381	3,929	71
Waltham	59,496	138	1,289	11.30	5.82	0.88	4.60	8,766	5,198	4,515	683	6,372	77
Watertown	32,303	75	616	4.16	1.61	0.45	2.10	6,753	3,344	2,614	731	5,996	65
Wellesley	26,169	130	1,271	4.30	1.65	0.75	1.90	3,383	1,888	1,298	590	5,769	73
Westwood	13,205	77	627	1.65	0.54	0.21	0.90	2,632	1,196	861	335	2,727	68
Weymouth	51,583	238	2,272	8.42	3.86	1.16	3.40	3,706	2,210	1,699	511	4,874	66
Wilmington	3,951	19	259	1.10	0.21	0.19	0.70	4,247	1,544	811	734	10,058	177
Winchester	21,160	83	633	2.70	1.09	0.31	1.30	4,265	2,212	1,722	490	3,735	61
Winthrop	17,069	36	309	2.32	0.95	0.37	1.00	7,508	4,272	3,074	1,197	10,358	59
Woburn	35,290	141	1,393	11.45	6.12	1.34	4.00	8,220	5,355	4,393	962	9,502	113
Total	1,993,217	5,076	55,398	356.94	137.19	56.56	163.20	261,290	148,541	110,917	37,625	393,955	3,294
Average	46,354	118	1,288	8.30	3.19	1.32	3.80	6,077	3,454	2,579	875	9,162	77

2006 Final Community Wastewater Flow Component Estimates (Ranked)

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)	
Community	Population	Community	Sewers	Community	Sewers	Community	(MGD)	Community	(MGD)	Community	(MGD)	Community	(MGD)
BWSC	558,475	BWSC	840	BWSC	14,024	BWSC	103.89	BWSC	28.65	BWSC	20.24	BWSC	55.00
Cambridge	100,035	Framingham	275	Newton	2,579	Cambridge	20.07	Newton	9.22	Cambridge	3.61	Cambridge	10.00
Quincy	90,241	Newton	271	Framingham	2,519	Newton	17.90	Quincy	6.87	Somerville	3.47	Quincy	7.00
Newton	81,827	Weymouth	238	Cambridge	2,344	Quincy	15.61	Cambridge	6.46	Newton	2.18	Newton	6.50
Somerville	74,963	Quincy	202	Weymouth	2,272	Woburn	11.45	Woburn	6.12	Quincy	1.74	Waltham	4.60
Framingham	62,946	Lexington	151	Quincy	1,956	Waltham	11.30	Waltham	5.82	Brookline	1.68	Somerville	4.50
Waltham	59,496	Cambridge	150	Somerville	1,523	Somerville	11.24	Malden	4.73	Medford	1.61	Framingham	4.40
Malden	55,815	Woburn	141	Lexington	1,487	Brookline	10.01	Medford	4.42	Woburn	1.34	Brookline	4.00
Brookline	55,479	Waltham	138	Woburn	1,393	Medford	9.93	Brookline	4.33	Weymouth	1.16	Malden	4.00
Medford	53,469	Braintree	133	Waltham	1,289	Malden	9.55	Weymouth	3.86	Braintree	1.08	Woburn	4.00
Weymouth	51,583	Wellesley	130	Wellesley	1,271	Weymouth	8.42	Braintree	3.56	Revere	1.08	Medford	3.90
Revere	45,761	Needham	115	Braintree	1,215	Braintree	7.24	Somerville	3.27	Norwood	1.01	Everett	3.50
Arlington	40,812	Burlington	115	Randolph	1,138	Revere	6.88	Lexington	2.86	Chelsea	1.00	Weymouth	3.40
Everett	36,837	Medford	113	Brookline	1,090	Framingham	6.61	Wakefield	2.81	Milton	0.96	Revere	3.00
Woburn	35,290	Somerville	107	Needham	1,075	Arlington	5.99	Revere	2.80	Framingham	0.91	Arlington	2.80
Braintree	33,647	Natick	107	Burlington	1,042	Lexington	5.98	Dedham	2.73	Waltham	0.88	Braintree	2.60
Chelsea	32,518	Arlington	106	Medford	982	Everett	5.95	Norwood	2.57	Norwood	0.87	Lexington	2.50
Watertown	32,303	Brookline	102	Natick	954	Norwood	5.68	Arlington	2.35	Arlington	0.85	Chelsea	2.30
Randolph	30,438	Randolph	101	Arlington	896	Wakefield	5.13	Needham	2.23	Malden	0.83	Norwood	2.10
Lexington	29,055	Malden	99	Malden	876	Dedham	4.95	Melrose	2.04	Wellesley	0.75	Watertown	2.10
Norwood	28,193	Reading	86	Wakefield	842	Needham	4.81	Milton	2.01	Dedham	0.72	Randolph	2.00
Natick	27,535	Milton	83	Revere	832	Melrose	4.61	Bedford	2.00	Belmont	0.68	Needham	1.90
Melrose	26,339	Winchester	83	Norwood	763	Milton	4.56	Stoughton	1.94	Needham	0.68	Stoneham	1.90
Wellesley	26,169	Norwood	83	Reading	747	Chelsea	4.34	Burlington	1.89	Everett	0.63	Wellesley	1.90
Needham	25,718	Wakefield	82	Dedham	712	Wellesley	4.30	Everett	1.81	Lexington	0.62	Burlington	1.80
Milton	24,212	Revere	78	Belmont	708	Watertown	4.16	Belmont	1.68	Wakefield	0.62	Natick	1.80
Wakefield	23,592	Belmont	78	Everett	686	Randolph	4.14	Wellesley	1.65	Canton	0.56	Melrose	1.70
Burlington	23,276	Westwood	77	Milton	680	Burlington	4.05	Canton	1.64	Randolph	0.53	Wakefield	1.70
Belmont	22,927	Dedham	76	Melrose	635	Stoneham	3.87	Watertown	1.61	Stoneham	0.51	Milton	1.60
Reading	22,098	Watertown	75	Winchester	633	Belmont	3.86	Randolph	1.60	Watertown	0.45	Belmont	1.50
Dedham	21,505	Melrose	74	Westwood	627	Stoughton	3.50	Reading	1.53	Reading	0.41	Dedham	1.50
Stoneham	21,258	Bedford	68	Stoughton	621	Reading	3.44	Stoneham	1.46	Winthrop	0.37	Reading	1.50
Winchester	21,160	Stoneham	63	Chelsea	618	Canton	3.40	Walpole	1.41	Burlington	0.36	Winchester	1.30
Stoughton	17,350	Canton	62	Watertown	616	Bedford	3.29	Framingham	1.29	Stoughton	0.36	Canton	1.20
Winthrop	17,069	Stoughton	60	Walpole	577	Natick	2.94	Winchester	1.09	Winchester	0.31	Stoughton	1.20
Walpole	15,485	Everett	57	Canton	567	Walpole	2.73	Chelsea	1.04	Hingham	0.26	Bedford	1.10
Canton	14,021	Walpole	56	Bedford	552	Winchester	2.70	Winthrop	0.95	Natick	0.24	Walpole	1.10
Westwood	13,205	Ashland	43	Stoneham	517	Winthrop	2.32	Natick	0.89	Walpole	0.22	Winthrop	1.00
Bedford	11,216	Chelsea	41	Ashland	390	Ashland	1.65	Hingham	0.58	Hingham	0.21	Westwood	0.90
Ashland	10,870	Winthrop	36	Holbrook	312	Ashland	1.25	Westwood	0.54	Bedford	0.20	Ashland	0.80
Holbrook	8,453	Hingham	31	Winthrop	309	Hingham	1.24	Holbrook	0.34	Wilmington	0.19	Wilmington	0.70
Hingham	6,625	Holbrook	31	Hingham	270	Wilmington	1.10	Ashland	0.33	Ashland	0.12	Holbrook	0.50
Wilmington	3,951	Wilmington	19	Wilmington	259	Holbrook	0.90	Wilmington	0.21	Holbrook	0.06	Hingham	0.40
Total	1,993,217	Total	5,076	Total	55,398	Total	357	Total	137	Total	57	Total	163
Average	46,354	Average	118	Average	1,288	Average	8	Average	3	Average	1	Average	4

2006 Final Community Wastewater Flow Component Estimates (Ranked)

30-Jul-07

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	10,902	Malden	6,347	Malden	5,400	Somerville	2,278	Somerville	32,300	Wilmington	177
Medford	10,112	Medford	6,141	Waltham	4,515	Medford	1,640	Chelsea	24,172	Woburn	113
Brookline	9,183	Brookline	5,514	Medford	4,501	Chelsea	1,618	BWSC	24,092	Cambridge	100
Waltham	8,766	Woburn	5,355	Woburn	4,393	Brookline	1,541	Cambridge	24,063	BWSC	98
Everett	8,673	Waltham	5,198	Brookline	3,972	Cambridge	1,540	Brookline	16,548	Bedford	98
Cambridge	8,562	Dedham	4,846	Dedham	3,834	BWSC	1,443	Medford	14,219	Everett	95
Revere	8,269	Norwood	4,692	Bedford	3,623	Milton	1,412	Revere	13,846	Stoneham	89
Woburn	8,220	Revere	4,663	Newton	3,575	Melrose	1,370	Norwood	12,197	Norwood	86
Quincy	7,981	Melrose	4,583	Quincy	3,512	Norwood	1,324	Melrose	11,829	Melrose	86
Winthrop	7,508	Somerville	4,425	Norwood	3,368	Revere	1,298	Milton	11,563	Milton	79
Stoneham	7,485	Newton	4,420	Revere	3,365	Winthrop	1,197	Everett	10,966	Everett	78
Norwood	7,444	Quincy	4,402	Wakefield	3,337	Dedham	1,011	Winthrop	10,358	Winthrop	77
BWSC	7,408	Milton	4,368	Melrose	3,213	Canton	988	Wilmington	10,058	Wilmington	77
Somerville	7,380	Cambridge	4,296	Stoughton	3,124	Stoneham	986	Woburn	9,502	Woburn	77
Melrose	7,260	Winthrop	4,272	Winthrop	3,074	Hingham	963	Dedham	9,428	Dedham	74
Chelsea	7,023	Wakefield	4,074	Milton	2,956	Woburn	962	Canton	9,037	Canton	74
Dedham	6,952	Bedford	3,986	Braintree	2,930	Belmont	960	Belmont	8,763	Belmont	74
Newton	6,941	Canton	3,880	Canton	2,892	Arlington	949	Quincy	8,614	Quincy	73
Watertown	6,753	Braintree	3,819	Stoneham	2,824	Malden	947	Hingham	8,387	Hingham	73
Milton	6,706	Stoneham	3,810	Cambridge	2,756	Everett	918	Malden	8,359	Malden	72
Arlington	6,685	Stoughton	3,704	Everett	2,638	Quincy	890	Braintree	8,145	Braintree	72
Wakefield	6,093	Arlington	3,571	Arlington	2,623	Braintree	889	Stoneham	8,095	Stoneham	72
Canton	5,996	Everett	3,557	Watertown	2,614	Newton	845	Newton	8,044	Newton	71
Bedford	5,960	BWSC	3,486	Walpole	2,444	Wakefield	736	Arlington	8,001	Arlington	71
Braintree	5,959	Watertown	3,344	Belmont	2,373	Wilmington	734	Wakefield	7,538	Wakefield	70
Stoughton	5,636	Belmont	3,333	Hingham	2,148	Watertown	731	Waltham	6,372	Waltham	70
Belmont	5,452	Chelsea	3,301	Somerville	2,147	Waltham	683	Stoughton	6,040	Stoughton	69
Walpole	4,731	Hingham	3,111	Needham	2,074	Needham	633	Stoughton	5,996	Stoughton	69
Reading	4,605	Walpole	2,825	Reading	2,048	Wellesley	590	Watertown	5,909	Watertown	69
Hingham	4,593	Needham	2,707	BWSC	2,043	Stoughton	580	Needham	5,909	Needham	68
Needham	4,474	Reading	2,597	Lexington	1,923	Reading	549	Wellesley	5,769	Wellesley	68
Winchester	4,265	Lexington	2,340	Burlington	1,814	Reading	511	Randolph	5,248	Randolph	66
Wilmington	4,247	Winchester	2,212	Burlington	1,722	Weymouth	490	Weymouth	4,874	Weymouth	66
Lexington	4,022	Weymouth	2,210	Winchester	1,699	Winchester	490	Reading	4,770	Reading	66
Burlington	3,887	Burlington	2,159	Weymouth	1,699	Randolph	466	Lexington	4,104	Lexington	66
Weymouth	3,706	Chelsea	1,683	Chelsea	1,683	Lexington	417	Walpole	3,929	Walpole	66
Randolph	3,638	Randolph	1,406	Randolph	1,406	Walpole	381	Winchester	3,735	Winchester	65
Wellesley	3,383	Wellesley	1,298	Wellesley	1,298	Bedford	362	Framingham	3,309	Framingham	65
Ashland	3,205	Wilmington	1,544	Holbrook	1,090	Framingham	361	Burlington	3,130	Burlington	65
Natick	3,082	Holbrook	1,282	Natick	933	Burlington	345	Bedford	2,941	Bedford	61
Holbrook	2,885	Westwood	1,196	Westwood	861	Westwood	335	Ashland	2,797	Ashland	60
Westwood	2,632	Natick	1,184	Ashland	846	Ashland	308	Westwood	2,727	Westwood	60
Framingham	2,624	Ashland	1,154	Wilmington	811	Natick	252	Natick	2,243	Natick	59
		Framingham	873	Framingham	512	Holbrook	192	Holbrook	1,935	Holbrook	59
Total	261,290	Total	148,541	Total	110,917	Total	37,625	Total	393,955	Total	3,294
Average	6,077	Average	3,454	Average	2,579	Average	875	Average	9,162	Average	77