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August 22, 2014

Mr. Stephen Perkins, Director
Office of Ecosystem Protection
US EPA, Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Ms. Ann Lowery
Bureau of Resource Protection
Department of Environmental Protection
1 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 2014

Dear Mr. Perkins and Ms. Lowery:

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 2014.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan
Attachment 2 – MWRA Regional I/I Reduction Plan – FY14 Progress Update and Detailed Implementation Schedule for FY15 Activities
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY14
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 – CY13 Community Wastewater Flow Data

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

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

cc: MassDEP-Regulatory Branch, Boston
MassDEP - SERO
MassDEP – NERO
Kevin Brander, MassDEP, NERO
Elizabeth Reilley, MWRA, Director, Environmental Quality
Wendy Leo, MWRA, NPDES Coordinator
Carl H. Leone, MWRA, Community Support Program

ATTACHMENT 1
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period – July 2013 Through June 2014

OVERVIEW OF MWRA REGIONAL I/I REDUCTION PLAN

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

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

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

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

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

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

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

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

ATTACHMENT 2
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period – July 2013 Through June 2014

MWRA REGIONAL I/I REDUCTION PLAN - FY14 PROGRESS UPDATE AND DETAILED IMPLEMENTATION SCHEDULE FOR FY15 ACTIVITIES

This document provides a progress update for FY14 accomplishments and a description of the activities to be accomplished during FY15 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.

Work by MWRA under these three Strategies is ongoing.

During FY14, MWRA properly operated and maintained the MWRA-owned interceptor system. Annual performance targets and ongoing accomplishments are tracked as part of the Authority's MAXIMO maintenance database and are reported monthly to MWRA senior management. Specific activities undertaken by MWRA for FY14 are detailed in Attachment 3. Additional information on MWRA's FY14 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.

During FY15, 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 as noted below.

During spring 2001 MWRA provided MassDEP 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 MassDEP. A follow-up letter dated June 20, 2001 requested MassDEP identify the format for finalizing the SSO reporting/record keeping electronic database.

During FY04, MassDEP (in conjunction with staff in the Massachusetts Information Technology Division), developed a revised format SSO electronic database package. This project was part of statewide efforts to upgrade computerized resources and electronic access. The system was demonstrated at an April 8, 2004 MassDEP/MWRA joint community workshop. Development/implementation by MassDEP was expected to continue in through FY05.

In May 2005, MassDEP developed a revised Reporting Form "Sanitary Sewer Overflow/Bypass/Backup Notification Form (rev 05/2005)." This form was made available on the MassDEP web site and reporting was via FAX or by mail. Following development of the web based reporting form by MassDEP, roll-out of the SSO reporting/record keeping electronic database was delayed. In January 2013, MassDEP developed the most recent revised Reporting Form "Sanitary Sewer Overflow (SSO)/Bypass Notification Form (rev 01/2013)." As of July 2014, this form is available on the MassDEP web site and reporting using the form is via FAX or by mail. As of July 2014, an SSO reporting/record keeping electronic database is not included among the searchable databases available on the MassDEP web site.

As requested by MassDEP, on August 22, 2011 MWRA provided MassDEP specific SSO site location information for SSO's on MWRA-owned northern system sewers (for events during the period January 2000 through June 2011), including street location, longitude and latitude location, and GIS site maps.

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

Work by MWRA under this Strategy is complete as noted below. Some ongoing work performed by MWRA that is associated with this Strategy is also noted.

MWRA utilizes MassDEP's Sanitary Sewer Overflow (SSO)/Bypass Notification Form (rev 01/2013) to report SSOs from MWRA's collection system.

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

During FY14, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY15.

In FY12, MWRA began implementing the North System Hydraulic Study which may further evaluate potential improvements to the MWRA-owned collection system that may reduce the risk of sewer backups and SSOs. This study is ongoing.

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 MassDEP on roll-out of the SSO reporting/record keeping electronic database (see Strategy A above). Some ongoing work performed by MWRA that is associated with this Strategy is noted below.

As part of its ongoing program to support member community I/I reduction and sewer system rehabilitation programs, MWRA offers technical assistance to communities to review local I/I reduction plans and regional SSO problems. During FY15, at the request of member communities, MWRA will continue to provide technical assistance on local sewer system projects.

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

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

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

Work by MWRA under this Strategy is complete as noted below. Some ongoing work that is associated with this Strategy is also noted.

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

During FY14, as part of its ongoing program to support member community I/I reduction and sewer system rehabilitation programs, MWRA offers technical assistance to communities to review local I/I reduction plans and regional SSO problems. MWRA also continued to provide financial assistance to reduce I/I entering local collection systems to help minimize SSOs that may occur during extreme storm events (see detail in Attachment 4).

During FY14, MWRA continued work on projects in the MWRA Capital Improvement Program, as summarized in Attachment 3.

During FY14 (as of April 25, 2014), MassDEP revised its Regulation 314 CMR 12.00 Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers. The revisions included a requirement for all public entities that own a sewer system to complete an I/I analysis by December 31, 2017. The analysis also must specifically include an assessment of the risk of sewer system overflows.

During FY15, at the request of member communities, MWRA will continue to provide technical and financial assistance to member sewer communities.

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)

Work by MWRA under this Strategy is ongoing.

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

During FY14, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY15.

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

- **Continued coordination with member communities to reduce I/I from local collection systems will help to minimize SSOs that may occur during extreme storm events. Most recently during MWRA Board of Director's approval of the FY15 Capital Improvement Program, an additional $160 million in 75% grants and 25% interest-free loans was added as Phases 9 and 10 ($80 million for each Phase) of the I/I Local Financial Assistance Program to help fund community I/I reduction**

projects. Note that MWRA has enhanced the Phase 9 and 10 Phases of its grant/loan community funding program by increasing the grant portion from 45% to 75%. As of FY15, MWRA's commitment to fund local sewer rehabilitation projects under the I/I Local Financial Assistance Program totals $460.75 million.

- **Ongoing CSO projects in Cambridge tributary to the Alewife Brook Conduit and the North Metropolitan Relief Sewer may reduce downstream SSOs that may occur during extreme storm events.**
- **If activated during an extreme rainfall event, MWRA's emergency directed discharge (via two gate valves) to the Stony Brook Conduit in Boston/Roslindale is intended to minimize potential SSO impacts within this local low lying area.**
- **In FY12, MWRA began implementing the North System Hydraulic Study which may further evaluate potential improvements to the MWRA-owned collection system that may reduce the risk of sewer backups and SSOs. This study is ongoing.**
- **MWRA's Capital Improvement Plan includes a long-term Randolph Extension Sewer Relief Study to identify and evaluate potential system improvements.**

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

Work by MWRA under this Strategy is complete as noted below.

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, MassDEP, all MWRA water-only member communities, and local watershed associations.

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

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

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

Work by MWRA under this Strategy is ongoing.

During FY14, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY13 is included as Attachment 6. These flow data tables are available to all users on MWRA's web site. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis. Over $21 million in funds for the next phase of wastewater meter replacement/upgrade project are programmed in MWRA's Capital Improvement Program during FY15-28.

During FY15, 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 MassDEP as part of the annual summary report on actions taken to reduce I/I (submitted annually by September 1 per the NPDES Permit).

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

Work by MWRA under this Strategy is complete as noted below.

MWRA's Wastewater Meter Replacement project was completed in FY06. The system continues to be used to monitor wastewater flow at key locations within the regional collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels.

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

Work by MWRA under this Strategy is ongoing.

During FY14, MWRA staff continued to meet with community representatives to provide technical assistance and discuss local programs. Communities are often interested in utilizing MWRA wastewater meter data and flow component analyses for local I/I and SSES studies. Communities also often discuss what sewer system rehabilitation actions other communities are pursuing. MWRA's Advisory Board Operation Committee meetings are regularly used as a platform for member communities to share information on projects and lessons learned. All member sewer communities are actively participating in MWRA's $460.75 million 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 MassDEP's January 1993 I/I Guidelines. This work will continue in FY15.

During FY14 (as of April 25, 2014), MassDEP revised its Regulation 314 CMR 12.00 Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers. The revisions included a requirement for all public entities that own a sewer system to complete an I/I analysis by December 31, 2017. The analysis also must specifically include an assessment of the risk of sewer system overflows.

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 EOEA 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 as noted below. Some ongoing work performed by MWRA that is associated with this Strategy is also noted. 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. Significant GIS mapping upgrades were rolled-out in FY06.

In July 2006, MWRA provided 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 GIS mapping information fulfilled MWRA's work under Strategy D.

During FY14, MWRA updated prior (or developed new) GIS mapping information partnership agreements with most MWRA member water and sewer communities to share MWRA/community GIS mapping data. Under the partnership agreements, MWRA and the member communities have agreed signed nondisclosure agreements that detail security protocols necessary to safeguard the water and sewer system data. MWRA continues to coordinate with member communities to add GIS partners and update existing data. This work will continue in FY14.

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)

Work by MWRA under this Strategy is ongoing.

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

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

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

In June 2012, 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 $300.75 million and extended program distributions through FY21. The additional $40 million (Phase 8) in financial assistance funds became available to the communities in FY13.

In June 2014, the MWRA Board of Directors approved an additional $160 million ($120 million in 75% grants and $40 million in 25% interest-free 10-year loans) to increase the total I/I Local Financial Assistance Program budget to $460.75 million and extended program distributions through FY25. The additional $160 million ($80 million each for Phases 9 and 10) in financial assistance funds became available to the communities in FY15. Note that MWRA has enhanced the Phase 9 and 10 Phases of its grant/loan community funding program by increasing the grant portion from 45% to 75%. Also, the loan portion repayment period has been extended from 5 to 10 years. As of FY15, MWRA's commitment to fund local sewer rehabilitation projects under the I/I Local Financial Assistance Program totals $460.75 million.

During FY14, MWRA continued to provide grants and loans to member sewer communities to fund local I/I reduction and sewer system rehabilitation projects. A total of $12.75 million was distributed during FY14. Since program inception in May 1993, $261 million has been distributed to fund 459 local projects. The program Guidelines, Financial Assistance Application, and summary of available funds by community are posted on the MWRA Community Support Program web page at http://www.mwra.com/comsupport/communitysupportmain.html. A status update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4.

During FY15, MWRA will continue to distribute funds and assist communities in the management of projects under the I/I Local Financial Assistance Program. MWRA's remaining financial assistance funds are authorized for distribution through FY25.

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)

Work by MWRA under this Strategy is ongoing.

During FY14, MWRA continued to provide emergency assistance to member communities, as requested. These efforts typically included internal TV inspection of local sewers and associated sewer cleaning, as well as, other emergency assistance. During FY15, 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)

Work by MWRA under this Strategy is ongoing.

During FY14, MWRA distributed technical information to member community Public Works Directors, local wastewater/water system operators, and local watershed groups, including:

- **During FY14, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY13 is included as Attachment 6. These flow data tables are available to all users on MWRA's web site. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis. Over $21 million in funds for the next phase of wastewater meter replacement/upgrade project are programmed in MWRA's Capital Improvement Program during FY15-28.**

- **November 19, 2013 MWRA staff provided an update presentation on the 2013 MWRA Water and Wastewater System Master Plan to the Water Supply Citizens Advisory Committee and the Wastewater Advisory Committee.**

- **December 4, 2013 MWRA staff provided an update presentation on the I/I Local Financial Assistance Program to the MWRA Advisory Board Operations Committee and discussed the proposed addition of Phases 9 and 10 to the program.**

- **January 14, 2014 MWRA staff distributed an announcement e-mail to all community water system managers for a meter data management webinar.**

- **January 16, 2014 MWRA staff provided an update presentation on the 2013 MWRA Water and Wastewater System Master Plan to the MWRA Advisory Board.**

- **January 16, 2014 MWRA staff provided an update presentation on the I/I Local Financial Assistance Program to the MWRA Advisory Board and discussed the proposed addition of Phases 9 and 10 to the program.**

- **March 10, 2014 MWRA staff distributed an announcement letter on water conservation educational materials and low-flow device retrofit kits available from MWRA at no cost to member communities, local customers, watershed associations, environmental groups, housing authorities, condo associations, etc.**

- **June 2014 annual community I/I questionnaire were distributed to member communities to acquire information on FY14 local I/I reduction programs for development of MWRA's Annual I/I Reduction Report (see Attachment 5).**

- **July 1, 2014 Local Pipeline and Water System Assistance Program funding (interest-free 10-year loans) update letters were distributed for local projects.**

- **July 2, 2014 announcement letters on the MWRA Board of Directors approval of an additional $160 million for Phases 9 and 10 of the I/I Local Financial Program and allocation of funds to each member community.**

During FY15, MWRA will continue to distribute information on I/I and SSO issues, as appropriate.

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

Work by MWRA under this Strategy is complete as noted below.

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)

Work by MWRA under this Strategy is ongoing. Following-up on the joint workshop in 2001, additional joint workshops were held in 2002 and 2004.

On April 27, 2011, representatives from MassDEP, EPA, and MWRA met to discuss I/I reduction in the region. The potential for future workshops was noted, but no specific plans have been developed for organizing additional joint workshops.

During FY14 (as of April 25, 2014), MassDEP revised its Regulation 314 CMR 12.00 Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers. The revisions included a requirement for all public entities that own a sewer system to complete an I/I analysis by December 31, 2017. The analysis also must specifically include an assessment of the risk of sewer system overflows.

On an annual basis, MWRA staff provided an update presentation to the MWRA Board of Directors on both I/I Local Financial Assistance and Local Water System Assistance Programs.

Periodically, MWRA staff provided update presentations to the MWRA Advisory Board and member community representatives, as well as the Wastewater Advisory Committee and Water Supply Citizens Advisory Committee, on a variety of related topics including: I/I Local Financial Assistance Program, Local Water System Assistance Program, water and wastewater metering, water and wastewater flow data, rate assessment methodologies, water and wastewater permitting and regulations, etc. See the list of technical information noted in Strategy A, above.

During FY15, MWRA will continue to work cooperatively with MassDEP 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)

Work by MWRA under this Strategy is complete as noted below.

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

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

Work by MWRA under this Strategy is complete as noted below.

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

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

Work by MWRA under this Strategy is complete as noted below.

Local communities, state agencies, regional associations, etc. all maintain their own web pages with numerous information links. MWRA's web site contains links to the communities' web sites and links to other organizations. Based on current broad use of the web, additional work under this strategy is not needed. During FY14, MWRA continued to revise and upgraded its web site www.mwra.com and the Community Support Program: http://www.mwra.com/comsupport/communitysupportmain.html.

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 ongoing.

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)

Work by MWRA under this Strategy is ongoing. During FY14, no assistance from MWRA was requested by MassDEP. Any future action under this strategy will be initiated jointly with MassDEP.

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)

Work by MWRA under this Strategy is ongoing. During FY14, no assistance from MWRA was requested under this strategy.

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

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

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

Work by MWRA under this Strategy is complete as noted below.

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. Both the I/I Task Force Report and MWRA Regional I/I Reduction plan are posted on MWRA's Community Support Program web page at: http://www.mwra.com/comsupport/communitysupportmain.html.

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

Work by MWRA under this Strategy is complete as noted below.

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

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

Work by MWRA under this Strategy is complete as noted below.

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

ATTACHMENT 3
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period – July 2013 Through June 2014

MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY14

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 32.6 miles of Authority-owned interceptors and 0.5 miles of community-owned sewers, internally inspected 45 inverted siphon barrels with sonar inspection equipment, and physically inspected 723 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.) during FY14. 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 FY14, MWRA's maintenance work included hydraulic/mechanical cleaning of 17.8 miles of Authority-owned sewers, cleaning of 97 siphon barrels, and replacement of 112 manhole frames and covers. In addition, 55 sewer manholes were rehabilitated via cement mortar lining under MWRA's annual manhole rehabilitation contract. 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 FY14, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. Evaluation and design of interceptor rehabilitation began in FY09. The program includes a series of twelve interceptor renewal projects to be phased over multiple years at a cost of $80 to $100 million. Each of these projects will provide structural repairs for existing pipelines and reduce I/I entering the MWRA interceptor system. MWRA's Interceptor Renewal/Asset Protection Projects #1 through #7 for rehabilitation construction of a variety of Sewer Sections are programmed in the FY15 CIP at a cost of about $45 million in FY15-30.

2. Sewer asset protection rehabilitation construction of Section 186 and a small portion of Section 4 on Deer Island, just upstream of the DITP, are programmed in the FY15 CIP at a cost of $3.67 million in FY19-23. Emergency removal of delaminated plastic liner from Section 186 was performed in June 2011. The rehabilitation project will include 2,000 feet of 108-inch sewer pipe.

3. Sewer asset protection rehabilitation design and construction of Section 4, 5, and 6 on the North Metropolitan Sewer in Winthrop is programmed in the FY15 CIP at a cost of $14.4 million in FY19-24. The project will include rehabilitation of about 3,300 feet of 108-inch brick sewer that was previously rehabilitated using a shotcrete process in the 1990s.

4. A corrosion and odor control project specific to design and construction of three biofilter air treatment systems to remove hydrogen sulfide from the Framingham Extension Sewer/Framingham Extension Relief Sewer (FES/FERS) and Wellesley Extension Sewer Replacement/Wellesley Extension Relief Sewer (WESR/WERS) is programmed in the FY15 CIP at a cost of $2.84 million in FY19-23. Rehabilitation and/or replacement of hydrogen sulfide metering in the sewers is included in this project. In addition, design and construction for rehabilitation of the Framingham Extension Sewer/Framingham Extension Relief Sewer (FES/FERS) Tunnel is programmed in the FY15 CIP at a cost of $8.5 million in FY19-23. A System-wide Corrosion and Odor Control Study to evaluate needs and identify solutions for hydrogen sulfide corrosion and odor problems is programmed in the FY15 CIP at a cost of $1.0 million in FY19-23.

5. Wastewater Process Optimization - North System Hydraulic Capacity Study to evaluate the tributary flows and hydraulic capacity of the North Sewer System tributary to Chelsea Creek Headworks and to determine the feasibility of increasing and/or optimizing system capacity is programmed in the FY15 CIP at a cost of $571,000 during FY12-15. This project could help identify options to mitigate occasional SSOs in the North System during extreme storm events. As a follow-up project, a North System Hydraulic Flood Engineering Analysis is programmed in the FY15 CIP at a cost of $7.44 million during FY17-24. This project will evaluate the feasibility and hydraulic optimization benefits of construction of modifications to manholes and other structures to reduce inflow during periods of high river flows and flooding of wetland areas.

6. Siphon Structure Rehabilitation (Phase 1) for design and construction of the most critical recommended improvements to a portion of MWRA's siphons and siphon headhouses is programmed in the FY15 CIP at a cost of $5.58 million during FY19-23. This project will include hydraulic capacity review, structural repairs of deteriorated conditions, stop plank construction, installation of new covers and/or appropriate access to structures, and procurement of legal access easements to allow for proper maintenance. Planning should consider potential increases in flood elevations and tidal surge due to impacts from climate change.

7. MWRA's $892 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. Through FY14, approximately $850 million has been expended on MWRA's CSO Control Plan with additional projects scheduled for FY15-23.

ATTACHMENT 4
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period – July 2013 Through June 2014

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

Financial Assistance Update

All 43 member sewer communities are participating in MWRA's $460.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY14, $261 million has been distributed to fund local I/I reduction and sewer system rehabilitation projects. The program budget of $460.75 million includes the most recent addition of $160 million in new Phase 9 ($80 million) and Phase 10 ($80 million) funds approved by the MWRA Board of Directors for distribution beginning in FY15. In addition, the grant component and loan repayment terms have been enhanced for the additional Phase 9 and 10 funds. The table on page 2 provides a summary of funding allocations, distributions, and funds remaining for each MWRA sewer community. Distribution of grant and loan financial assistance to member communities has been approved through FY25. The table on page 3 provides a summary of funding distributions by fiscal quarter since Program inception.

Program Background

MWRA's I/I Local Financial Assistance Program was initiated to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Following recommendations from the MWRA Advisory Board, the MWRA Board of Directors has approved a total program budget of $460.75 million. The funds have been allocated among the 43 MWRA sewer communities based on respective share of MWRA's wholesale sewer charge. Financial assistance for Phases 1 and 2 (total of $63.75 million) was distributed for approved projects as a 25 percent grant and a 75 percent interest-free loan. The grant/loan split was revised for distribution of the Phase 3, 4, 5, 6, 7, and 8 funds (total of $237 million) to a 45 percent grant and a 55 percent interest-free loan. The interest-free loan portion for program Phases 1 through 8 has been repaid to MWRA over a five-year period beginning one year after the date the funds are distributed. The grant/loan split was again revised for distribution of Phases 9 and 10 funds (total of $160 million) to a 75 percent grant and a 25 percent interest-free loan. The interest-free loan repayment period for Phase 9 and 10 has been extended to ten years from the previous five (again 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, MWRA staff perform site visits to document progress.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
FUNDING SUMMARY AS OF JULY 2014

Community	Total Allocations (Phases 1 - 10)	Total Distributions (Phases 1 - 10)	Percent Distributed	Funds Remaining
Arlington	$8,423,000	$5,613,000	67%	$2,810,000
Ashland	$2,168,500	$1,328,500	61%	$840,000
Bedford	$3,404,600	$1,691,600	50%	$1,713,000
Belmont	$5,135,100	$2,992,100	58%	$2,143,000
Boston	$132,171,200	$83,711,976	63%	$48,459,224
Braintree	$8,359,000	$3,425,800	41%	$4,933,200
Brookline	$13,165,200	$5,526,400	42%	$7,638,800
Burlington	$5,102,800	$3,285,800	64%	$1,817,000
Cambridge	$23,620,100	$11,077,055	47%	$12,543,045
Canton	$3,965,900	$2,675,900	67%	$1,290,000
Chelsea	$6,870,100	$4,232,100	62%	$2,638,000
Dedham	$5,740,000	$3,914,000	68%	$1,826,000
Everett	$8,071,500	$3,141,500	39%	$4,930,000
Framingham	$12,125,000	$5,003,000	41%	$7,122,000
Hingham	$1,632,500	$952,852	58%	$679,648
Holbrook	$1,639,600	$896,562	55%	$743,038
Lexington	$7,445,300	$4,835,300	65%	$2,610,000
Malden	$12,283,900	$4,593,900	37%	$7,690,000
Medford	$11,987,600	$4,794,600	40%	$7,193,000
Melrose	$6,076,300	$3,914,300	64%	$2,162,000
Milton	$5,564,500	$3,251,500	58%	$2,313,000
Natick	$5,582,600	$3,644,600	65%	$1,938,000
Needham	$6,257,600	$2,892,150	46%	$3,365,450
Newton	$21,197,400	$11,565,400	55%	$9,632,000
Norwood	$6,879,400	$3,955,399	57%	$2,924,001
Quincy	$19,790,000	$11,125,000	56%	$8,665,000
Randolph	$6,050,800	$3,894,800	64%	$2,156,000
Reading	$4,629,100	$2,870,100	62%	$1,759,000
Revere	$10,130,900	$5,502,900	54%	$4,628,000
Somerville	$15,515,800	$10,117,800	65%	$5,398,000
Stoneham	$4,919,900	$3,291,900	67%	$1,628,000
Stoughton	$4,722,900	$2,696,900	57%	$2,026,000
Wakefield	$5,966,900	$3,527,400	59%	$2,439,500
Walpole	$3,680,000	$1,928,300	52%	$1,751,700
Waltham	$13,732,400	$7,808,400	57%	$5,924,000
Watertown	$6,285,800	$2,581,800	41%	$3,704,000
Wellesley	$5,709,700	$2,748,808	48%	$2,960,892
Westwood	$2,532,300	$1,425,300	56%	$1,107,000
Weymouth	$11,480,900	$5,545,300	48%	$5,935,600
Wilmington	$2,462,000	$1,388,000	56%	$1,074,000
Winchester	$4,183,000	$2,777,000	66%	$1,406,000
Winthrop	$3,393,400	$1,926,400	57%	$1,467,000
Woburn	$10,695,500	$7,229,500	68%	$3,466,000
Totals	$460,750,000	$261,300,902	57%	$199,449,098

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

FY	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	FY Total
FY93	Aug 1992	$0	Nov 1992	$0	Feb 1993	$0	May 1993	$2,714,883	$2,714,883
FY94	Aug 1993	$3,096,468	Nov 1993	$4,096,133	Feb 1994	$3,191,032	May 1994	$251,494	$10,635,127
FY95	Aug 1994	$354,126	Nov 1994	$976,700	Feb 1995	$1,894,030	May 1995	$6,489,891	$9,714,747
FY96	Aug 1995	$0	Nov 1995	$504,100	Feb 1996	$2,921,600	May 1996	$3,902,426	$7,328,126
FY97	Aug 1996	$1,682,061	Nov 1996	$1,581,266	Feb 1997	$395,100	May 1997	$3,530,758	$7,189,185
FY98	Aug 1997	$1,066,300	Nov 1997	$1,157,260	Feb 1998	$909,350	May 1998	$2,001,608	$5,134,518
FY99	Aug 1998	$1,521,100	Nov 1998	$2,464,263	Feb 1999	$1,481,700	May 1999	$5,758,077	$11,225,140
FY00	Aug 1999	$1,315,767	Nov 1999	$1,847,900	Feb 2000	$1,679,000	May 2000	$1,070,100	$5,912,767
FY01	Aug 2000	$1,148,400	Nov 2000	$388,000	Feb 2001	$1,640,931	May 2001	$804,800	$3,982,131
FY02	Aug 2001	$4,480,735	Nov 2001	$704,040	Feb 2002	$1,804,200	May 2002	$5,002,691	$11,991,666
FY03	Aug 2002	$1,962,600	Nov 2002	$4,461,768	Feb 2003	$7,955,752	May 2003	$1,836,600	$16,216,720
FY04	Aug 2003	$2,021,940	Nov 2003	$1,306,200	Feb 2004	$1,770,760	May 2004	$3,295,400	$8,394,300
FY05	Aug 2004	$2,756,659	Nov 2004	$6,013,436	Feb 2005	$4,054,060	May 2005	$2,636,700	$15,460,855
FY06	Aug 2005	$5,377,487	Nov 2005	$4,589,600	Feb 2006	$1,519,463	May 2006	$6,489,676	$17,976,226
FY07	Aug 2006	$0	Nov 2006	$4,947,414	Feb 2007	$8,789,300	May 2007	$8,121,023	$21,857,737
FY08	Aug 2007	$3,915,500	Nov 2007	$4,355,750	Feb 2008	$1,392,400	May 2008	$4,436,600	$14,100,250
FY09	Aug 2008	$4,196,399	Nov 2008	$352,000	Feb 2009	$1,990,300	May 2009	$4,872,400	$11,411,099
FY10	Aug 2009	$5,462,736	Nov 2009	$616,600	Feb 2010	$2,679,600	May 2010	$4,845,000	$13,603,936
FY11	Aug 2010	$723,700	Nov 2010	$3,183,250	Feb 2011	$4,123,100	May 2011	$4,258,900	$12,288,950
FY12	Aug 2011	$3,695,100	Nov 2011	$2,417,378	Feb 2012	$848,300	May 2012	$7,010,324	$13,971,102
FY13	Aug 2012	$21,299,965	Nov 2012	$1,004,610	Feb 2013	$2,460,000	May 2013	$2,675,000	$27,439,575
FY14	Aug 2013	$7,550,310	Nov 2013	$0	Feb 2014	$2,929,700	May 2014	$2,271,852	$12,751,862
Total		$73,627,353		$46,967,668		$56,429,678		$84,276,203	$261,300,902

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 to the Deer Island Treatment Plant.

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.

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-six 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.

PROJECT PHASE	COMPLETE PROJECTS ($ millions)	ONGOING PROJECTS ($ millions)	TOTAL ($ millions)
Planning/Study:	$ 35.4	$ 2.3	$ 37.7 (14%)
Design:	11.4	0.7	12.1 (5%)
Construction:	152.1	46.2	198.3 (76%)
Eng. Services During Const.:	10.9	2.3	13.2 (5%)
TOTAL	$ 209.8 (80%)	$ 51.5 (20%)	$ 261.3 (100%)

Program Results

The I/I Local Financial Assistance Program began in May 1993. Through FY14, a total of 459 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's grant/loan program. Cumulative results for the program are summarized below.

Results for all projects (FY93 through FY14) for planning/inspection include the following:

- 1,434 miles of sewer TV inspected
- 973 miles of sewer flow isolated
- 1,108 miles of sewer smoke tested
- 38,287 sewer manholes inspected
- 60,980 buildings inspected

Results for all projects (FY93 through FY14) targeting infiltration reduction include the following:

- 52 miles sewer replaced
- 93 miles sewer CIP lined
- 136 miles sewer tested/chemically sealed
- 2,254 sewer spot repairs
- 8,708 service connection repairs
- 4.7 miles underdrains sealed

Results for all projects (FY93 through FY14) targeting inflow reduction include the following:

- 953 catch basins disconnected
- 39 miles of new or replaced storm drains
- 11,428 manholes rehabilitated/sealed
- 1,777 manhole covers replaced or inflow seals installed
- 417 sump pumps redirected
- 5,197 downspouts/area drains disconnected

Estimated I/I Reduction

The system annual average daily flow is 362 mgd (last 25 years); minimum dry weather flows drop to 225 mgd; peak wet weather flow during significant rainfall can exceed the 1270 mgd capacity at the Deer Island Treatment Plant (more than 3.5 times the average flow), and significant additional system capacity is available at combined sewer overflow (CSO) outfalls and storage facilities. Few problems exist within local and regional sewer systems during dry weather or as a result of small and medium storm events. However, high levels of I/I (as well as stormwater from combined sewers) reduce pipeline capacity in the collection system that would otherwise be available to transport sanitary flow. The result, during extreme storm events, may be sewer system surcharging and sanitary sewer overflows (SSOs). I/I also results in the transport of groundwater and surface water out of the natural watershed.

The estimated average daily flow reduction associated with completed local I/I reduction projects that have received MWRA financial assistance is about 85 million gallons per day (mgd). This flow reduction "ballpark" figure is based on the communities' (or their consultants') peak I/I reduction estimates, which have been prorated by MWRA staff to estimate an annual average I/I reduction. Some additional I/I reduction may be expected from projects not funded by MWRA. The estimated I/I reduction represents groundwater and stormwater that no longer enter the collection system at the point of repair. Regional wastewater flow reductions resulting from specific local I/I reduction projects are difficult to substantiate through end-of-the-collection-system meter data, due to factors noted below:

- Wastewater flows within the collection system vary dramatically due to changes in precipitation. For example, annual average daily flow for MWRA's system varies up to 100 mgd from year to year (from a low of less than 300 mgd to a high of more than 400 mgd). 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 less net flow reduction at the end of the collection system;

- MWRA's numerous pumping and interceptor upgrades, as well as combined sewer overflow and system optimization projects, have resulted in an increase in the capture and treatment of wastewater flow and the reduction of raw sewage discharges. When reviewing end-of-the-collection system meter data, these increased flows to the Deer Island Treatment Plant offset upstream I/I reductions; and,

- Over the last 20 years sewered population in the service area has increased by about 150,000 leading to an increase in sanitary sewage. Conversely, during the same 20 year period, per capita water use returned to the sewer system has decreased due to installation of low-flow plumbing fixtures and appliances leading to a decrease in sanitary sewage.

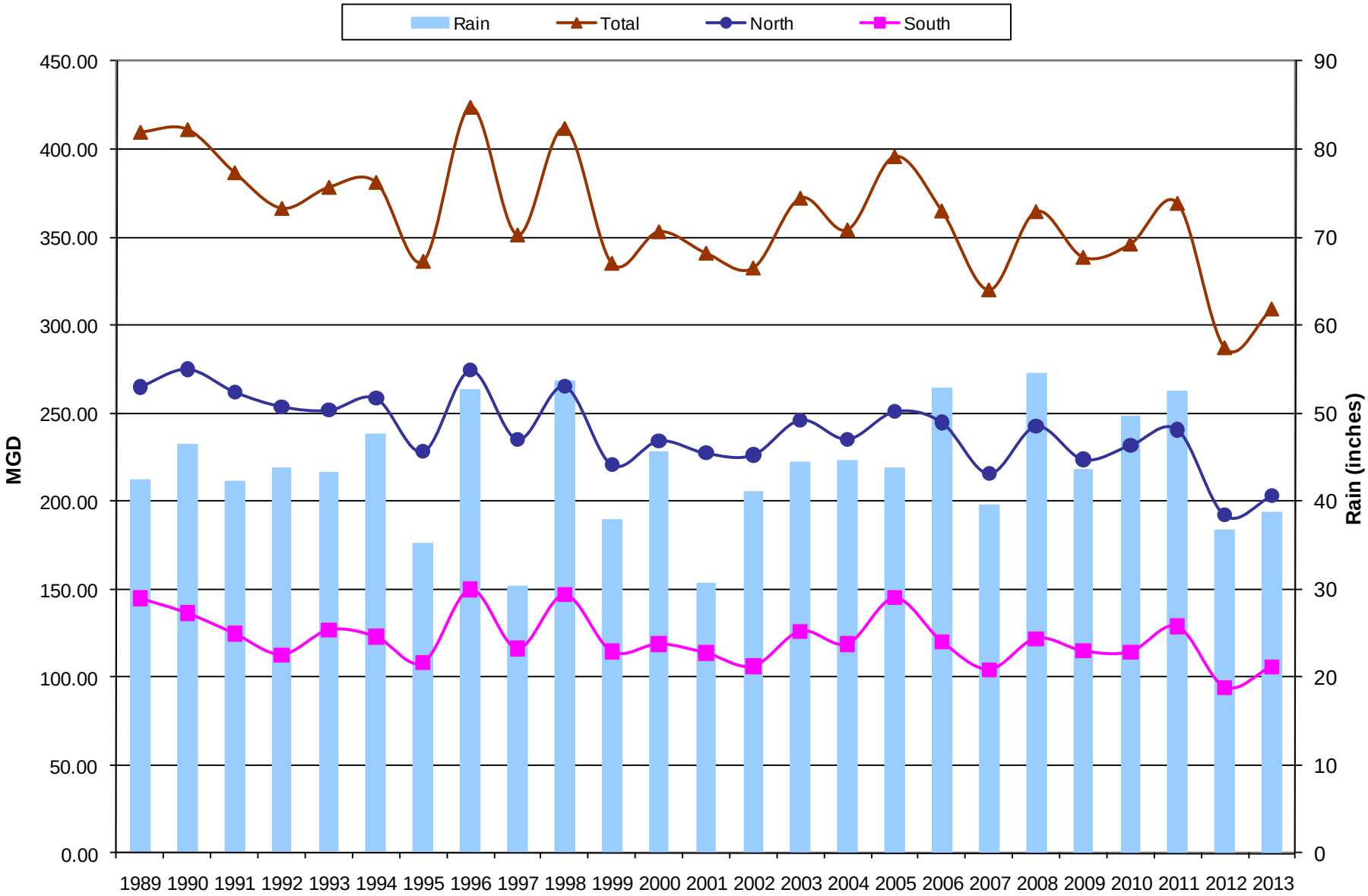
Taking these factors into account, long-term metering records will continue to be analyzed to monitor regional wastewater flow trends. The graph shown on page 7 presents long-term (25 years from 1989 through 2013) regional flow data for the Deer Island Treatment Plant collection system and annual rainfall. The 25-year average daily flow for the total system was 362 mgd and the average annual rainfall over those 25 years was 44 inches (local NOAA site at Boston Logan Airport). Over the last three years (2011/2012/2013), MWRA's average daily wastewater flow has been well below the 25-year average at 322 mgd (a 10 percent reduction); while the three-year rainfall average has been consistent with the 25-year average. Both calendar year 2012 and 2013 were relatively dry (37-inches and 39-inches of rainfall, respectively) and accounted for low average daily wastewater flows of about 290 mgd and 310 mgd, respectively. These are the two lowest flow calendar years over the last 25 years.

The same 25-year (1989 through 2013) long-term regional flow and annual rainfall data are presented again on page 8, both recalculated as 5-year running averages. The 5-year running average smoothes the extreme highs and lows within the annual data. The 5-year running average data over the last 25-years clearly shows the regional wastewater flow trend is modestly declining while the annual rainfall trend is modestly increasing. The data show an approximate 40 mgd reduction in wastewater flow during the last 25 year period while annual rainfall totals for the metro-Boston area have increase slightly over the same period.

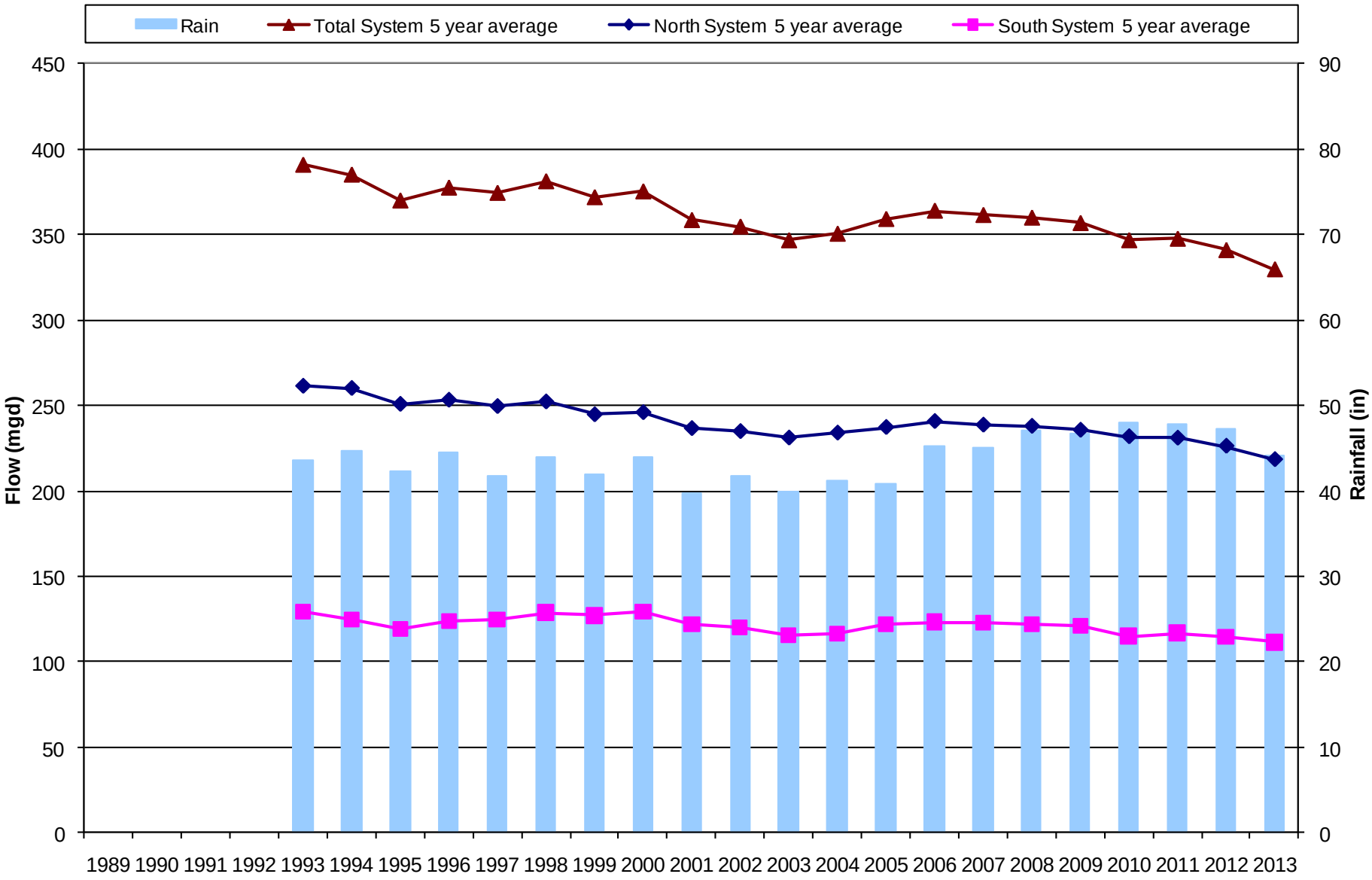
Community Projects Funded During FY14

Local community projects are funded quarterly under the MWRA I/I Local Financial Assistance Program. Attached (after page 8) are funding summaries for the four quarterly funding distributions during FY14: August 2013 with $7,550,310 distributed (seven communities funded: Ashland, Boston, Canton, Lexington, Randolph, Somerville, and Wakefield), November 2013 with $0 distributed (no communities funded), February 2014 with $2,929,700 distributed (three communities funded: Chelsea, Natick, and Winchester), and May 2014 with $2,271,852 distributed (five communities funded: Ashland, Hingham, Melrose, Reading, and Weymouth).

MWRA Long-Term Regional Flow Data
NOAA Annual Rainfall at Logan Airport



MWRA Long-Term Regional Flow Data
5-year Running Averages
5 year running average NOAA Rainfall at Logan Airport



MWRA I/I Local Financial Assistance Program Funding Summary

August 2013 Funding Cycle

Community	Funding Allocation
Ashland	$ 104,500
Boston	$ 3,070,400
Canton	$ 1,030,000
Lexington	$ 676,000
Randolph	$ 1,083,900
Somerville	$ 1,455,010
Wakefield	$ 130,500
Total	$ 7,550,310

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF ASHLAND, MASSACHUSETTS
PLEASANT STREET SEWER MAIN LINING

MWRA PROJECT NO. WRA-P8-02-3-822

SCOPE OF SERVICES

The proposed project is contracted sewer main lining leading to the elimination of infiltration sources within Pleasant Street (Sewer System Sub-Basin IV) in the Town of Ashland. Rehabilitation Construction work includes, but is not limited to, the following sewer main / manhole rehabilitation measures:

1. Lining one thousand, seven hundred and sixty (1760) linear feet of sewer main;
2. Grouting nine (9) sewer service connections; and
3. Interior coating ninety (90) vertical feet of brick/block sewer manholes.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For On-Call Sewer Rehabilitation Services By and Between the Town of Ashland and National Water Main Cleaning Co., the Agreement For Construction Administration / Observation Services By and Between the Town of Ashland and GCG Associates Inc. and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application (received August 2, 2013).

Total project cost is estimated at $246,800 (Rehabilitation Construction = $215,000 / Construction Engineering Inspection Services = $10,800 / Police Details = $21,000). Eligible MWRA I/I Local Financial Assistance is $104,500. [The project funding balance ($142,300) will be financed through previously unspent project funds ($109,100) and accrued MMDT account interest ($33,200)]. As a result of the above work, an estimated 0.14 mgd of peak infiltration will be removed from the collection system upon contract completion.

PROJECT SCHEDULE

Item	Start Date	Completion Date
Construction	August 2013	September 2013

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
PROJECT NO. WRA-P8-05-3-821

BWSC DRAINAGE, WATER AND SEWERAGE WORKS IMPROVEMENTS (2012 CIP)

A STREET SEWER SEPARATION
(SOUTH BOSTON – GILLETTE HEADQUARTERS AREA)

BWSC CONTRACT NO. 12-309-009

SCOPE OF SERVICES

This project will separate sewer flows from the A Street area of South Boston. The project work area is located in the Gillette Headquarters area and bordered by the following streets: Dorchester Avenue / Gillette Park / Wormwood Street / Richards Street / A Street / South Boston Haul Road / West Broadway Street. The separation of sewers and drains achieved by this project will result in a decrease of combined sewer overflows that currently discharge to the Fort Point Channel (BOS 072). Separation of this area was not included in the MWRA's CSO Plan.

Work to be performed under this project includes, but is not necessarily limited to, contracted installation of approximately 5690 linear feet (LF) of 12 to 36-inch sewer/drain pipe and 1350 LF of minor drain; installation of 50 manholes and 8 catch basins; disconnecting 8 downspouts; rehabilitating 18 sewer manholes; structurally lining 7500 LF of sewer/drain pipe; cleaning and TV inspecting 7700 LF of sewer pipe; and the performance of all other work pursuant to the terms and conditions detailed within the plans and specifications of BWSC Contract No. 12-309-009 [Drainage, Water and Sewerage Works Improvements (2012 CIP), A Street Sewer Separation: Replacement and Installation of Storm Drains, Sanitary Sewer and Water Mains in South Boston] and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application received July 31, 2013.

The area being separated by this project is approximately 32 acres. The peak and average annual inflow reductions are estimated to be 14.39 mgd and 0.09 mgd, respectively. Total project cost is estimated at $9,734,050. Eligible MWRA I/I Local Financial Assistance is $3,070,400 (Separation Construction = $3,070,400).

PROJECT SCHEDULE

Item	Start Date	Completion Date
Construction	August 2013	March 2015

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF CANTON, MASSACHUSETTS
SEWER SYSTEM REHABILITATION (CONTRACT NO. 12-01S)
MWRA PROJECT NO. WRA-P8-10-3-817

SCOPE OF SERVICES

The proposed project is contracted construction leading to the elimination of I/I sources within Canton Sewer Subsystems 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 / 17. Rehabilitation Construction work includes, but is not limited to, the following sewer main / manhole rehabilitation measures:

1. Chemical / mechanical root removal within 1500 linear feet (LF) of sewers;
2. Manhole heavy cleaning / root removal within 17 sewer manholes;
3. Pre- / Post rehabilitation flow measurements within 35,000 LF of sewers;
4. Internal TV inspection of 3000 LF of sewers;
5. Testing 5000 sewer joints in existing sewers;
6. Sealing and retesting 4000 sewer joints in existing sewers;
7. Testing 500 sewer service connection;
8. Sealing and retesting 400 sewer service connections;
9. Furnishing and installing 3000 LF of cured-in-place pipe (CIPP) Type III lining in existing sewers;
10. Furnishing and installing 40 replacement sewer manhole fames and covers; locating and resetting 10 existing sewer manhole frames and covers;
11. Furnishing and installing 5 replacement watertight sewer manhole fames and covers; and
12. Providing 50 sewer manhole restorations and sealings.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Professional Engineering Services By and Between the Town of Canton and Stantec Consulting Services, the terms and conditions detailed within the plans and specifications of Canton Contract Document For Sewer Rehabilitation (Contract No. 12-01S) and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application (received July 11, 2013).

Total project cost is estimated at $1,030,000. Eligible MWRA I/I Local Financial Assistance is $1,030,000 (Rehabilitation Construction = $932,100 / Construction Engineering Services = $97,900). As a result of the above work, an estimated 0.12 mgd of peak infiltration will be removed from the collection system upon contract completion.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF CANTON, MASSACHUSETTS
SEWER SYSTEM REHABILITATION (CONTRACT NO. 12-01S)
MWRA PROJECT NO. WRA-P8-10-3-817

PROJECT SCHEDULE

Item	Start Date	Completion Date
Design/Bidding	February 2013	April 2013
Award Contract	May 2013	June 2013
Construction	July 2013	December 2013

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-17-3-818

TOWN OF LEXINGTON

DESIGN & CONSTRUCTION OF THE RECOMMENDED SEWER REHABILITATIONS FOR THE MILL BROOK AREA AND THE SEWER SYSTEM EVALUATION SURVEY – PHASE 4 STUDY AREA

SCOPE OF SERVICES

The recommended sewer rehabilitations under this project are to be performed in the Mill Brook Area (Sewer Basin 14) and Sewer Basins 3 & 9. These sewer rehabilitations are presented in the Final Report entitled "Sewer System Evaluation Survey – Phase 4: Sewer Basins 3 and 9", dated May 2013.

The approximate scope of work includes but is not necessarily limited to: rehabilitating and cementitious lining of 106 manholes; chemical root treatment of 735 lf of sewers; installation of 6,115 lf of cured-in-place pipe and structural cured-in-place pipe; installation of cured-in-place short liners and structural short liners at 40 locations; cleaning, inspection, testing and sealing of 8,664 lf of sewers; open cut point repair at 4 locations; testing & grouting 13 service connections; heavy cleaning & inspection of 14,311 lf of sewers; and other related tasks and appurtenances. This project will also include the engineering services during the design, bid & award and construction which will include construction administration (office engineering) and resident engineering (field engineering).

PROJECT COST SUMMARY

Description of Task	Estimated Total Cost	Total Eligible Cost
Engineering Design, Bid & Award Services	$ 75,000.00	$ 52,437.31
Engineering Services During Construction	$ 160,000.00	$ 111,866.27
Construction of Recommended Sewer Rehabilitations	$ 1,029,000.00	$ 719,439.96
ESTIMATED TOTAL PROJECT COST	$ 1,264,000.00	$ 883,743.54

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM – PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-17-3-818

TOWN OF LEXINGTON

DESIGN & CONSTRUCTION OF THE RECOMMENDED SEWER REHABILITATIONS FOR THE MILL BROOK AREA AND THE SEWER SYSTEM EVALUATION SURVEY – PHASE 4 STUDY AREA

PROJECT SCHEDULE

Milestone Description	Start Date	Completion Date
Design of Recommended Sewer Rehabilitations	July 2013	September 2013
Bid & Award	October 2013	December 2013
Construction of Recommended Sewer Rehabilitations	January 2014	May 2014
Warranty Inspection & Retesting	March 2015	May 2015

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF RANDOLPH, MASSACHUSETTS
I/I REHABILITATION – DESIGN / CONSTRUCTION

MWRA PROJECT NO. WRA-P8-27-3-820

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community subareas that contribute excessive I/I, evaluate rehabilitation options and rehabilitate the sewer system on a continuous set schedule. Project work will include, but not be limited to, the following:

1. **I/I Rehabilitation Design:** During April 2010, the Town contracted for internal TV inspection of 35,500 linear feet (LF) of sewer main throughout the community. A letter report was developed (July 2013) detailing areas in which work was performed, summarizes work completed to date and includes recommendations and a cost-effectiveness analysis for rehabilitation of pipeline/ manhole defects and I/I sources identified during the investigation. Rehabilitation design work will provide cost-effective and value-effective sewer rehabilitations; preparation of construction drawings and specifications for rehabilitation design public bidding; and preparation a final cost estimate for the designed rehabilitations. (Estimated Design Cost = $49,700)

2. **I/I Rehabilitation Construction:** Construction of cost-effective and value-effective sewer rehabilitations and the performance of construction services (public bid and award) / resident inspection. Construction will include CIP lining of approximately 1500 LF of sewer main; testing & sealing 5000 LF of sewer main; rehabilitating 10 manholes; grouting 20 service connections; installing 10 service connection liners; replacing 100 LF of sewer main; performing 6 point repairs; and redirecting 2 sump pumps. Construction will also include the lining of the Vine Street Pump Station wet well. (Estimated Construction Cost = $955,100 / Estimated Construction Services and Resident Inspection Cost = $54,500 / Police Details = $24,600)

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Professional Services By and Between the Town of Randolph and BETA Group, Inc. and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application received July 30, 2013.

Total project cost is estimated at $1,083,900. Eligible MWRA I/I Local Financial Assistance is $1,083,900. As a result of the above work, an estimated 0.12 mgd of peak I/I will be removed from the collection system upon contract completion.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF RANDOLPH, MASSACHUSETTS
I/I REHABILITATION – DESIGN / CONSTRUCTION

MWRA PROJECT NO. WRA-P8-27-3-820

PROJECT SCHEDULE

Item	Start Date	Completion Date
Design	August 2013	October 2013
Construction	March 2014	September 2014

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-30-3-816

CITY OF SOMERVILLE

BEACON STREET WATER & SEWER IMPROVEMENT PROJECT
(FEBRUARY 2013)

SCOPE OF SERVICES

The location of this project is on Beacon Street from the intersection of Oxford Street to the intersection of Dickinson Street (Cambridge City Line).

The specific sewer improvement work consists of: the cured-in place pipe lining of approximately 11,500 linear feet (lf) of 8" to 18" diameter vitrified clay sewer and approximately 4,100 lf of 18" to 48" diameter brick sewer; replacement of approximately 3,000 lf of 8" to 15" diameter vitrified clay pipe with PVC pipe; lining of approximately 750 vertical feet of sewer manholes and all appurtenances.

This construction project will also include engineering services during the sewer and manhole improvements/rehabilitation.

Since this sewer rehabilitation and replacement project is located on a busy thoroughfare, a significant amount of Police Details will also be required.

The MWRA I/I Local Financial Assistance Program funding is being applied to the construction of the sewer improvements only.

ESTIMATED PROJECT COST SUMMARY

Project Task	Estimated Cost	Eligible Cost
Engineering Services During Construction	$ 341,805	$ 0
Construction Phase of Sewer Improvements	$ 3,418,047	$ 1,455,010
Construction Contingency (10%)	$ 341,805	$ 0
Police Details	$ 239,263	$ 0
TOTAL ESTIMATED PROJECT COST	**$ 4,340,920**	**$ 1,455,010**

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-30-3-816

CITY OF SOMERVILLE

BEACON STREET WATER & SEWER IMPROVEMENT PROJECT
(FEBRUARY 2013)

PROJECT SCHEDULE

General Description of Work Performed	Start Date	Completion Date
Bid & Award of Contract	August 2013	September 2013
Construction of Contract	October 2013	March 2014

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM – PHASE 8
ATTACHMENT A
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PROJECT NO. WRA-P8-33-1-819

TOWN OF WAKEFIELD

SEWER INVESTIGATION IN PORTIONS OF
SEWER SUBAREA 6 – GAUGING AREAS 6 & 7

SCOPE OF SERVICES

The specific portions of Sewer Subarea 6 – Gauging Areas 6 & 7 in which the sewer investigations will be conducted are presented in the Town memo of March 26, 2013 and the attached sewer map to that memo.

This project includes 2 major sewer investigation tasks. Under the first task, approximately 48,000 lf of sewer interceptor will be cleaned and internally inspected to identify sources of I/I. The second task includes the topside manhole inspections of up to 275 manholes. A Letter Report will be prepared which will present the results of the field work; identify those sewer segments and manholes which appear to contribute excessive I/I; present specific conclusions and recommendations for sewer rehabilitations and associated cost that includes a cost-effectiveness analysis.

ESTIMATED PROJECT COST SUMMARY

Description of Task	Estimated Cost
Sewer Investigations in Subarea 6 – Gauging Areas 6 & 7	$ 130,500

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM – PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-33-1-819

TOWN OF WAKEFIELD

SEWER INVESTIGATION IN PORTIONS OF
SEWER SUBAREA 6 – GAUGING AREAS 6 & 7

PROJECT SCHEDULE

General Description of Work Performed	Start Date	Completion Date
Sewer Investigations in Subarea 6 – Gauging Areas 6 & 7	July 2013	September 2013

MWRA I/I Local Financial Assistance Program Funding Summary

February 2014 Funding Cycle

Community	Funding Allocation
Chelsea	$ 627,000
Natick	$ 1,374,000
Winchester	$ 928,700
Total	$ 2,929,700

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
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PROJECT NO. WRA-P8-11-3-824

CITY OF CHELSEA

SPRUCE STREET AND BEECH STREET ROADWAY AND UTILITY IMPROVEMENTS PROJECT

SCOPE OF SERVICES

This project is a construction project that involves the improvement of the water, sewer and storm drain infrastructure along with the roadway reconstruction in the Spruce Street and Beech Street Area.

The eligible portion of the larger project involves the separation of the combined sewer on Spruce Street between Beech Street and Everett Avenue with the construction of 400 linear feet of 15" sanitary sewer and 900 linear feet of storm drain including jacking of the sanitary sewer and storm drain under the MBCR Railway Right-of-Way at Spruce Street

The specific contract bid items that will be eligible under this funding distribution are as follows:

Item #1a	Spruce St Storm Drain Jacking @ Railroad Easement (estimate of $1,000)
Item #1b	Spruce St Water & Sewer Jacking @ Railroad Easement (55%)
Item #2a	15-inch PVC Sewer
Item #3a	8-inch wyes & tees for sewer pipe
Item #3b	8-inch PVC sewer & building connections
Item #4a	Precast manholes complete with frame & cover
Item #4b	Replacing catch basins
Item #4c	Connection to existing structure
Item #4d	Remove & Replace catch basin or manhole riser, frame & grate
Item #4e	Replace gutter inlet structure
Item #5a	Sewer & Drain construction
Item #6a	12-inch RCP Storm Drain
Item #6b	15-inch RCP Storm Drain

PROJECT COST SUMMARY

DESCRIPTION OF WORK	TOTAL COST	ELIGIBLE COST
Spruce St & Beech St Utility & Roadway Improvements	$ 3,998,320.00	$ 627,000.00
TOTAL PROJECT COST	$ 3,998,320.00	$ 627,000.00

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF NATICK, MASSACHUSETTS

3 YEAR SEWER INFILTRATION REHABILITATION
(NATICK CONTRACT NO. S-127)

MWRA PROJECT NO. WRA-P8-22-3-825

SCOPE OF SERVICES

The proposed project is a continuation of a multi-year sewer rehabilitation plan focusing on infiltration removal throughout the Town's sanitary sewer system.

Project work (as identified in the recently completed Sewer System Evaluation Survey) will include, but not be limited to, the following:

1. Cleaning of approximately 47,200 linear feet (LF) of 6 to 16-inch sewer;
2. CIPP lining of approximately 15,300 LF of 6 to 16-inch sewer;
3. CIPP lining of approximately 42 lateral service connections;
4. Testing approximately 3500 sewer joints and sealing approximately 1730 sewer joints within 6 to 12-inch sewers;
5. Testing approximately 310 lateral service connections and sealing approximately 105 lateral service connections;
6. Performing two point repair linings of 8 and 26-inch sewer; and
7. Performing 360 manhole rehabilitations.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Professional Services By and Between the Town of Natick and Haley and Ward, Inc. and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application received February 3, 2014.

Total project cost is estimated at $1,822,492 (Design/Contract Preparation = $55,600 / Bid Administration = $6,200 / Construction Administration & Resident Project Representation = $193,045 / Rehabilitation Construction = $1,567,647). Eligible MWRA I/I Local Financial Assistance is $1,374,000 (Rehabilitation Construction = $1,374,000). A portion ($357,900) of this project was previously funded under MWRA Project No. WRA-P7-22-3-761 in May 2012. As a result of the above work, an estimated 0.26 mgd of peak infiltration will be removed from the collection system upon contract completion.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF NATICK, MASSACHUSETTS

3 YEAR SEWER INFILTRATION REHABILITATION
(NATICK CONTRACT NO. S-127)

MWRA PROJECT NO. WRA-P8-22-3-825

PROJECT SCHEDULE

Item	Start Date	Completion Date
Design	May 2012	May 2013
Bidding / Award	May 2013	June 2013
Construction	August 2013	August 2016

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
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PROJECT NO. WRA-P8-41-3-823

TOWN OF WINCHESTER

SQUIRE ROAD SANITARY SEWER REHABILITATION PROJECT
AND
RELATED ENGINEERING CONSTRUCTION SERVICES

SCOPE OF SERVICES

This project consists of the construction and engineering construction services associated with the Squire Road Sanitary Sewer Rehabilitation Project. This sewer rehabilitation project includes the repair of sewer defects and sewer rehabilitations identified during the Squire Road & Meter #4 Areas Sanitary Sewer Evaluation Survey Project.

The approximate scope of work includes but is not necessarily limited to: installation of 60 lf of sewers; replacement of 20 sewer building connections; 372 lf of temporary trench width pavement; 372 lf of permanent binder course and top course trench width pavement; chemical root treatment of 8,148 lf of sewers; root treatment of 12 manholes; installation of 3,954 lf of cured-in-place pipe; installation of 181 lf of cured-in-place short liners; inspection, testing and sealing of 256 service connections; cementitious lining of 746 vf of manholes; replacement of 8 manhole frames and covers; resetting of 19 manhole frames and covers; raising of 5 manhole frames and covers 2-ft above grade; building of 20 manhole benches and inverts; installation of 22 manhole inflow dishes; other related tasks and appurtenances.

PROJECT COST SUMMARY

Description of Task	Estimated Cost
Construction of Sanitary Sewer Rehabilitations	$ 1,060,200
Construction Administration (Office)	$ 39,490
Resident (Field) Engineering Services	$ 125,310
TOTAL ESTIMATED PROJECT COST	$ 1,225,000

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM – PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-41-3-823

TOWN OF WINCHESTER

SQUIRE ROAD SANITARY SEWER REHABILITATION PROJECT
AND
RELATED ENGINEERING CONSTRUCTION SERVICES

PROJECT SCHEDULE

Item	Start Date	Completion Date
Bid & Award of Contract	February 2014	March 2014
Rehabilitations Construction	April 2014	September 2014
Re-test Warranty Inspection	----------	Spring 2015

MWRA I/I Local Financial Assistance Program Funding Summary

May 2014 Funding Cycle

Community	Funding Allocation
Ashland	$ 293,500
Hingham	$ 363,352
Melrose	$ 1,069,000
Reading	$ 350,000
Weymouth	$ 196,000
Total	$ 2,271,852

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF ASHLAND, MASSACHUSETTS

I/I INVESTIGATION IN ASHLAND SEWER SYSTEM SUB-BASINS 1 / 2
(INTERNAL TV INSPECTION)

MWRA PROJECT NO. WRA-P8-02-1-827

SCOPE OF SERVICES

The proposed project is contracted internal TV inspection of sewer mains within Town of Ashland Sewer System Sub-Basins 1 / 2. The project purpose is the identification and quantification of I/I sources. Project work includes, but is not limited to, the following:

1. Internal TV inspection of approximately 88,564 LF of sewer main in Ashland Sewer System Sub-Basin 1; and

2. Internal TV inspection of approximately 110,952 LF of sewer main in Ashland Sewer System Sub-Basin 2.

The above work will be performed pursuant to the terms and conditions detailed within the Contract between the Town of Ashland and Truax Corporation (dated April 1, 2014) and the approved MWRA Phase 8 I/I Local Financial Assistance Project Application (received April 16, 2014).

Total project cost is estimated at $302,000. Eligible MWRA I/I Local Financial Assistance is $293,500.

PROJECT SCHEDULE

Item	Start Date	Completion Date
Internal TV Inspection	April 2014	September 2014

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF HINGHAM, MASSACHUSETTS
NORTH SEWER DISTRICT: I/I INVESTIGATION & REHABILITATION PROGRAM

MWRA PROJECT NO. WRA-P8-15-3-828

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community subareas that contribute excessive I/I, evaluate rehabilitation options and rehabilitate the sewer system on a continuous set schedule. Project work will be performed within Hingham's North Sewer District. Project work will include, but not be limited to, the following:

2013 I/I Rehabilitation: Replacement of 350 LF of sewer and 14 lateral connections. Rehabilitation of Kimball Beach sewer. Estimated cost = $112,103.

FY14 Annual Sewer Program: Review television inspection videos of approximately 10,000 LF of sewer. Conduct topside physical survey of as many as 60 sewer manholes. Prepare a letter report that details areas in which work was performed, summarizes work completed to date and include recommendations, a cost-effectiveness analysis and prioritization analysis for rehabilitation of pipeline/manhole defects and I/I sources identified during this investigation. Estimated construction costs will also be provided. Prepare construction specifications (Contract Documents) for public bidding of On-Call I/I Rehabilitation Services. Estimated cost = $44,800.

FY15 Annual Sewer Program: Review television inspection videos of approximately 11,500 LF of sewer. Conduct topside physical survey of as many as 65 sewer manholes. Prepare a letter report that details areas in which work was performed, summarizes work completed to date and include recommendations, a cost-effectiveness analysis and prioritization analysis for rehabilitation of pipeline/manhole defects and I/I sources identified during this investigation. Estimated construction costs will also be provided. Prepare work orders for On-Call I/I Rehabilitation Services for distribution to selected contractors. Estimated cost = $39,500.

On-Call I/I Rehabilitation Services: On-Call work is divided amongst three contracts: Contract 1 (Work Order 1.1) Clean and inspect approximately 14,550 LF of sewer; Contract 2 (Work Order 2.1): Trenchless infiltration rehabilitations as recommend in Annual Town-Wide Sewer Investigation & Rehabilitation Program – FY 14 Report; and Contract 3 (Work Order 3.1): Replacement of sewers to remove infiltration as recommend in Annual Town-Wide Sewer Investigation & Rehabilitation Program – FY 14 Report. Estimated cost = $166,949.

Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA Phase 8 I/I Local Financial Assistance Project Application received April 11, 2014 and the Agreements For Engineering Services By And Between The Town Of Hingham, Massachusetts And Weston & Sampson Engineers. Peak I/I reduction is estimated to be 0.10 mgd. Total project cost is estimated at $363,352. Eligible MWRA I/I Local Financial Assistance is $363,352.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-20-3-830

CITY OF MELROSE

DESIGN & CONSTRUCTION OF I/I REHABILITATIONS FOR SEWERS IN SEWER SUBAREAS 21 & 22

SCOPE OF SERVICES

This project consists of the design, bid & award, construction and engineering construction services associated with the sewer rehabilitations in Sewer Subareas 21 & 22 as recommended by the Report entitled "Subareas 21 and 22 Proposed Rehabilitations".

The approximate scope of work includes but is not necessarily limited to: cleaning, inspecting, testing and sealing approximately 7,400 linear feet of 8" to 12" diameter sewer; chemical root treatment of approximately 11,000 linear feet of 8" & 10" diameter sewer; installation of approximately 10,400 linear feet of 8" & 12' diameter cured-in-place pipe structural liners; installation of approximately 400 linear feet of 8", 10" & 12" diameter cured-in-place structural short liners; inspection, testing and sealing of approximately 90 service connections; cutting of approximately 5 protruding service connections; and all other related tasks and appurtenances.

PROJECT COST SUMMARY

Description of Task	Estimated Cost
Design, Bid & Award Services	$ 41,000
Construction of I/I Rehabilitations in Sewers	$ 900,000
Construction Administration (Office)	$ 30,800
Resident (Field) Engineering Services	$ 97,200
TOTAL ESTIMATED PROJECT COST	$ 1,069,000

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM – PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-20-3-830

CITY OF MELROSE

DESIGN & CONSTRUCTION OF I/I REHABILITATIONS FOR SEWERS IN SEWER SUBAREAS 21 & 22

PROJECT SCHEDULE

Item	Start Date	Completion Date
Design of I/I Rehabilitations	April 2014	June 2014
Bid & Award of Contract	June 2014	July 2014
I/I Rehabilitations Construction	July 2014	December 2014
Re-test Warranty Inspection	----------	Spring 2015

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-28-3-829
TOWN OF READING

DYE TESTING INVESTIGATIONS; UPGRADING THE EXISTING GIS SYSTEM; INSTALLING CURED-IN PLACE PIPE LINER ON LEWIS ROAD & CHARLES ST; INFLOW ELIMINATION FROM 2 CATCH BASINS ON MAIN ST; PERFORMING SPOT REPAIRS ON PLYMOUTH ROAD

SCOPE OF SERVICES

This project continues the Town of Reading's Infiltration/Inflow (I/I) identification and elimination program.

The 205 locations of the Dye Testing Investigations are listed in Table 3-3A of the "Infiltration & Inflow Investigations" Report of November 2012. These locations include driveway drains, stairwell drains, yard drains, flat roofs and window well drains. At the completion of the I/I identification work, a report will be prepared which will summarize the data collected and analysis thereof, present recommendations for further investigations and recommended sewer rehabilitations.

The Town will be updating their current GIS software system to a GIS based asset management and planning software. This new software will include InfoSWMM capabilities. Also included is the cost to update the existing data in the current GIS.

Through the Town's TV inspection Program, a portion of the existing sewer on Lewis St and Charles St was observed to be in such disrepair that the installation of a Cured-in-Place Pipe Liner (935 lf in Lewis St & 450 lf in Charles St) has been recommended. The Town is preparing Contract Documents for bidding. The cost of this construction contract is being included under this funding project.

In the "Infiltration & Inflow Investigations" Report of November 2012, an Inflow source in the vicinity of Catch Basins 1166 & 1170 on Main Street was identified. To eliminate this source, repairs need to be made to the storm drain and sewer pipes.

Through the Town's TV Inspection Program, a portion of the existing sewer on Plymouth Rd was observed to be in such disrepair that a spot repair is required.

For both the Inflow source in the vicinity of the 2 catch basins and the spot repair on Plymouth Rd, the town intends to either use the on-call contractor or town forces and equipment.

PROJECT COST SUMMARY

Task	Estimated Cost
Dye Testing Investigations & Report (including Police)	$ 58,000
Updating GIS System	$ 75,500
I/I Data Management	$ 16,500
Cured-in Place Pipe Liner	$ 150,000
Spot Repair & Inflow Elimination	$ 50,000
Total Estimated Cost	**$ 350,000**

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

PROJECT NO. WRA-P8-28-3-829

TOWN OF READING

DYE TESTING INVESTIGATIONS; UPGRADING THE EXISTING GIS SYSTEM; INSTALLING CURED-IN PLACE PIPE LINER ON LEWIS ROAD & CHARLES ST; INFLOW ELIMINATION FROM 2 CATCH BASINS ON MAIN ST; PERFORMING SPOT REPAIRS ON PLYMOUTH ROAD

PROJECT SCHEDULE

Item	Start Date	Completion Date
Dye Testing Investigations	May 2014	December 2014
Updating GIS System	May 2014	December 2014
I/I Data Management	May 2014	December 2014
Cured-in-Place Pipe Liner	May 2014	December 2014
Spot Repair & Inflow Elimination	May 2014	December 2014

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF WEYMOUTH, MASSACHUSETTS

SPRING 2014 TOWN-WIDE SEWER INVESTIGATION & REHABILITATION PROGRAM

MWRA PROJECT NO. WRA-P8-39-1-826

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community subareas that contribute excessive I/I, evaluate rehabilitation options and rehabilitate the sewer system on a continuous set schedule. Project work will be undertaken in Weymouth Subareas C-5 / C-6 / C-7. Project work will include, but not be limited to, the following:

1. Flow isolate as much as 55,000 LF of sewer in Weymouth Subareas C-5 / C-6 / C-7 to quantify infiltration amounts within manhole-to-manhole segments of sewer. The inspection will be conducted in Spring 2014 between the hours of 12AM and 6AM when groundwater levels are typically at their highest and sanitary flows are at a minimum.

2. Light clean, TV inspect, videotape and record as much as 55,000 LF of sewer in Weymouth Subareas C-5 / C-6 / C-7. The TV inspection will be performed to locate problem areas and I/I sources within manhole-to-manhole segments of sewer. The inspection will be conducted in Spring 2014 when groundwater levels are typically at their highest.

3. Conduct topside physical survey of as many as 355 sewer manholes in Weymouth Subareas C-5 / C-6 / C-7 for defects and I/I sources. A written log will be furnished for each manhole inspected. The manhole survey will document location, structural defects, I/I sources, size, depth, materials of construction, solids deposition and other pertinent information. When manholes are observed to be depressed or can otherwise collect runoff, an estimate of the manhole's drainage area will be provided.

4. Prepare a letter report that details areas in which work was performed, summarizes work completed to date and include recommendations, a cost-effectiveness analysis and prioritization analysis for rehabilitation of pipeline/manhole defects and I/I sources identified during this investigation. Estimated construction costs will also be provided. For those I/I sources that will require additional investigative work, the report will include a plan and a cost estimate to conduct the investigation.

Total project cost is estimated at $196,000. Eligible MWRA I/I Local Financial Assistance is $196,000. Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA Phase 8 I/I Local Financial Assistance Project Application received April 10, 2014 and the Agreement For Engineering Services By And Between The Town Of Weymouth, Massachusetts And Weston & Sampson Engineers, Inc. (executed March 7, 2014).

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM - PHASE 8
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF WEYMOUTH, MASSACHUSETTS

SPRING 2014 TOWN-WIDE SEWER INVESTIGATION & REHABILITATION PROGRAM

MWRA PROJECT NO. WRA-P8-39-1-826

PROJECT SCHEDULE

Item	Start Date	Completion Date
Flow Isolation	April 2014	June 2014
TV Inspection	April 2014	June 2014
Manhole Inspection	April 2014	June 2014
Letter Report	July 2014	September 2014

ATTACHMENT 5
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period: July 2013 Through June 2014

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 $460.75 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 FY14, MWRA has distributed $261 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 submit annual status reports on their I/I reduction programs. All 43 member sewer communities have submitted information to MWRA for FY14. Community information is summarized below:

1. ARLINGTON: North System

Background Information:

- Miles of Sewer: 106
- Sewered Population: 42,857
- Three Year ('11 - '13) Annual Average I/I: 2.06 mgd
- MassDEP Administrative Actions: ACOP-NE-10-1N006 (August, 2010)
  NON-NE-09-1N003 (July 2009)
  NON-NE-07-1N004 (June 2007)

Latest I/I or SSES Reports:

"Sewer System Investigation Area #6" Final Report (November 2011)
"Kimball Road/MWRA Millbrook Valley Relief Sewer Evaluation" Final Report (November 2011)
"Area #6 Smoke Testing, Dye Testing and Dye Flooding" Final Report (December 2011)
"Town-wide I/I Analysis" Final Report (April 2012)
"Additional Inspection of Sewer on Pond Lane, Academy St & Mystic Lake Drive" Letter Report (May 2012)
"Area #6 (Kimball Road) Building Inspections" Report (January 2013)
"Sewer system Investigation Area #7" Report (August 2013)
"Area #4, 5 & 7 Smoke Testing" Report (December 2013)

Private Source Inflow Removal Program: The Area #6 Building Inspection Program, which was conducted Fall 2012, identified 45 direct inflow sources.

I/I Rehabilitation Projects in Design or Construction:

- The Phase #3 Sanitary Sewer Rehabilitations – Bid No. 11-24 construction has been completed and the warranty inspection was completed March 2013.

- The Phase #4 Sanitary Sewer Rehabilitations – Bid Item 12-07 construction reached substantial completion on April 30, 2013. Warranty inspections were completed April 2014.

- The Phase #5 Sanitary Sewer Rehabilitations – Bid Item 12-46 construction reached substantial completion on June 21, 2013. Warranty inspections were completed April 2014.

- The Phase #6 Sanitary Sewer Rehabilitations – Bid Item 14-07 began on June 2, 2014. This sewer rehabilitation project consists of approximately: 31 LF of open cut point repair; replacement of building connections at 4 locations; installation of 1 internal drop connection; installation of 1 sewer manhole; replacement of 3 manhole frames & covers; installation of 11,776 LF of cured-in-place pipe; reinstating & grouting 273 service connections; installation of 240 LF of structural cured-in-place pipe; exterior grouting & interior sealing of 670 VF of sewer manholes; cutting of 2 protruding service connections; testing & grouting of 13 service connections; cleaning, inspection, testing & sealing of 1940 LF of sewer; installation of 11 LF of short liners; root treatment of 5069 LF of sewer; root treatment of 3 manholes; post construction flow isolation of 13,806 LF of sewer. This project is expected to be substantially completed by October 2014 with warranty inspection to be completed by July 2015. It is expected that this project will remove 132,000 gpd of Infiltration.

Reporting Period Activity:

- In February 2013, funds were distributed to fund the majority of the cost for the "Construction of the Phase 5 Sanitary Sewer Rehabilitations – Bid Invitation #12-46". Rehabilitation of defects identified in the sewer system during the previous Area # 6 Sewer System Investigation Planning Program (SSIPP) Study is included in this project. The sewer rehabilitation work will mainly take place in Sewer Subareas 21, 40, 41, 45 & 50. The cost of the engineering services provided during the sewer rehabilitation is also included. The estimated Peak Inflow removal is 0.050 mgd and the peak Infiltration removal is 0.094 mgd (MWRA Project No. WRA-P8-01-3-808).

- The Sewer System Investigation in Area #7 was completed August 2013.

- Smoke testing was conducted in Areas 34, 5 & 7 and the Report was completed December 2013.

MWRA I/I Local Financial Assistance Program: The community has financed nineteen (19) I/I reduction projects through the Authority's funding assistance program. Of the $8,423,000 allotted through the Program's Phases 1 - 10, the community has $2,810,000 remaining in funding assistance.

2. ASHLAND: South System

Background Information:
- Miles of Sewer: 66
- Sewered Population: 12,743
- Three Year ('11 - '13) Annual Average I/I: 0.39 mgd
- MassDEP Administrative Actions: No. 594 (November 1985)

Latest I/I or SSES Report: I/I Investigation/Repair (Summary Report): December 2010
I/I Investigation/Repair (Summary Report): March 2012
I/I Investigation/Repair Status Reports: CY13/14

Private Source Inflow Removal Program: Sump pump/roof leader investigations (via DPW personnel) by Sub-Basin during FY13/14:

Sub-Basin I: 52 inspections	Sub-Basin II: 135 inspections
Sub-Basin III: 20 inspections	Sub-Basin IV: 80 inspections

I/I Rehabilitation Projects in Design or Construction: The Town replaced 60 LF of collapsed/misaligned sewer main immediately upstream of the Brackett Road Pump Station (MWRA Project No. WRA-P6-02-3-632). Approximately 72,000 gpd of identified peak I/I removed. Also, the Town contracted National Water Main to line approximately 1760 LF of 14-inch sewer main and nine sewer service connections on Pleasant Street (MWRA Project No. WRA-P8-02-3-822). Project work completed Fall 2013. Approximately 80,000 gpd of identified peak I/I was removed. In addition, the Town contracted Truax Corp. to perform internal TV inspection of 199,500 LF of sewer main in Ashland Sewer System Sub-Basins 1 / 2 (MWRA Project No. WRA-P8-02-1-827). Project work is scheduled for completion Fall 2014.

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

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the $2,168,500 allotted through the Program's Phases 1 - 10, the community has $840,000 remaining in funding assistance.

3. BEDFORD: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 14,020
- Three Year ('11 - '13) Annual Average I/I: 1.13 mgd
- MassDEP Administrative Actions: None

- Latest I/I or SSES Report: Entegris Sewer Evaluation Final Report (dated January 2012)

Private Source Inflow Removal Program: No additional inspections were reported this period. Smoke testing which was conducted as part of the Sewer System Investigation Project #3 identified several private Inflow sources. These sources are expected to be removes in an upcoming sewer rehabilitation project.

In March 2010, Town Meeting voted to amend the Town's General Bylaws for Article 52 – Sewer System. This amendment includes a new Section 52.19 which allows authorized Town personnel to enter private properties to inspect internal plumbing. Under this bylaw amendment, the Town's Sewer System Bylaw now includes a 4:1 Inflow/Infiltration removal requirement for new developments that will generate greater than 50,000 gpd of new sanitary flows.

I/I Rehabilitation Projects in Design or Construction: No sewer rehabilitation project was conducted over the past year. At the completion of the Sewer System Investigation Project #3 it is expected that a sewer rehabilitation project will be initiated.

Additional sewer rehabilitations for the Phase II Sanitary Sewer Rehabilitations (Bid Invitation #10-S1) were conducted in April 2013. This project is now complete.

Reporting Period Activity: The Sewer System Investigation Project #3 is on-going with completion of the report by Fall 2014. The majority of this project was conducted in the Page Road Pump Station tributary area and will identify I/I sources.

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 $3,404,600 allotted through the Program's Phases 1 - 10, the community has $1,713,000 remaining in funding assistance.

4. BELMONT: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 22,987
- Three Year ('11 - '13) Annual Average I/I: 1.34 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report:

I/I and Comprehensive Flow Monitoring Project Final Report (July 2009)
Sewer System Evaluation Survey Final Report (October 2009)
Preliminary Design Report – Investigations of Sewers to Identify I/I Report (January 2013)

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

I/I Rehabilitation Projects in Design or Construction:

- CWSRF funded illicit connection mitigation project (CWSRF No. 3711) has been extended to accommodate additional work. An estimated 27,300 gpd of infiltration is to be removed. Construction is anticipated to be completed October 2014.

- The Town-Wide Sewer Service Laterals & Mainline Sewer Rehabilitation Project bids were accepted on April 17, 2013. The construction contract was awarded on June 19, 2013. This contract has been extended due to weather related and unforeseen conditions. Construction is anticipated to be completed September 2014. An estimated 215,000gpd of I/I will be removed.

Reporting Period Activity:

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- Approximately 17,900 LF of sewers and storm drains were CCTV inspected in support of Belmont's 2014 pavement management program. As a result, cured-in-place pipe lining of 2400 LF was incorporated into the CWSRF 3711 contract.

- Approximately 14,600 LF of sewers and storm drains were CCTV inspected in support of Belmont's 2013 pavement management program. Pipes requiring immediate attention were incorporated into the CWSRF project (lining only). Remaining recommended rehabilitations will be incorporated into future construction projects.

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 $5,135,100 allotted through the Program's Phases 1 - 10, the community has $2,143,000 remaining in funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 858
- Sewered Population: 619,914
- Three Year ('11 - '13) Annual Average I/I: 36.26 mgd
- MassDEP Administrative Actions: None (Cooperative agreement exists)

Boston North is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). Portions of Boston – North are impacted by projects under MWRA's CSO Control Plan.

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

Private Source Inflow Removal Program: Since 1994, the Downspout Disconnection Program has conducted approximately 38,000 building surveys and 10,500 dye water tests. Approximately 23,250 downspouts have been disconnected. During CY05-CY14, a total of seventy-five (75) large impervious areas were surveyed to identify inflow sources. All seventy-five (75) areas have been dye tested.

I/I Rehabilitation Projects in Design or Construction: BWSC has both completed and is currently working on a wide variety of separation and I/I identification/rehabilitation projects. To date, seventy-nine (79) projects have received funding through the MWRA I/I Local Financial Assistance Program. During FY07-FY14, BWSC completed the following rehabilitation projects: East Boston (Border/Meridian Street Area) Sewer Separation; Sewer Rehabilitation in Back Bay/ Kenmore/Hyde Park/Mattapan; Albany Street Sewer Separation, Sewer Rehabilitation in Dorchester/Mattapan/ West Roxbury/Brighton; Talbot Avenue High Level Sewer Area Sewer Replacement/Manhole Rehabilitation; South End Sewer Rehabilitation, Marginal Street Sewer Separation; St. Botolph Street Sewer Separation; Maverick Street Sewer Separation; West Side Interceptor and Public Garden Lining; Back Street Sewer Separation and Chester Park Area Sewer Separation.

On-going rehabilitation projects include: Mass Ave – Roxbury Separation (New Market Square), Mass Ave – Dorchester Separation (New Market Square Area), Dudley Square Sewer Separation, A Street Sewer Separation (South Boston Gillette Headquarters) and Rehabilitation of Sewers in the Fenway (Audubon Circle/St. Mary's Street Area).

BWSC is also working with the Boston University Medical Center Facilities Management Group on I/I mitigation projects to offset sanitary discharges from Boston University's National Emerging Infectious Diseases BioSquare Phase II Project (620 Albany Street).

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

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

MWRA I/I Local Financial Assistance Program: The Commission has financed seventy-nine (79) I/I identification/ reduction projects through the Authority's funding assistance program. Of the $132,171,200 allotted through the Program's Phases 1 - 10, the community has $48,459,224 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 140
- Sewered Population: 34,910
- Three Year ('11 - '13) Annual Average I/I: 3.44 mgd
- MassDEP Administrative Actions: ACO-NE-01-1001 (April 2001)
  ACO-NE-99-1001 (March 1999)
  NON (May 1997)
  NON (October 1986)
  Amended AO Docket No. 546 (February 1985)

Latest I/I or SSES Report: Annual Town-Wide Sewer Investigation & Rehabilitation Program – Prioritization Evaluation Report (July 2011)
Annual Town-Wide Sewer Program – Yr 1 Investigation (July 2012)
Annual Town-Wide Sewer Program – Yr 2 Investigation (January 2014)
Annual Town-Wide Sewer Program – Yr 3 Investigation (Ongoing)

Private Source Inflow Removal Program: Sump pump removal program is ongoing. Ten (10) private source sump pump removal contracts have redirected 295 sump pumps to date. Developer Flow Reduction Program is now 6 to 1 per DEP ACO. During CY13/14, a sump pump amnesty letter was sent out with the Town's annual water report to all users. The letter resulted in 31 customer calls to have their connections checked. To date, 27 inspections have taken place, and nine (9) sump pumps have been identified for removal. Actual removal/rerouting of the sump pumps has not yet taken place.

I/I Rehabilitation Projects in Design or Construction: Annual I/I Removal Program (Year 3) performed flow isolation television inspection and topside manhole inspections during Spring 2014. Data review is ongoing. Annual Town-Wide Sewer Program (Year 2 Investigation / MWRA Project No. WRA-P8-06-3-812) performed flow isolation TV inspection and topside manhole inspection during Spring 2013. Annual Town-Wide Sewer Program (Year 1 Investigation / MWRA Project No. WRA-P7-06-3-748) performed TV inspection of 49,538 LF of sewer pipe in Subareas S1 / W2 / HC2 / M2 and revealed an estimated 43,632 gpd of peak infiltration. Topside manhole inspection of 230 manholes in Subareas S1 / W2 revealed an estimated 35,795 gpd of peak infiltration. An annual flow monitoring project is also ongoing. Reports will be provided on a quarterly basis.

Reporting Period Activity: Annual Town-Wide Sewer Program (Year 2 Design / MWRA Project No. WRA-P8-06-3-812) was completed May 2014. Year 2 Rehabilitation Construction (Braintree Contract 14-1) was bid July 2014 and is scheduled for completion Fall 2014. Annual Town-Wide Sewer Program (Year 1 Design / MWRA Project No. WRA-P7-06-3-748) was completed May 2013. Year 1 Rehabilitation Construction (Braintree Contract 13-1) was bid June 2013 and completed (warranty restesting) Spring 2014.

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 $8,359,000 allotted through the Program's Phases 1 - 10, the community has $4,933,200 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 111
- Sewered Population: 59,073
- Three Year ('11 - '13) Annual Average I/I: 4.99 mgd
- Mass DEP Administrative Actions: None

Brookline is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). Portions of Brookline are impacted by projects under MWRA's CSO Control Plan.

Latest I/I or SSES Report:

Sewer Evaluation Survey in Subareas NI-7, 8 & 12 Final Report (May 2012)
Results for Condition Survey – Subareas NI-7, NI-8 & NI-12 Technical Memo (August 2012)
Eliot Street Smoke Testing Technical Memo (January 2013)
Englewood Ave/Kilsyth Rd Sewer Alternative Evaluation Technical Memo (February 2013)

Private Source Inflow Removal Program: Town is in the process of developing a Private Flow Source Identification and Removal Program. A 4:1 Flow Reduction is enforced for large residential and commercial projects. The community is continuing its public outreach for private inflow identification/removal. Engineering Division personnel are on the lookout for illicit sump pumps during inspections. None were found to be connected to the sewer this year.

I/I Rehabilitation Projects in Design or Construction: The construction of the recommended sewer rehabilitations per the I/I investigations conducted in NI-7, 8 and 12 has been completed (Sewer System Rehabilitations – Contract No. PW/12-34) and final payment has been made to the contractor. The construction of the recommended sewer rehabilitations per the sewer investigations conducted on Englewood and Kilsyth Streets has been completed (Various Sewer and Drain Improvements – Contract No. PW/13-14). Final payment has been made to the contractor.

Reporting Period Activity:

- In June 2013, funds were distributed for the following two (2) sewer rehabilitation contracts: (1) Contract No. PW/12-34: Sewer Rehabilitations and (2) Contract No. PW/13-14: Various Sewer and Drain Improvements (sewer portion only). The estimated peak I/I to be removed is 0.174 mgd (MWRA Project No. WRA-P8-07-3-815).

- A developer contracted Insituform Technologies to line approximately 550 LF of 16-inch sanitary sewer from SMH S001-067 (Arlington Road) to SMH S008-067 (near Hammond Pond Parkway) and 426 LF of 24-inch from sanitary sewer from SMH S006-083 (Hammond Pond Parkway) to S010-083 (Transfer Station Drive). The project also included rehabilitation of nine (9) sewer manholes on these sewers. This rehabilitation work was in Sewer District NI-1 as required by DEP Sewer Extension Permit X239-239. The estimated Infiltration to be removed is 36,000 gpd.

- In December 2013, the Town executed an engineering agreement for a Master Plan Summary Update, I/I Investigation and Sewer System Rehabilitation Design in Subareas NI-9, NI-10 & NI-11. The purpose of this project is to update the Master Plan to include the sewer separation and rehabilitation work that has been completed in recent years including CCTV inspection data. Recommendations for the next phase of rehabilitation will be made along with additional investigations which are expected to include flow isolation and additional CCTV inspections of sewers and manhole inspections. The design of the recommendations from this update is also included under this project. Completion is estimated to be January 2015.

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 $13,165,200 allotted through the Program's Phases 1 - 10, the community has $7,638,800 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 115
- Sewered Population: 24,507
- Three Year ('11 - '13) Annual Average I/I: 1.38 mgd
- MassDEP Administrative Actions: ACO-NE-06-1N001 (March 2006)
  ACO-NE-01-1004 (July 2001)
  Amended AO Docket No. 618 (October 1986)

Latest I/I or SSES Reports:

Easement Manhole Inspections & Flood Plain Manhole Inflow Investigations Final Report (August 2011)
Phase 5 Smoke Testing, Dye Testing & Dye Flooding Final Report (January 2012)
Phase 5 Sanitary Sewer Flow Evaluation and Recommendations Final Report (January 2012)
Phase 6 Sewer System Evaluation Survey Final Report (January 2012)
Building Inspections in the Phase 6 Area Final Report (June 2012)
Project 7 – Evaluate Sewer Flows Based on Water Use & SCADA Pump Station Data Report (Fall 2013)
Project 7 – Evaluation of Localized Flooding Areas Final Report (February 2014)
Project 7 – Building Inspections Final Report (March 2014)
Project 7 – Sewer System Evaluation Survey Final Report (March 2014)

Private Source Inflow Removal Program:

The Town hired a consultant to perform building inspections for private sources of inflow at residential properties, as part of the Project 7 Building Inspections. Inspections were attempted at 3171 buildings with 2237 being completed. These inspections identified the following sources: 105 sump pumps; three floor drains; one internal floor drain; two external floor drains and one open cleanout.

In the past year, developers have redirected 14 private illicit sump pumps for an estimated inflow removal of 16,800 gpd. There is an additional 7 illicit sump pumps under construction for redirection.

The current sewer bank balance is 38,126 gpd.

I/I Rehabilitation Projects in Design or Construction:

The Town has a sewer rehabilitation project scheduled for the Fall 2014 which will remove an estimated 487,422 gpd of I/I resulting in a sewer bank credit of 121,856 gpd.

The construction of "Gravity Sewer Rehabilitations Downstream of Force Main Discharge Locations" has been completed with the warranty retesting and final inspection to be completed Fall 2014.

Reporting Period Activity:

- During October/November 2013, the Town conducted a sewer rehabilitation project that targeted locations just downstream from force main discharges that showed signs of corrosion.

- Heavy cleaning of 758 LF of sewer was completed as part of the Project 7 Sewer System Evaluation Survey Study.

- In February 2013, funds were distributed for the four following projects: (1) Sewer System Evaluation Survey in Specific Areas; (2) Evaluation & Comparison of Sewer Flows at Pump Stations with Water Use Data; (3) Evaluation of Manholes in Localized Flooding Areas; and (4) Building Inspection Program in Specific Areas (MWRA Project No. WRA-P8-08-2-809).

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 $5,102,800 allotted through the Program's Phases 1 - 10, the community has $1,817,000 remaining in funding assistance.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 148
- Sewered Population: 105,932
- Three Year ('11 - '13) Annual Average I/I: 5.92 mgd
- Mass DEP Administrative Actions: NON-NE-00-1012 (May 2000)
  NON-NE-00-1004 (January 2000)
  ACOP-NE-96-1004

Cambridge is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). Portions of Cambridge are impacted by projects under MWRA's CSO Control Plan.

Latest I/I or SSES Reports:

Phase II: Analysis and Fast Track Design of I/I Rehabilitation Projects (December 2007)
East Cambridge Sewer Capacity Program (Study Ongoing)

Private Source Inflow Removal Program:

As part of the Contract 8A Huron Avenue Project, the contractor has removed 59 inflow sources from buildings.

Two (2) inflow sources have been removed to date as part of the Concord Avenue Contract 9 Project.

In 2013, DPW instituted a dedicated budget code within the Capital Budget for I/I offset fees. Per DEP Bureau of Resources Protection 2009 I/I Policy, new development projects that cannot remove 4 gallons of I/I per gallon of new sewer flow are charged a mitigation fee which goes to the fund. The fees collected are used by the DPW to remove I/I at other City projects. This program is continuing.

I/I Rehabilitation Projects in Design or Construction:

- Western Avenue Reconstruction Project - In the past year, the City's contractor has completed the installation of over 2700 LF of sewer and 2800 LF of storm drain. The Contractor has lined 900 LF of existing sewer and 110 LF of storm drain. The contractor has also installed the storm water deflection structure. Remaining work consists of surface restoration and construction of a storm water sampling station.

- The construction for the Common Manhole Removal Project Contract No. 7 is ongoing. To date, 27 common manholes have been removed with two remaining which are scheduled to be removed by December 2014. The contractor has installed over 580 LF of sewer and over 130 LF of storm drain. DPW performed an analysis of the potential peak hourly and average annual I/I removal for this project. Estimated peak hourly I/I removal is 6.20 mgd. Estimated average annual I/I removal is 0.036 mgd.

- Alexandria Real Estate, which is developing the properties in the Binney Street area, are in the process of separating the sewers on Binney Street between Land Boulevard and Third Street This separation work is expected to be completed by the end of CY14.

Reporting Period Activity:

- Remedial Sewer Repair: In the past year, the City's contractor installed 150 LF of new sanitary sewer and 119 LF of new storm drain on Day Street replacing existing pipe. The contractor also installed 33 LF of new 8-inch sewer and 33 LF of new 12-inch storm drain replacing existing pipe and has lined 11 LF of sewer and 11 LF of storm drain on Eliot Street at Mt. Auburn Street. The contractor installed 77 LF of new 12-inch sewer on Mt. Auburn Street between Hilliard and Gerry Street replacing existing pipe and installed 185 LF of new sewer on Portland Street replacing existing sewer.

- Myrtle Magnolia Project: Construction for this project began in 2012. Work includes construction of new storm water holding tank and new pump station. To date, the City's contractor has installed more than 1700 LF of new storm drain and has replaced or installed more than 750 LF of sewer. More than 700 LF of combined sewer have been abandoned. The contractor will soon begin to install the storm water pump station for the Hovey Street storm water holding tank. Easement issues with the location of the pump control panel box have been resolved. The pump station is expected to be installed by the end of 2014. All other work is completed and the storage tank is fully functional

- CAM004 Contract 8A Huron Avenue: Construction for this project began in 2012. In the past year, the contractor has installed 3174 LF of new sewer and 1374 LF of new storm drain and lined 869 LF of existing sewer. As part of the sewer separation, five common manholes in the project area and one outside the project area have been separated. The project is expected to be completed by December 2014.

- CAM004 Contract 8B Huron Avenue: Construction for this project began in 2013. In the past year, the contractor has installed 3814 LF of new sewer and 6491 LF of new storm drain and lined 81 LF of existing sewer. Remaining work includes removal of 10 common manholes and additional sewer and drain installation. The subsurface work is expected to be completed by December 2015.

- CAM 004 Contract 9 Concord Avenue: Construction for this project began in 2014. The contractor has installed 1043 LF of new sewer and 1364 LF of new storm drain. Along with sewer separation, the project will include the removal of 12 common manholes. The subsurface work for the project is expected to be completed by December 2015.

- Contract 12 – Alewife Wetlands and Stormwater Outfall: Remaining work includes installation of the storm water sampling station.

- Fawcett Street: The Contractor has installed 100 LF of new storm drain replacing existing pipe which will discharge to the wetland area constructed under Contract 12.

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 $23,620,100 allotted through the Program's Phases 1 - 10, the community has $12,543,045 remaining in funding assistance.

10. CANTON: South System

Background Information:
- Miles of Sewer: 62
- Sewered Population: 14,459
- Three Year ('11 - '13) Annual Average I/I: 1.36 mgd
- MassDEP Administrative Actions: AO Docket No. 537 (April 1984)

Latest I/I or SSES Report: Comprehensive Water Resources Management Plan (February 2009)
I/I Five Year Management Plan (November 2011)
I/I Five Year Management Plan Update (Ongoing)

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: Sewer System Rehabilitation (Canton Contract No. 12-01S / MWRA Project No. WRA-P8-10-3-817) began July 2013. Project work includes sewer manhole sealing/restoration, sewer pipe testing and sealing, CIPP lining and joint testing/sealing in various sewer subsystems throughout the Town. Project work substantially complete July 2014.

Reporting Period Activity: The Town conducted a 12 week flow metering program within Subsystems 7/9/12/14/16/18/19/24 to identify areas with extraneous flows. Town-wide CCTV inspection program is complete.

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 $3,965,900 allotted through the Program's Phases 1 - 10, the community has $1,290,000 remaining in funding assistance.

11. CHELSEA: North System

Background Information:
- Miles of Sewer: 41
- Sewered Population: 35,649
- Three Year ('11 - '13) Annual Average I/I: 2.10 mgd
- MassDEP Administrative Actions: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-008 (March 2009)

Chelsea is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). Portions of Chelsea are impacted by projects under MWRA's CSO Control Plan.

Latest I/I or SSES Report: Investigation into Excessive Infiltration/Inflow & Exfiltration (November 2010)

Private Source Inflow Removal Program: The City began collecting Sewer Bank fees for redevelopment projects in 2013. The City has also begun a move toward the implementation of Green vs. Gray infrastructure to reduce the amount of stormwater discharged to combined sewers. Efforts to date have included requiring all redevelopment projects to utilize Low Impact Development and retain/infiltrate stormwater onsite, and incorporating green infrastructure into municipal projects (e.g., rain garden at Mace Housing Complex).

I/I Rehabilitation Projects in Design or Construction:

- Construction of Chelsea's One North Utility Improvements (formerly Crescent Urban Renewal Area Utility Improvements) project is substantially complete. Minor punch list items remain on the utility construction and surface improvements are ongoing. The project includes upgrades to utilities on Heard and Sixth Streets between Maple and Spruce, Maple Street from Heard to Sixth, and on Spruce Street between Blossom and the Sixth Street. This includes approximately 2500 LF of water main improvements and comprehensive sewer separation throughout the project area (approximately 1100 LF of sewer and 2000 LF of drain); however, separated flow will temporarily be returned to the combined sewer on Spruce Street until such time as required sewer and drain pipe jackings can be completed under the MBCR rail lines.

- Design for the Broadway Infrastructure Project began in the Spring 2013 and ongoing. The project was submitted to the MassDOT Transportation Improvement Program (TIP) for funding; therefore, final design and construction may not begin for a several years. This project consists of upgrades to utilities throughout the project area, including approx. 5000 LF of full sewer separation.

- Design has been completed and construction of the Spruce Street Infrastructure Improvements project has begun. The project consists of utility improvements on Spruce Street from Sixth to Beech, including the sewer and drain pipe jackings under the MBCR rail lines to complete the sewer separation effort currently ongoing in the upstream "One North" tributary area. It also includes utility improvements on Beech Street between Maple and Spruce Street in support of anticipated development. Completion is anticipated by Fall 2014.

- Bidding is complete and construction is ongoing for the Lash, Gardner, and John Street Utility & Roadway Improvements project. The project includes comprehensive infrastructure improvements the full length of Lash Street and John Street, and on Gardner between John and Parker. It includes replacement of approximately 1050 LF of aging sewer pipe and installation of approximately 780 LF of new drain. Completion is expected by Fall 2014.

- Construction of the Lower Broadway Water Main and Drainage Improvements project is anticipated to begin in August 2014. The project will include installation of approx. 600 LF of drain line on Broadway, between Beacon Street and Medford Street, to allow sewer separation. It will also include redirection of a few catch basins from the sewer to the new drain, as well as elimination of Combined Sewer Overflow CHE002. Completion is anticipated by Spring 2015.

- In February 2014, funds were distributed for the separation of the combined sewer portion of the project entitled "Spruce Street and Beech Street Roadway and Utility Improvements Project". The specific work involves the separation of the combined sewer on Spruce Street between Beech Street & Everett Avenue with the construction of 400 LF of 15-inch sanitary sewer and 900 LF of storm drain(including jacking of the sanitary sewer and storm drain under the MBCR Railway Right-of-Way at Spruce Street). The estimated Peak Inflow Removal is 10.6 mgd (MWRA Project No. WRA-P8-11-3-824).

Reporting Period Activity: See above work descriptions.

MWRA I/I Local Financial Assistance Program: The community has financed twelve (12) I/I reduction projects through the Authority's funding assistance program. Of the $6,870,100 allotted through the Program's Phases 1 - 10, the community has $2,638,000 remaining in funding assistance.

12. DEDHAM: South System

Background Information:
- Miles of Sewer: 95
- Sewered Population: 23,650
- Three Year ('11 - '13) Annual Average I/I: 1.73 mgd
- MassDEP Administrative Actions: AO Docket No. 547 (October 1985)

Latest I/I or SSES Report: Town-Wide Flow Monitoring (October 2011)
Municipal Building Inspections (October 2012)
2012 Inflow Investigation (February 2013)
I/I Investigation & Rehabilitation Annual Program (February 2013)
2013 Year One Inflow Investigation (March 2014)

Private Source Inflow Removal Program: The Town adopted a sewer system enterprise fund at the May 2009 Town Meeting. A Municipal Buildings Inspection Program was undertaken to indentify inflow sources. Inspections indentified approximately 1200 GPD of peak inflow. The Town removed the 1200 GPD of peak inflow during CY13/14.

Weston & Sampson was contracted to conduct smoke testing on approximately 140,000 LF of sewer to identify potential inflow sources. Testing results indicated 27 sources of inflow contributing approximately 78,231 GPD of peak design storm inflow. Of the 27 defects indentified, six were located within the Town's ROW. These six defects are anticipated to be removed by the Town's DPW in Summer 2014.

I/I Rehabilitation Projects in Design or Construction: The Town, as part of the 2013 on-call sewer repairs project (MWRA Project No. WRA-P8-12-3-811), completed the installation of 16,277 LF of CIPP lining, 640 LF of short liners and 240 VF of cementitious manhole lining. The project removed an estimated 0.28 mgd of peak infiltration. The community also continued its annual sewer system inspection program. In April 2014, the Town began cleaning and TV inspecting 124,000 LF of sewer main and inspecting 500 sewer manholes. The Town plans to utilize this data to perform additional rehabilitation on the most cost-effective sewer mains/manholes in Fall 2014 utilizing an on-call rehabilitation contract.

Reporting Period Activity: Approximately 595 LF of sewer main extensions were installed throughout the Town by private developers. Upon completion of the extension projects, the Town took over ownership of the sewer mains.

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 $5,740,000 allotted through the Program's Phases 1 - 10, the community has $1,826,000 remaining in funding assistance.

13. EVERETT: North System

Background Information:
- Miles of Sewer: 57
- Sewered Population: 42,101
- Three Year ('11 - '13) Annual Average I/I: 1.76 mgd
- MassDEP Administrative Actions: ACOP-NE-08-1N006 (July 2008)
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-026 (August 2009)

Latest I/I or SSES Report:

Sanitary Sewer Overflow Abatement Plan – Behan & Beacham Street Area Final Report (December 2009)
I/I Investigation (July 2010)
Sanitary Sewer/Drain Investigation on Beacham Street (August 2012)

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

- The developer for the Air Force Road expansion is being required to assume the cost of I/I mitigation (37,500 gpd) to offset the proposed wastewater flows associated with the project. The developer has been given specific areas to complete the required mitigation.

I/I Rehabilitation Projects in Design or Construction: The Behan/Beacham Street Sewer Replacement Project has been completed. This project is in compliance with Mass DEP Administrative Order NE-08-1N006. Funding was provided under the State SRF Program.

Reporting Period Activity: I/I investigation of the sewers in the Otis Street / Henderson Street area is being conducted. Internal TV inspection and evaluation of the sewer in the Beacham Street extension from Behan Street to Broadway is being conducted.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the $8,071,500 allotted through the Program's Phases 1 - 10, the community has $4,930,000 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:
- Miles of Sewer: 275
- Sewered Population: 62,092
- Three Year ('11 - '13) Annual Average I/I: 2.10 mgd
- MassDEP Administrative Actions: ACO-NE-07-1N001 (March 2007)
  AO Docket No. 592 (January 1986)

Latest I/I or SSES Report: Town-Wide I/I Study / SSES Phase 1 / CWMP (Complete)
SSES Phase 2 (Complete); SSES Phase 3 (Complete)
SSES Phase 4/5 (Complete; Blackberry Lane SSES (Complete)

Private Source Inflow Removal Program: The Town's ten year capital plan now includes three phases of inflow removal projects. The first phase is scheduled for funding in the FY17 budget cycle. The Town is currently developing capital projects that will incorporate the removal of the illicit connections identified during the field reconnaissance efforts of the SSES programs. The capital project program will include the redirection of illicit flows as well as the extension of storm drain systems to remove the flow from the sewer system. During this years' capital project development cycle, the Town will determine the proposed rehabilitation areas and improvements required in order to further refine the costs and timing of the actual inflow removal projects.

I/I Rehabilitation Projects in Design or Construction: The Concord and School Street Sewer Project was completed Fall 2013. The project involved sewer reconfiguration to allow the Saxonville Pumping Station and a siphon under the Sudbury River to be eliminated. All flows from the Saxonville and Speen Street Pumping Stations are now directed to the A Street Wastewater Management Facility, which has resulted in considerable reductions in sulfide formation and discharge levels to the Framingham Extension Sewer.

The Central Street Siphon / Sudbury River Interceptor Project consisted of lining 4000 LF of 18-inch sewer in a wetland area of the Sudbury River and the replacement of 4000 LF of 8-inch sewer with an 18-inch interceptor. The new configuration eliminates two siphons under the Sudbury River and will eliminate a bottleneck that had generated a seasonal sanitary sewer overflow. Project work is complete.

The Coburn Street Area Sewer Rehabilitation Project (Contract PW 191 / MWRA Project No. P7-14-3-745) included the replacement of 5000 LF of sewer and CIP lining of 1200 LF of 8-inch sewer. Project work is complete.

Reporting Period Activity: The Eaton / Chalis / Nob Hill Pumping Stations Replacement Project was completed in October 2013. It involved the elimination of a sewer pumping station and replacement of more than 5000 LF of sewer.

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 $12,125,000 allotted through the Program's Phases 1 - 10, the community has $7,122,000 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 33
- Sewered Population: 6,652
- Three Year ('11 - '13) Annual Average I/I: 0.82 mgd
- MassDEP Administrative Actions: AO Docket No. 536 (November 1985)

Latest I/I or SSES Report: Manhole Inspection Report (August 2008)
Comprehensive Wastewater Management Study (August 2010)
I/I Investigations Letter Report (June 2012)
FY14 I/I Evaluation (January 2014)
FY15 I/I Evaluation (Ongoing)

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

I/I Rehabilitation Projects in Design or Construction:

2013 I/I Rehabilitation: Replacement of 350 LF of sewer and 14 lateral connections. Rehabilitation of Kimball Beach sewer. Project work (MWRA Project No. WRA-P8-15-3-828) is complete.

FY14 Annual Sewer Program: Review television inspection videos of approximately 10,000 LF of sewer main. Conduct topside physical survey of 60 sewer manholes. Identified sewer main/manhole defects to be repaired as part of On-Call I/I Rehabilitation Services Contract. FY14 Sewer System I/I Investigation (MWRA Project No. WRA-P8-15-3-828) completed December 2013. FY 14 Rehabilitation Construction (MWRA Project No. WRA-P8-15-3-828) to be completed Fall 2014.

FY15 Annual Sewer Program: Review television inspection videos of approximately 11,500 LF of sewer main. Conduct topside physical survey of 65 sewer manholes. Identified sewer main/manhole defects to be repaired as part of On-Call I/I Rehabilitation Services Contract. FY15 Sewer System I/I Investigation (MWRA Project No. WRA-P8-15-3-828) completed Spring 2014.

Reporting Period Activity: Ship Street and Street Sewer Extensions are ongoing (total length of extension is approximately 1800 LF of PVC sewer pipe). Eighty (80) LF of low pressure force main was installed on Alden Road.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the $1,623,500 allotted through the Program's Phases 1 - 10, the community has $679,648 remaining in funding assistance.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 9,557
- Three Year ('11 - '13) Annual Average I/I: 0.33 mgd
- MassDEP Administrative Actions: ACOP-NE-04-1001
  (Signed January 2005; Amended July 2007)
  (Amended ACO No. 2 May 2008)

Latest I/I or SSES Report: I/I Inspections Report (July 2006); DEP ACO Progress Report (June 2008);
CWSRF No. 2919 Contract No. 1 (October 2009)

Private Source Inflow Removal Program: House-to-House inspections continue. All new home construction inspected by the DPW and Town Plumbing Inspector. The State has approved the Town's Sewer Bank Policy.

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

Reporting Period Activity: The Town has completed its yearly check of all cross-country sewer manholes. Phase 3/4 properties associated with collection system expansion are now being connected at owner's request. Phase 5 System Extension (Spring Street Area) to be completed Summer 2014. Plymouth Street System Extension scheduled to be designed Summer 2014, with construction starting Fall 2014. Juniper Road drainage improvements project completed June 2014.

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 $1,639,600 allotted through the Program's Phases 1 - 10, the community has $743,038 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 170
- Sewered Population: 30,557
- Three Year ('11 - '13) Annual Average I/I: 2.76 mgd
- MassDEP Administrative Actions: ACO-NE-11-015 (July 2011)

Latest I/I or SSES Reports:

Annual Town-wide Sewer Investigation & Implementation Program Final Report (October 2011)
Sewer Basins 3, 9 & 10 Smoke Testing, Dye Testing & Dye Flooding Program Final Report (January 2012)
Sewer Use Code Review Final Report (February 2012)
Private Inflow Removal Program Final Letter Report (February 2012)
Sewer System Evaluation Survey – Phase III Final Report (April 2012)
Surcharged Areas Evaluation Final Report (April 2012)
Sewer System Evaluation Survey Phase 4: Sewer Basins 3 & 9 (May 2013)
Sewer System Evaluation Survey – Manhole Inspections in Sewer Basin 14 (August 2013)

Private Source Inflow Removal Program:

- The Town is using the February 2012 *Sewer Use Code Review* to update their current regulations to incorporate a sewer bank or other funding options that may be adopted by the town.

- A private inflow program from the February 2012 Private Inflow Removal Program Letter Report is currently on hold.

I/I Rehabilitation Projects in Design or Construction:

- Warranty re-inspections for Contract No. 10-29 and Contract No. 11-24 were completed in May 2012. All final paperwork has been processed.

- Warranty re-inspection for the "2012 Wastewater System Improvements (Contract No. 12-46)" was performed in May/June 2013. The final pay estimate and balancing change order have been processed and the project has been closed out.

- Construction of Marrett Road Sewer Improvements - Contract 13-07 began in September 2012 and was substantially complete in December 2012. Final paving was completed in June 2013.

- The design of the sewer rehabilitations for the Phase 4 Study Area SSES and Mill Brook Area was completed and bids were accepted in March 2014. The Contract (No. 14-40) was awarded to New England Pipe Cleaning in May 2014. Construction is ongoing and scheduled to be completed August 2014. This project is estimated to remove approximately 74,500 gpd of peak infiltration and 24,000 gpd of peak design storm inflow.

Reporting Period Activity:

- See "I/I Rehabilitation Projects in Design or Construction" Item above.

- The Town investigated approximately 150,000 LF of sewers in Sewer Basins 4 / 5 / 14 in Spring 2014. These inspections are scheduled to be reviewed in Summer 2014 with a report being provided to MWRA in Fall 2014.

- In August 2013, funds were distributed for the design and construction of the recommended sewer rehabilitations for the Mill Brook Area and SSES – Phase 4 Study Area (Contract No. 14-40). The estimated annual removal is 0.048 mgd (MWRA Project No. WRA-P8-17-3-818).

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the $7,445,300 allotted through the Program's Phases 1 - 10, the community has $2,610,000 remaining in funding assistance.

18. MALDEN: North System

Background Information:
- Miles of Sewer: 100
- Sewered Population: 60,011
- Three Year ('11 - '13) Annual Average I/I: 3.75 mgd
- MassDEP Administrative Actions: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-002 (January 2009)

Latest I/I or SSES Report:

Malden Sewer System Evaluation Survey (Phase III) Final Report (December 2011)
Hydraulic Model and Capacity Assessment Draft Report (June 2012)
Hydraulic Model and Capacity Assessment Final Report (December 2012)

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

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

Reporting Period Activity:

- The City and CDM Smith prepared construction documents known as 2014-S-1. The design included 40,000 LF of sewer main to receive CIPP liner and cement lining of all sewer manholes within the limit of work. Heavy cleaning of approximately 2000 LF of sewer main will be completed beyond the CIPP limit of work. In June 2013, the City authorized the borrowing of $3.0 million of State Revolving Fund financial assistance. The bid process resulted in National Water Main Cleaning Co. being awarded the contract for $2.9 million. The contract is under way and is expected to be complete in November 2014. The estimated removal of approx. 250,000 GPD of I/I will be confirmed upon contract completion.

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 $12,283,900 allotted through the Program's Phases 1 - 10, the community has $7,690,000 remaining in funding assistance.

19. MEDFORD: North System

Background Information:
- Miles of Sewer: 113
- Sewered Population: 56,681
- Three Year ('11 - '13) Annual Average I/I: 3.10 mgd
- MassDEP Administrative Actions: NON-NE-00-1005
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-027 (August 2009)

Latest I/I or SSES Report:

Limited Sewer System Evaluation Survey of North Medford/Heights Area Final Report (July 2012)
Mini-System "P" Sewer System Evaluation Survey Study Draft Report (March 2013)

Private Source Inflow Removal Program: The Mini-System "P" study targeted 180 homes for inspection. Over 900 letters were mailed to residences in the area. Wright-Pierce and their sub-contractor, Stacey DePasquale Engineering, were able to gain access to 106 homes within the study area. The study has not been finalized as of this date; therefore no follow-up activities have been scheduled at this time. A City-wide policy to disconnect sump pumps is being developed as part of the follow-up activities.

I/I Rehabilitation Projects in Design or Construction: In August 2012, the design of the sewer rehabilitations as recommended by the "Limited Sewer System Evaluation Survey of North Medford/Heights Area" Final Report commenced. Contract documents are undergoing final review with the advertisement for bids expected in August 2013. This sewer rehabilitation contract has been awarded and construction is ongoing.

Reporting Period Activity: The Sewer Mini System "P" sewer investigation and evaluation study is in final review with the final report being issued within the next few months.

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 $11,987,600 allotted through the Program's Phases 1 - 10, the community has $7,193,000 remaining in funding assistance.

20. MELROSE: North System

Background Information:
- Miles of Sewer: 74
- Sewered Population: 27,236
- Three Year ('11 - '13) Annual Average I/I: 2.44 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report:

I/I Rehabilitation Project Recommendations (November 2001)
Draft Summary Letter Report for Sewer System Investigations & Mapping (February 2014)
Draft Summary Letter Report for Sewer System Investigations _ Subareas 21 & 22 (May 2014)

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

I/I Rehabilitation Projects in Design or Construction: Design was completed for the "Subareas 21 & 22 – Sewer Rehabilitation Project". Bids were accepted on June 4, 2014.

Reporting Period Activity:

- As of July 2013, the City has hired a consultant to compile a summary of all I/I rehabilitation projects completed over the past 5–10 years and to prepare a summary report of recommendations to the sewer system for I/I related projects over the next 1 to 3 years. The 2 Draft Reports and the Contract Documents for the recommended Sewer Rehabilitation were completed during this past year.

- In May 2014, funds were distributed for the Design & Construction of I/I Rehabilitations for Sewers In Subareas 21 & 22 as recommended by the Report entitled "Subareas 21 & 22 Proposed Rehabilitations". The estimated annual I/I removal is 0.38 mgd. (MWRA Project No. WRA-P8-2-3-830).

- The City of Melrose hired Pioneer Consulting Group, Inc. to review the current water and sewer rate structure and recommend improvements. As recommended, the City adopted a tiered rate structure for water and sewer billing. The tiered structure is anticipated to result in FY2015 budgeted reserves of approximately $150,000.

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 $6,076,300 allotted through the Program's Phases 1 - 10, the community has $2,162,000 remaining in funding assistance.

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

Background Information:
- Miles of Sewer: 83
- Sewered Population: 25,279
- Three Year ('11 - '13) Annual Average I/I: 1.81 mgd
- MassDEP Administrative Actions: Amended AO Docket No. 580 (March 1986)

Latest I/I or SSES Report: I/I Town-Wide Sewer Evaluation – Year 8 (January 2013)
I/I Rehabilitation – Year 8 Construction (April 2014)
I/I Town-Wide Sewer Evaluation – Year 9 (September 2013)
I/I Rehabilitation – Year 9 Construction (Ongoing)
I/I Town-Wide Sewer Evaluation – Year 10 (Ongoing)

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

I/I Rehabilitation Projects in Design or Construction: Year 9 I/I Rehabilitation Construction has been awarded and is set to begin Summer 2014. Year 9 Investigation review was completed September 2013. Television inspection of 50,550 LF of sewer in Subareas G-11A, G-11C, G-12B, G-12E, G-18, G-21, G-23, G-24, NI-13, NI-21 and S-15 revealed an estimated 94,752 gpd of peak infiltration. Topside manhole inspection of 259 manholes in Subareas G-11A, G-11C, G-12B, G-12E, G-18, G-21, G-23, G-24, NI-13, NI-21 and S-15 revealed an estimated 25,056 gpd of peak infiltration. Year 8 I/I Rehabilitation Investigation completed January 2013. Year 8 I/I Rehabilitation Design completed April 2013. Year 8 I/I Rehabilitation Construction (warranty retesting) completed April 2014.

Reporting Period Activity: Year 10 I/I Rehabilitation Investigation completed Spring 2014. Data review and reporting is ongoing. Year 9 I/I Rehabilitation Investigation completed September 2013. Also, approximately 550 LF of 8-inch PVC gravity sewer main and one new sewer connection has been installed to the existing sewer system.
MWRA I/I Local Financial Assistance Program: The community has financed seventeen (17) I/I reduction projects through the Authority's funding assistance program. Of the $5,564,500 allotted through the Program's Phases 1 - 10, the community has $2,313,000 remaining in funding assistance.

22. NATICK: South System

Background Information:

- Miles of Sewer: 135
- Sewered Population: 29,481
- Three Year ('11 - '13) Annual Average I/I: 1.25 mgd
- MassDEP Administrative Actions: AO Docket No. 593 (November 1985)

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

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

I/I Rehabilitation Projects in Design or Construction: The Three Year Sewer Rehabilitation Project (Natick Contract No. S-127 / MWRA Project Nos. WRA-P7-22-3-761/825) was bid June 2013. Rehabilitation Construction began October 2013 with completion of identified rehabilitation work estimated to be Winter 2014/5. The contractor is under contract through August 2016 and will be available to rehabilitate any additional sewer defects found during that time frame. The peak infiltration estimated to be removed is 0.61 MGD.

Reporting Period Activity: South Natick Hills (268 unit condo development; privately-owned sewers) – All units have tied in; Hunters Hill Subdivision (11 homes) – All 11 homes in this phase have tied in; Hunters Hill Subdivision (Phase II) – This is a new second phase (12 single family homes) connected to the previously submitted Hunters Hill Subdivision. The 1031 LF of 8-inch PVC gravity sewer has been installed but no connections have been made; Cider Mill Estates – A sewer extension of 1462 LF of 8-inch PVC gravity sewer has been constructed. Five new homes have been connected. Six stubs were left for existing homes on Rockland Street. Only two Rockland Street homes have connected to date; Heavey Estates (4 homes) - No homes have yet to tie in; No. 57-58 North Avenue – Two existing buildings were converted into apartment buildings and connected to the sewer system. There is a total of 73 bedrooms associated with the two buildings.

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 $5,582,600 allotted through the Program's Phases 1 - 10, the community has $1,938,000 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 132
- Sewered Population: 28,152
- Three Year ('11 - '13) Annual Average I/I: 1.55 mgd
- MassDEP Administrative Actions: AO Docket No. 549 (November 1984)

Latest I/I or SSES Report: Sewer Infiltration Investigation for Subareas 16 and Lower 22 - Phase 2 Report (August 2011)
I/I Investigation (October 2013)
I/I Sewer Rehabilitation Assessment Project (January 2013)
Town-wide Infiltration/Inflow Report (October 2013)
Phase II I/I Investigation Report (Ongoing)

Private Source Inflow Removal Program: A private source identification program, using Town-owned CCTV equipment, is ongoing.

I/I Rehabilitation Projects in Design or Construction: The Infiltration Rehabilitation (Subareas 16 / Lower 22 and Others) Project (MWRA Project Nos. WRA-P7-23-3-751 / Needham Contract No. FY 12-14-01) included design and construction of sanitary sewer infiltration reduction measures. Project work is complete. Project work included cleaning and TV inspection of 14,500 LF of sewer main; chemical root treatment of 650 LF of gravity sewer; cleaning, testing and sealing 800 LF of gravity sewer; installing 2200 LF of CIP liner; renewing three sewer service laterals; sealing 35 wyes; point repairs at 20 sections of gravity sewer; removing and replacing seven 20 foot sections of gravity sewer; removing and replacing 14 sewer manholes; and cleaning, sealing and coating the interior of 4 sewer manholes. An estimated 0.04 mgd of peak infiltration was removed from the collection system.

The Infiltration Rehabilitation (Subareas 16 / Lower 22) Project (MWRA Project Nos. WRA-P7-23-3-716/723 / Needham Contract No. FY 11-40-01) included design and construction of sanitary sewer infiltration reduction measures. Project work is complete. Project work included chemical root treatment of 13,300 LF of gravity sewer; cleaning, testing and sealing 14,300 LF of gravity sewer; grouting 17 services at the sewer main; point repairs at 17 sections of gravity sewer; removing and replacing twenty-two 20 foot sections of gravity sewer; removing and replacing one 80 foot section of gravity sewer; and cleaning, sealing and coating the interior of 24 sewer manholes. An estimated 0.14 mgd of peak infiltration was removed from the collection system.

Reporting Period Activity: Town-Wide TV inspection of 113,186 LF of sewer main was completed. The ongoing Phase II I/I Investigation has targeted 209,000 LF of sewer main for TV inspection. The Town relined 208 LF of sewer main on Reservoir Street. Twelve (12) permanent flow meters have been installed for continued I/I monitoring. Design and bidding of instrument/control upgrades for the Kendrick Street and West Street Pump Stations is ongoing.

Sewer Extensions: 262 LF of sewer pipe on Armen Way installed by private developer; 371 LF of sewer pipe on Putnam Road installed by private developer; 627 LF of sewer pipe on South/Chestnut Street installed by private developer; 209 LF of sewer pipe on Country Way installed by private developer; 145 LF of sewer pipe on High Street installed by private developer; 105 LF of sewer pipe at Greendale installed by private developer; 1514 LF of sewer pipe on Farley Pond Lane installed by private developer; 620 LF of sewer pipe on Second Avenue installed by private developer; 323 LF of sewer pipe on Greendale Avenue installed by private developer.

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 $6,257,600 allotted through the Program's Phases 1 - 10, the community has $3,365,450 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 271
- Sewered Population: 84,914
- Three Year ('11 - '13) Annual Average I/I: 8.69 mgd
- MassDEP Administrative Actions: ACO-NE-00-1001
  ACOP-NE-96-1005 (March 1997)

Latest I/I or SSES Reports:

Commonwealth Ave Sewer/Underdrain Investigation Final Report (May 2011)
Newton Commonwealth Golf Course Sewer & Drain Evaluation Report (November 2012)
CIP – Project 1 Inspection & Assessment Final Report (November 2012)
CIP – Project 1, 2 & 3 Smoke Testing Final Report (November 2012)
CIP – Project 2 Inspection & Assessment Final Report (January 2014)
CIP – Project 4, 5, 6 & 7 Smoke Testing Report (February 2014)
Smoke Testing in Subareas B016, B022 & B029 Final Report (February 2014)
CIP – Project 3 Inspection & Assessment Report (Ongoing)
CIP – Project 4 Inspection & Assessment Report (Ongoing)

Private Source Inflow Removal Program: Under the Private Inflow Inspection Program, 133 of the positive inflow sources have been removed during the current reporting period which contributed an estimated 159,600 gpd of inflow.

I/I Rehabilitation Projects in Design or Construction:

- The design of the recommended sewer rehabilitations for the Phase IA was incorporated into CIP Project 1 Rehabilitations.

- CIP Project 1 Rehabilitations were advertised for public bidding on June 4, 2013. Bids were opened on July 3, 2013. The Notice to Proceed was issued on October 17, 2013. The Contract completion date is July 3, 2014. An estimated 283,280 gpd of infiltration, 80230 gpd of inflow and 48,816 gpd of rain-induced infiltration is estimated to be removed.

Reporting Period Activity:

- Smoke testing was completed on 535,829 LF of sanitary sewer as part of the CIP – Projects 4, 5, 6, and 7 Smoke Testing Project and 133 private inflow sources. The smoke testing identified 21 direct sources and 120 indirect sources, which contribute an estimated 670,197 gpd of peak inflow and 538,272 gpd of rain-induced infiltration.

- The smoke testing that was completed in Subareas B016 / B022 / B029 was conducted on 52,003 LF of sewer and included 9 dye tests and 14 dye floods.

- The City has submitted a financial assistance application to MWRA for August 2014 funding distribution for the construction of the CIP Project 2 Sewer Rehabilitations. This construction project will include the rehabilitation/repair of the defects found in the sanitary sewer Subareas B005 / B006 / B008 / B009 / B018 / B019 B020 / B025 / B026 / B031. The approximate scope of work includes but is not necessarily limited to: cleaning & inspecting 10,100 LF of 5 to 36-inch sewer; chemical root treatment of 28,000 LF of 8 to 15-inch sewer; installation of 15,600 LF of 8 to 15-inch CIP manhole-to-manhole pipe liners; installation of 1100 LF of 8 and 15-inch CIP manhole-to-manhole structural pipe liners; installation of 950 LF of 8 to 15-inch CIP short liners; installation of 120 LF of 8 and 10-inch CIP structural short liners; open cut point repair of sewer at 10 locations; inspection, testing and sealing of 163 service connections; cutting 61 protruding service connections; replacing 12 wye connections; installation of lateral liners at nine sewer service connections; chemical root treatment of 38 manholes; cementitious lining of 280 manholes; sealing seven access ports to the underdrain; sealing 12 cross-connections to the underdrain; installation of 50 manhole inflow dishes; repairing bench/invert at one manhole; repairing chimneys at three manholes; replacing manhole frames and covers at 46 locations; raising manhole frames and covers at three locations; and installing seven sewer manholes. The estimated peak infiltration removal is 411,213 gpd; peak rain-induced infiltration is 80,712 gpd and peak inflow is 14,445 gpd.

MWRA I/I Local Financial Assistance Program: The community has financed twenty-four (24) I/I reduction projects through the Authority's funding assistance program. Of the $21,197,400 allotted through the Program's Phases 1 - 10, the community has $9,632,000 remaining in funding assistance.

25. NORWOOD: South System

Background Information:
- Miles of Sewer: 83
- Sewered Population: 28,254
- Three Year ('11 - '13) Annual Average I/I: 2.51 mgd
- MassDEP Administrative Actions: AO Docket No. 534 (July 1983)

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

Private Source Inflow Removal Program: Within the Hawes Brook sewer tributary area, eight property owners have been notified to redirect sump pumps. A Guild Street apartment building roof drain was disconnected from sanitary system. As part of the Meadowbrook Area Sewer Inspection, ten buildings were inspected for illicit connections. Eleven illegal connections removed to date.

I/I Rehabilitation Projects in Design or Construction: Hoyle Street Area (Hospital Area @ Meadowbrook) Sewer System Rehabilitation Project (MWRA Project No. WRA-P8-25-3-814) is ongoing. Rehabilitation work under this project includes the installation of CIP liner in 2100 LF of sewer main, lining 10 sewer manholes and CIP lining 45 house service connections. Project work scheduled for completion December 2014. Hawes Brook-Westover Parkway Area Sewer Rehabilitation Construction substantially complete (lining of two service connections remain). Meadowbrook Area Sewer Rehabilitation Project is ongoing. Rehabilitation work under this project includes the installation of CIP liner in 8190 LF of sewer main, manhole rehabilitation and the CIP lining of 299 service connections. Hospital and Florence Avenue Areas Sewer Rehabilitation (SRF Project) is complete. Project work included CIP lining 7500 LF of 6 to 12-inch sewer main, manhole rehabilitation and CIP lining 100 house service connections.

Reporting Period Activity: Vanderbilt Avenue Pumping Station rehabilitation complete.

MWRA I/I Local Financial Assistance Program: The community has financed seventeen (17) I/I reduction projects through the Authority's funding assistance program. Of the $6,879,400 allotted through the Program's Phases 1 - 10, the community has $2,924,001 remaining in funding assistance.

26. QUINCY: South System

Background Information:
- Miles of Sewer: 202
- Sewered Population: 92,909
- Three Year ('11 - '13) Annual Average I/I: 5.23 mgd
- MassDEP Administrative Actions: AO Docket No. 644 (October 1986)

Latest I/I or SSES Report: Squantum Area Flow Monitoring Evaluation Study (May 2008)
Tidal I/I Source Identification Study (July 2009)
Coastal Pipeline Inflow Investigation Study (January 2010)
Quincy SSES (May 2011)
Additional Coastal CCTV Investigations (July 2011)
Downtown I/I Mitigation - New Quincy Center FEIR (November 2012)
Adams Green CCTV Inspections (June 2014)

Private Source Inflow Removal Program: Storm Water Discharge Ordinance has been approved. The ordinance forbids non-sanitary connections. A new fee structure was recently made effective (as of July 1, 2013) and outlines penalties for illegal connections/discharges to the sanitary sewer system. Developers contribute one percent of total project value to Sewer Rehabilitation Fund.

The City owns a CCTV sewer inspection vehicle. The vehicle provided significant input towards the development of the Tidal I/I Source Identification Study. Also, many of the open cut and rehabilitation repairs on the Phase IIB I/I Reduction Project (detailed below) were identified via the City's CCTV truck during I/I investigative efforts in the City's Houghs Neck area.

Two catch basins were found illicitly connected to the sewer at 100 West Squantum Street in a previous sewer system investigation. After discussions with the condominium owners, the City and private owner reached an agreement where the two catch basins were removed from the sewer and reconnected to the local drainage system. These two catch basins contributed approximately 150,000 gallons of inflow annually. This rerouting work was completed Fall 2013.

I/I Rehabilitation Projects in Design or Construction: It is anticipated that the City will be completing a significant amount of I/I reduction work over the coming years based upon the results of the July 2009 Tidal I/I Source Identification work.

Coastal manhole inspections were completed Summer 2009 with rehabilitation design completed Winter 2010. In March 2010, the City awarded a construction contract to Aqualine Industries to conduct sewer manhole rehabilitation in coastal areas. The Coastal Manhole Rehabilitation Construction Contract I was completed during Summer 2011. Work included the rehabilitation of 139 manholes and is estimated to have removed approximately 0.50 MGD of I/I. This work was partially funded through the MWRA I/I Local Financial Assistance Program.
Additional manhole inspections and sewer CCTV inspections were conducted during 2010/2011. Recommendations from this work resulted in the Coastal Structures I/I Reduction Project Phase IIA (MWRA Project No. WRA-P7-26-3-737). This project was bid in August 2011. Rehabilitation construction is now complete. Warranty retesting work was performed in Spring/Summer 2013. Phase IIA work is estimated to have removed 0.85 MGD of peak I/I.

Coastal Structures I/I Reduction Project Phase IIB (MWRA Project No. WRA-P9-26-3-903) is the fourth project in the City's ongoing I/I removal program since 2010. Phase IIB project work will be advertised in Fall 2014 with an expected construction start in Winter/Spring 2015. The work currently proposed under this phase includes approximately 2200 LF of CIPP lining in the salt marsh along East Squantum Street and open cut repairs through the Houghs Neck/Rock Island Cove areas. Phase IIB work is estimated to remove 0.65 MGD of peak I/I.

Dysart Street I/I Rehabilitation was previously designed for repair within the above Phase IIB contract. However, this sewer completely collapsed in late April 2014 and was subsequently replaced. This repair work is estimated to have removed 0.04 MGD of peak infiltration.

Mallard–Post Island Road I/I Rehabilitation was an open cut repair of 70 LF of 24-inch sewer main that runs through an easement from Mallard Road to Post Island Road. Repair work was performed August 2013. This section of sewer was previously identified for CIPP structural liner installation but collapsed prior to lining. A repair of the upstream sewer main reach was completed Spring 2011 and a full length CIPP liner of the downstream sewer main reach was completed to Sea Street in 2012. To complete the work in this area, a final CIPP liner was installed in June 2014. This repair work is estimated to have removed 0.18 MGD of peak I/I. This sewer main abuts the Quincy Bay seawall and the infiltration is believed to be tidally induced.

Underground Technologies Downtown CCTV: MassDOT is currently working on a traffic redesign/streetscape project of the Historic Adams Green area in Downtown Quincy. As part of this areas' work, the City investigated their sewer and drain infrastructure and found these pipes to range in condition from collapsed to in need of repair within the next 5-10 years. To protect the investment in the Downtown area, the City is in the preliminary rehabilitation design process. This work is expected to improve drainage and water quality conditions in the area. Rehabilitation Construction is anticipated to begin by the end of CY14.

Downtown Redevelopment I/I Mitigation: Also part of the Downtown redevelopment, the City and developer reached an agreement where I/I would be removed from the City's system at a 4:1 ratio to the new proposed sewer flows. In order to satisfy this requirement, both metering and CCTV inspections were completed in the Hospital Hill and Block 4 (Merchants Row) areas to quantified I/I. However, Downtown redevelopment is temporarily on hold as project finances are readjusted. If the I/I rehabilitation work is not completed by the developer, the City intends to include this work on a future I/I mitigation contract.

Reporting Period Activity: The Fort Square Pump Station Upgrades Project was bid in early 2014. This project is currently under construction with completion anticipated for Fall 2014. The station services a large portion of southern Quincy and was designed to relieve the surcharging of the trunk sewer in that area. With a design capacity of over 3500 gallons per minute, the station pumps directly to the MWRA High Level Sewer and ensures that wet weather and high flow events do not cause sanitary sewer overflows in the area. The project's design includes mechanical, electrical, site, and building upgrades. Existing pump station capacity will not be changed by these improvements.

The City is also in the process of evaluating the Quincy Point Pump Station and associated force main. This project is anticipated to be very similar to the Fort Square Pump Station Upgrade. A preliminary update design package should be completed by the end of CY14. No impacts to station capacity are anticipated at this time.

Rice Road Sewer Replacement: The City is the process of replacing approximately 1500 LF of sewer on Rice Road near the Wollaston Beach area. This sewer was in need of repair due to trench settlement and suspected infiltration. A final infiltration removal quantity will be estimated upon completion of construction.

Block 4 Infrastructure Upgrades: As part of the Downtown redevelopment, the initial Block 4 phase included upgrades of the sewer and storm drain pipes around the Hancock Street, Chestnut Street and Cottage Avenue triangle. This project is now temporarily on hold as project finances are readjusted. on hold as finances are readjusted. Approximately170,000 gpd of I/I must be removed prior to the planned occupancy of the Block 4 (Merchants Row) phase of the Downtown redevelopment.

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 $19,790,000 allotted through the Program's Phases 1 - 10, the community has $6,908,000 remaining in funding assistance.

27. RANDOLPH: South System

Background Information:

- Miles of Sewer: 101
- Sewered Population: 32,304
- Three Year ('11 - '13) Annual Average I/I: 1.57 mgd
- MassDEP Administrative Actions: AO Docket No. 548 (July 1985)

Latest I/I or SSES Report: Amelian Road SSES (January 2003)
Internal TV Inspection Report (August 2010)
I/I Investigation – March 2010 Storm Events (July 2013)

Private Source Inflow Removal Program: The Town developed a sump pump inspection and amnesty program. As a result of the program, the Town was contacted by two hundred and two (202) homeowners having sump pumps. Internal inspections were completed to determine sump pump locations. One hundred twenty-one homes (121) were determined to have sump pumps connected to the sewer system. Ninety-four (94) of these homes have drainage directly adjacent to the homes. Each of the 94 homes was inspected. Design was completed to redirect these sump pumps to the drainage system. Sump pump redirection construction is complete (Randolph Contract Nos. 08-SP1/2/3 / MWRA Project No. WRA-P6-27-3-655). Total peak flow inflow removed is estimated to be 0.61 mgd.

I/I Rehabilitation Projects in Design or Construction: An I/I Investigation Report (July 2013) was drafted for the community areas affected by the March 2010 storm events. As a result of that report a rehabilitation contract (MWRA Project No. WRA-P8-27-3-820) is currently being designed. Design is scheduled to be completed Fall 2014 with a contract award anticipated for Spring 2015.

Reporting Period Activity: Replacement of Vine Street Pump Station is complete. The Michelle Lane Pump Station was upgraded to increase capacity to allow for the expansion of the Avalon Bay development.

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 $6,050,800 allotted through the Program's Phases 1 - 10, the community has $2,156,000 remaining in funding assistance.

28. READING: North System

Background Information:

- Miles of Sewer: 96
- Sewered Population: 24,751
- Three Year ('11 - '13) Annual Average I/I: 1.47 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report:

Infiltration/Inflow Investigations – Spot Gauging & Flow Isolation Final Report (August 2010)
Infiltration and Inflow Investigations Final Report (November 2012)

Private Source Inflow Removal Program: One Resident sump pump was removed. The Town is continuing to work with property owners where illicit connections that were found during the Building Inspection Program. The Town received I/I funds totaling $255,907.

I/I Rehabilitation Projects in Design or Construction:

- Contract Documents were prepared for the "Tennyson Road, Whittier Road & Browning Terrace Sewer Main Rehabilitation and Replacement Project" (Contract No. 13-05). This project was bid and awarded to Joseph P. Cardillo & Sons. Construction is complete. Contract replaced 200 LF of 8-inch sewer main, 171 LF of 4-inch service laterals, six manholes, 100 LF of sewer main spot repair, tested 2556 LF of 8-inch sewer main, sealed 153 joints.

- Howard Street Sewer Main Replacement (Contract No. 14-06) was awarded to Ventresca Inc. and is complete. Contract replaced 1500 LF of 8-inch sewer main, seven sewer manholes, and 590 LF of sewer laterals.

- Lewis & Charles Street Cured-In-Place (CIPP) Sewer Main Rehabilitation (Contract No. 14-14) has been awarded to Layne Inliner. Sewer rehabilitation work will consist of CIPP lining 1385 LF of 8-inch sewer main; joint sealing 25 service lateral connections; lining 55 VF of sewer manholes. Work anticipated to start August 2014.

- During the last year, the Town cleaned and TV inspected an additional 13,847 LF of sewer main; performed 460 joint tests; sealed 192 joints; and cement lined 63 manholes.

Reporting Period Activity:

- Flow isolation was conducted on 8830 LF of sewer in Sewer Areas 2b-2 / 2b-3.

- In May 2014, funds were distributed for the following projects: (1) Conducting dye testing investigations at 205 locations detailed in the "Infiltration & Inflow Investigations Final Report'; (2) Upgrading the existing GIS System with asset management and planning software; (3) Installation of CIP liner (approximately 935 LF in Lewis Street and 450 LF in Charles Street); (4) Inflow elimination from two catch basins on Main Street; and (5) Spot Repairs on Plymouth Road. The estimated average annual I/I removal is 0.04 mgd (MWRA Project No. WRA-P8-28-3-829).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the $4,629,100 allotted through the Program's Phases 1 - 10, the community has $1,759,000 remaining in funding assistance.

29. REVERE: North System

Background Information:

- Miles of Sewer: 98
- Sewered Population: 52,407
- Three Year ('11 - '13) Annual Average I/I: 3.40 mgd
- MassDEP Administrative Actions: No. 837 (April 1991)
- EPA Clean Water Act Administrative Order: CD 1:10-cv-11460 (November 16, 2010)

Latest I/I or SSES Reports:

Sewer System Evaluation Survey (SSES) Phase I Study Areas – CWSRF No. 3233 Final Report (July 2010)
Internal CCTV Inspection of Revere Trunk Sewer Technical Memorandum Report (October 2011)
Sewer System Evaluation Survey (SSES) – Phase II (CWSRF 3411) Final Report (July 2011)
Sewer System Evaluation Survey (SSES) – Phase III (CWSRF 3513) Final Report (July 2012)
Comprehensive Stormwater and Wastewater Management Plan (CWSRF 3513) Final Report (December 2013)
Sewer System Evaluation Survey (SSES) – Phase IV (CWSRF 3655) Final Report (December 2013)
Sewer System Evaluation Survey (SSES) – Phase V and Supplemental Field Investigations (CWSRF 3831) (expected December 31, 2014)

Private Source Inflow Removal Program:

- The contract for the removal of private inflow sources from 42 properties is complete.

- The City is currently in the identification/investigation phase of its sump pump removal program. To date, 143 illegal connections have been identified and scheduled for removal.

- There has been no sewer mitigation funds from the developer flow reduction program reported during this time period. The City continues to maintain a 10:1 I/I removal ratio for new commercial and multi-family developments.

I/I Rehabilitation Projects in Design or Construction:

- The City has awarded a contract to Moriarty and Sons in March 2014 for the installation of a storm water pump station to remove and redirect a substantial inflow source from the sanitary system.

- During the last year, the City cleaned, CCTV and lined 4975 LF of 8-inch sewer; 229 LF of 10-inch sewer; 4875 LF of 12-inch sewer; 176 LF of 15-inch sewer; 570 LF of 18-inch sewer; lined 263 VF of manholes. Another 7271 LF of 24-inch interceptor sewer pipe was cleaned and TV inspected.

- During the last year, the City removed and replaced 1655 LF of 8-inch pipe; 101 LF of 10-inch pipe; 5 LF of 12-inch pipe; 175 LF of 18-inch pipe and two services laterals.

- In March 2014, National Water Main Cleaning Co. was awarded a contract for sewer rehabilitation. Work included: cleaning, CCTV and lining of 24,410 LF of 8-inch sewer; 5270 LF of 10-inch sewer; 1,880 LF of 12-inch sewer; 2300 LF of 15-inch sewer; 2650 LF of 18-inch sewer; 200 LF of 20-inch sewer; 6000 LF of 24-inch sewer and 500 lateral service connections. The contract also included the removing and replacing of 56 LF of 8-inch sewer; 8 LF of 10-inch sewer; 12 LF of 12-inch sewer and 84 LF of 15-inch sewer.

- As part of the SSES – Phase V and Supplemental Field Investigations (CWSRF 3831), the City installed long term flow meters at five locations to monitor various flow conditions and measure sewer system rehabilitation success.

Reporting Period Activity: See "Latest I/I or SSES Reports" section and "I/I Rehabilitation Projects in Design or Construction" Section.

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 $10,130,900 allotted through the Program's Phases 1 - 10, the community has $4,628,000 remaining in funding assistance.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 128
- Sewered Population: 75,754
- Three Year ('11 - '13) Annual Average I/I: 5.06 mgd
- MassDEP Administrative Actions: Unilateral Order (September 2010)
  NON-NE-00-1006 (January 2000)

Somerville is one of MWRA's five combined sewer service communities (Boston North, Brookline, Cambridge, Chelsea, Somerville). Portions of Somerville are impacted by projects under MWRA's CSO Control Plan.

Latest I/I or SSES Report: City-Wide Sewer Assessment Report (February 2009)

Private Source Inflow Removal Program: City continues to enforce a 4 to 1 I/I Reduction policy with potential developers if the proposed project increases sanitary flows by more than 2000 gpd. All new development or redevelopment projects are required to separate sewer and stormwater flows leaving the project site. If a separate stormwater system is available in the public right-of-way, stormwater systems from those projects are tied directly into that storm water system.

I/I Rehabilitation Projects in Design or Construction:

- East Broadway Rehabilitation Project: Construction is continuing through the Summer/Fall 2014 and is anticipated to be completed by Spring 2015. For the sewer rehabilitation portion of this project, approximately 1600 LF of sewer pipe has been lined to date with a total of 6800 LF to be lined upon completion of project.

- Beacon Street Water and Sewer Improvements Project: The contract has been bid and awarded to D'Allessandro Corp. The Notice to Proceed was given on 3/26/14. The sewer rehabilitation portion of this project includes approximately 300 LF of new sewer pipe of various sizes and cleaning & lining of approximately 15,000 LF of existing sewer of various sizes and all manholes.

Reporting Period Activity:

- Small sewer and/or drain repairs have been completed throughout the last year, however no other modifications have been made that would reduce large amounts of I/I in the system.

- In August 2013, funds were distributed for the Beacon Street Water and Sewer Improvement Project. The location of this project is on Beacon Street from the intersection of Oxford Street to the intersection of Dickinson Street (Cambridge City Line). Sewer improvement work includes: CIP lining of 11,500 LF of 8 to 18-inch VC sewer and 4100 LF of 18 to 48-inch brick sewer; replacement of 3000 LF of 8 to 15-inchVC pipe with PVC pipe; lining of 750 VF of sewer manholes. This construction project will also include engineering services during the sewer and manhole improvements/rehabilitation (MWRA Project No. WRA-P8-30-3-816).

- The City has contracted with Weston & Sampson to develop a City-wide SSES/Capital Improvement Program (CIP) for the sewer, drain and combined systems. The CIP will create a plan to efficiently:

  Inspect and assess sewer, drain and combined sewer systems city-wide (approximately 165 miles);
  Design improvements for identified defects;
  Construct the required infrastructure improvements.

  The focus will be on repairing existing infrastructure to improve system performance, reduce I/I, reduce IDDE and extend the systems useful life.

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 $15,515,800 allotted through the Program's Phases 1 - 10, the community has $5,398,000 remaining in funding assistance.

31. STONEHAM: North System

Background Information:
- Miles of Sewer: 63
- Sewered Population: 21,269
- Three Year ('11 - '13) Annual Average I/I: 1.52 mgd
- MassDEP Administrative Actions: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-028 (August 2009)

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

Private Source Inflow Removal Program: In conjunction with the Town's stormwater program and contracts, as part of the Town's Phase 4 Illicit Discharge Detection and Elimination Program (IDDE), the Town continues to investigate illicit cross-connections between the sanitary and storm sewer systems. Over the past five years, this work has been successful at identifying and eliminating illicit connections between the systems. During the last year, two illicit cross-connections between the sewer and storm drain were found and eliminated. At Lindenwood Road and Cottage Street, the sewer was leaking into the underdrain. At 77 Summer Street, the sewer service flow was leaking into the storm drain.

I/I Rehabilitation Projects in Design or Construction:

- The Phase 4 Sanitary Sewer Rehabilitation Design was completed September 2012. Bids were accepted on October 31, 2012 and the contract was awarded to New England Pipe Cleaning Company. Construction is substantially complete, with warranty inspection tentatively scheduled for Fall 2014.

  The project mainly consists of CIP lining and CIP spot repairs of the sewers in portions of Barbara Road, Campbell Road, Bear Hill Road, Broadway, Converse Street, Fairview Drive, Gerald Road, Hampton Road, Harrison Street, Isabella Street, Jefts Terrace Easement, Kenwood Avenue, Lucy Street, Main Street, Phillips Road, Rita Road, Rustic Road, South Street, Stonewood Avenue, Sunset Road, Tamarock Terrace, Upland Road, Veterans Lane and Wilson Road.

- The Phase 5 Sanitary Sewer System Rehabilitation Design is 95% complete. The Town plans to include an Article on the October 2014 Town Meeting Warrant to vote on accepting MWRA's Phase 9 I/I Local Financial Assistance. Once approved by Town Meeting, the Town will apply for the MWRA Phase 9 funding and utilize those funds to construct Phase 5 Sanitary Sewer Rehabilitation. It is anticipated that the project will be bid in the Winter 2014.

Reporting Period Activity: See "Latest I/I or SSES Reports" Section and "I/I Rehabilitation Projects in Design or Construction" Section.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the $4,919,900 allotted through the Program's Phases 1 - 10, the community has $1,628,000 remaining in funding assistance.

32. STOUGHTON: South System

Background Information:
- Miles of Sewer: 85
- Sewered Population: 18,191
- Three Year (’11 - ’13) Annual Average I/I: 1.36 mgd
- MassDEP Administrative Actions: AO Docket No. 538 (June 1984)

Latest I/I or SSES Report: Flow Metering Report (June 2009)
Sewer System Evaluation (September 2009)
Hydraulic Model Report (December 2009)
Year 5 Rehabilitation Evaluation (December 2009)
Year 6 Rehabilitation Evaluation (March 2011)
Year 7 Rehabilitation Evaluation (December 2011)
Year 8 Rehabilitation Evaluation (May 2013)
Years 9/10 Rehabilitation Evaluation (February 2014)

Private Source Inflow Removal Program: The Town has adopted new sewer use regulations which address private inflow removal. TV inspection of service connections / house-to-house inspections is ongoing.

I/I Rehabilitation Projects in Design or Construction: Years 8/9/10 Infiltration Rehabilitation Construction (Stoughton Contract 14-1) to be bid Fall 2014 (estimated 0.19 mgd of peak I/I to be removed). Years 8/9/10 Infiltration Rehabilitation Design completed August 2014. Years 9/10 Sewer System Evaluation completed February 2014. Year 8 Sewer System Evaluation completed May 2013. Years 6/7 Infiltration Rehabilitation Construction (Stoughton Contract 12-2) completed March 2013 (estimated 0.14 mgd of peak I/I removed). Years 6/7 Infiltration Rehabilitation Design completed July 2012. Year 7 Sewer System Evaluation Report completed December 2011 (MWRA Project No. WRA-P7-32-1-750).

Reporting Period Activity: Sewer extension of approximately 9000 LF off Daly Drive by private developer is ongoing. Sewer extension of approximately 3000 LF at Forest Green by private developer is ongoing.

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 $4,722,900 allotted through the Program’s Phases 1 - 10, the community has $2,026,000 remaining in funding assistance.

33. WAKEFIELD: North System

Background Information:
- Miles of Sewer: 93
- Sewered Population: 24,687
- Three Year (‘11 - ‘13) Annual Average I/I: 2.44 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report:

Sanitary Sewer Investigation Assistance – Subarea 3 Smoke Testing, Dye Testing & Dye Flooding Program Final Report (November 2011)

Sanitary Sewer Investigation Assistance – Municipal Building Inspections Final Report (November 2011)

Sanitary Sewer Investigation Assistance – Subarea 3 Television Inspection of Sewers and Manhole Investigations in Subarea 3 & Subarea 6 Low-lying Areas Final Report (April 2012)

2013 Infiltration & inflow Investigation – Gauging Areas 6 & 7 Final Report (January 2014)

Private Source Inflow Removal Program: The Town is scheduled to publicly bid the On-Call Sewer System Repair Program in Summer 2014. The Town continues to require a 4 to 1 removal of flow from completed subdivisions/ developments.

I/I Rehabilitation Projects in Design or Construction: The work associated with "Sewer System I/I Rehabilitation – Subareas 3 & 6" (Contract No. 13-S1-1373) has been completed with the warranty inspection being completed in June 2014. The rehabilitation removed approximately 59,000 gpd of peak infiltration and 12,000 gpd of peak design storm inflow.

Reporting Period Activity:

- An additional 15,000 LF of sewer main were television inspected in areas that will be paved by the Town in CY14. These lines were prioritized by the Town and will be repaired by August 2014. The rehabilitation will remove an estimated 15,750 gpd of peak infiltration.

- The Town will continue their investigation of 48,000 LF of sewer main in Subarea 6, Gauging Areas 6 and 7 by performing flow isolation and smoke testing in this area during Summer 2014.

- Sewer System evaluation in Sewer Area 2 is scheduled to begin Fall 2014.

- In August 2013, funds were distributed for conducting Sewer Investigations in portions of Sewer Subarea 6 – Gauging Areas 6 & 7. This project includes two major sewer investigation tasks. Under the first task, approximately 48,000 LF of sewer interceptor will be cleaned and internally inspected to identify I/I sources. The second task includes the topside manhole inspections of up to 275 manholes. A Letter Report will be prepared which will present the results of the field work; identify those sewer segments and manholes which appear to contribute excessive I/I; present specific conclusions and recommendations for sewer rehabilitations and associated cost that includes a cost-effectiveness analysis (MWRA Project No. WRA-P8-33-1-819).

MWRA I/I Local Financial Assistance Program: The community has financed twenty (20) I/I reduction projects through the Authority's funding assistance program. Of the $5,966,900 allotted through the Program's Phases 1 - 10, the community has $2,439,500 remaining in funding assistance.

34. WALPOLE: South System

Background Information:
- Miles of Sewer: 59
- Sewered Population: 17,448
- Three Year ('11 - '13) Annual Average I/I: 0.74 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: I/I Investigation Program: Year 3 (February 2009)
Flow Metering Report (April 2010)
I/I Investigation Program: Year 4 (June 2011)
I/I Investigation Program: Year 5 (November 2011)
I/I Investigation Program: Year 6 (December 2012)
I/I Investigation Program: Year 7 (January 2014)

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

I/I Rehabilitation Projects in Design or Construction: Year 7 I/I Investigation was completed January 2014. Project work was undertaken in Subareas 10 / 11 and included TV inspection of 73,614 LF of sewer main and 349 topside manholes inspections. The work revealed an estimated 37,300 gpd of peak infiltration. Year 6 I/I Investigation was completed December 2012 (MWRA Project No. WRA-P7-34-1-759). Project work was undertaken in Subareas 3 / 12 and included TV inspection of 61,630 LF of sewer main and 295 topside manholes inspections. The work revealed an estimated 42,900 gpd of peak infiltration. Years 4/5/6/7 Infiltration Rehabilitation Design is anticipated to begin Winter 2014/5.

Reporting Period Activity: Year 7 I/I Investigation was completed January 2014. There were a total of 55 new connections made to the sewer system over the past year.

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 $3,680,000 allotted through the Program's Phases 1 - 10, the community has $1,751,700 remaining in funding assistance.

35. WALTHAM: North System

Background Information:

- Miles of Sewer: 138
- Sewered Population: 61,120
- Three Year ('11 - '13) Annual Average I/I: 3.35 mgd
- MassDEP Administrative Actions: ACOP-NE-10-1N001 (February 2010)
  ACOP-NE-04-1N004 (January 2005)
  ACOP-NE-02-1003 (May 2003)
  NON-NE-01-1066 (April 2001)

Latest I/I or SSES Report:

Updated Wastewater Facilities Plan (including Operations and Maintenance Plan) (April 2011)
Rangley Acres – I/I Removal Project Report (Spring 2012)
Polaroid Redevelopment Project Report (Summer 2013)
Inflow & Infiltration Improvements Section 5C (Lexington St – Trapelo Rd to Town Line) (March 2014)
Inflow & Infiltration Analysis Sewer System Section 12A-2 Lakeview Area (July 2014)
Inflow & Infiltration Improvements Phase 5.1, Section 6B6 – Pond End Lane Area (August 2014)

Private Source Inflow Removal Program:

- The contract for 59 illegal sump pump removal (Contract #2 – Areas 5B, 5D and 15 under the Sump Pump Amnesty Program) was awarded to Gravity Construction. To date, 55 illegal sump pumps have been removed. Construction is ongoing with completion expected in Summer 2014. This project is expected to remove 66,000 gpd of peak inflow.

- Sump Pump Amnesty Program:

  Three SDE Engineering memos, City's consulting engineer for administering the third phase of the Program:

  Memo 1- "Single Family Residence Survey" 6129 homeowners received survey of which 3303 responses were received. Date, February 13, 2014

  Memo 2 – "Inspection Results of Single Family residences", 337 internal building inspections were performed. Date, February 13, 2014

  Memo 3 – "Sump Pumps Discharging to Sanitary Sewer" 169 illegal sump pumps were detected. Date, February 7, 2014.

I/I Rehabilitation Projects in Design or Construction:

- In February 2014, City hired Tighe & Bond Engineers to design the Cedarwood Area 13/14 A, SSO Mitigation Project. This project also includes flow metering, pipe cleaning and CCTV which was completed Spring 2014. Project design is ongoing,

- Repair of Rich Street / Elson Road sewer easement pipe, removed six-foot section of damaged sewer main.

- Remove and repair severely leaking wye in sewer main on No. 1099 Trapelo Road (in front of Boston Chicken), approximately 89,000 gpd infiltration removed.

- Forty-eight (48) sewer service repairs were performed by City with some help from Contractors (assume 5 gpd I/I per service = 240 gpd removed).

- Sewer Main cleaned and CCTV inspected on Lexington Street, Pond to School Street and School Street, including siphon from Lexington Street to Exchange Street (no significant I/I detected).

- Heavy cleaning of sewers on Livingstone Lane along with sewer mains tributary to the Spencer Street Sewer Pumping Station.

Reporting Period Activity: The following sewer rehabilitations were performed under the Illicit Discharge Detection and Elimination (IDDE) Project for the period July 2013 to June 2014:

- For the Phase 2 and Phase 3 portions of this project, construction work package will be bid Fall 2014. City is procuring for an engineering consultant to continue this program.

- Smoke test, direct connection removal of inflow in Cedarwood Area to be performed in conjunction with SSO mitigation project / sewer rehabilitation. Work to be bid Summer 2014.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I investigation projects through the Authority's funding assistance program. Of the $13,732,400 allotted through the Program's Phases 1 - 10, the community has $5,924,000 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:
- Miles of Sewer: 75
- Sewered Population: 32,248
- Three Year ('11 - '13) Annual Average I/I: 1.23 mgd
- MassDEP Administrative Actions: ACOP-NE-97-5004

Latest I/I or SSES Report:

TV Inspection Report - Nichols Avenue & Boylston Street Sewers (June 2009)
TV Inspection – Lexington Street Sewer (December 2011)

Private Source Inflow Removal Program: Stacey DePasquale Engineers dye tested the buildings on Knowles Road, Bancroft Street, Westminster Avenue and Edenfield Road for any cross-connections between the sewer and storm drain system.

I/I Rehabilitation Projects in Design or Construction:

- For Contract No. 12-01S (Construction of Sewer and Drain Replacement in Hovey Street"), project work is substantially complete. The contractor is currently completing the punch list items.
- Replaced 80 LF of 8-inch sewer main on Melendy Avenue at the intersection of Nichols Avenue.
- Performed 20 sanitary sewer spot repairs.
- Replaced or rebuilt 223 catch basins/manholes.
- Illicit connection found and removed at 98 Galen Street (at the intersection of Elliot Street).

Reporting Period Activity: Over 3000 LF of sanitary sewer on Arsenal Street was cleaned and television inspected.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I investigation projects through the Authority's funding assistance program. Of the $6,285,800 allotted through the Program's Phases 1 - 10, the community has $3,704,000 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:
- Miles of Sewer: 130
- Sewered Population: 27,420
- Three Year ('11 - '13) Annual Average I/I: 1.72 mgd
- MassDEP Administrative Actions: AO Docket No. 579 (May 1985)

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

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

I/I Rehabilitation Projects in Design or Construction: Contract No. 13C-460-1482 (Sewer Inspection and Rehabilitation) was renewed for CY13/14. To date, 19,986 LF of sewer main has been TV inspected, 4031 joints tested and 715 joints sealed with grout. In addition, 11,917 LF of VC sewer main was treated for root control. Estimated peak monthly removal is 9126 gpd.

The first year of Contract No. 13C-460-1482 (Sewer Inspection and Rehabilitation) began in December 2012. Eight (8) cured-in-place short liners have been installed. Approximately 40 LF of VC sewer pipe has been repaired. There have been fifty-three (53) sewer manholes sealed (totaling 405 VF). In addition, 11,937 LF of VC sewer main was treated for root control. Estimated peak monthly removal is 1281 gpd.

The third year of Contract No. 09C-460-1366 Fuller Brook Area Sewer Inspection and Rehabilitation was completed Fall 2012 (MWRA Project No. WRA-P7-37-3-758). Approximately 53,948 LF of sewer main was cleaned and CCTV inspected. Approximately 1711 joints of VC sewer pipe were tested and, of that, 538 joints needed to be sealed and retested. This results in a failure rate of 31%. The estimated annual I/I reduction is approximately 2725 gpd with an estimated 9% reduction of storm-related I/I.

Reporting Period Activity: The Pickerel Road Sewer Lift Station was reconstructed and placed back in service.

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 $5,709,700 allotted through the Program's Phases 1 - 10, the community has $2,960,892 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:
- Miles of Sewer: 77
- Sewered Population: 13,985
- Three Year ('11 - '13) Annual Average I/I: 0.59 mgd
- MassDEP Administrative Actions: AO Docket No. 578 (May 1985)

Latest I/I or SSES Report: SSES Phases 1 and 2 (January 1991)
Town-Wide I/I Study (Ongoing)

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

I/I Rehabilitation Projects in Design or Construction: Sewer System Rehabilitation Project (Westwood Project No. 4808 / MWRA Project No. WRA-P7-38-3-753) is complete. Warranty liner replacement work on Edgewater Street completed. Project work included CIP lining of 17,700 LF of 8 and 12-inch sewer main, 420 VF of cementitious interior manhole lining and grouting 247 service laterals/mainline connections. Sewer System Rehabilitation Project (Westwood Project No. 14D-102) is ongoing. Project work includes CIP lining of 8 to 20-inch sewer main, cementitious interior manhole lining and grouting service laterals/mainline connections (minimum 20 inches up into lateral).

Reporting Period Activity: Manhole rehabilitation/replacement work ongoing (Westwood Project No.13-004). Construction of large retail/residential development on University Avenue is ongoing

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the $2,532,300 allotted through the Program's Phases 1 - 10, the community has $1,107,000 remaining in funding assistance.

39. WEYMOUTH: South System

Background Information:
- Miles of Sewer: 238
- Sewered Population: 52,276
- Three Year ('11 - '13) Annual Average I/I: 3.93 mgd
- MassDEP Administrative Actions: ACO-NE-04-1N002 (September 2004)
  NON-NE-00-1025 (August 2000)
  AO Docket No. 543 (November 1984)

Latest I/I or SSES Report: Sewer System Hydraulic Model / Evaluation (November 2009)
Town-Wide Sewer Investigation – Year 2 (October 2010)
Union Street Area Sewer Investigation (October 2010)
Hinston Road Sewer Evaluation / Design (June 2011)
Fall 2013 Inflow Investigation (January 2014)
Spring 2014 Town-Wide Sewer Investigation/Rehabilitation Program (Ongoing)

Private Source Inflow Removal Program: The Town has completed the redirection of 330 sump pumps (for an estimated 165,000 gpd of inflow removal). Six (6) sump pumps were redirected during FY13/14.

I/I Rehabilitation Projects in Design or Construction: The Hinston Road/ Neck Street Area Sewer Rehabilitation Project – Phase II Construction was completed September 2013 and an estimated 0.03 MGD of peak infiltration was removed through the project. The Hinston Road/Neck Street Area Sewer Rehabilitation Project (Contract PW-12-006-S / MWRA Project No. WRA-P7-39-3-749) was completed September 2012 and an estimated 0.43 MGD of peak infiltration was removed through the project.. Work included CIP lining of 3587 LF of 15, 18 and 24-inch sewers and 105 VF of cementitious interior manhole lining. The Town is currently designing the replacement of 2040 LF of 30-inch RC sewer associated with the Lower Central Interceptor [just upstream of the MWRA Headhouse at Newell Park (Idlewell Boulevard)].

Reporting Period Activity: The investigation phase of Spring 2014 Town-Wide Sewer Investigation/Rehabilitation Program (MWRA Project No. WRA-P8-39-1-826) has been completed. Data review/reporting is ongoing. Smoke testing of 93,000 LF of sewers tributary to the Wharf Street Pump Station was completed (as part of the Fall 2013 Inflow Investigation). Smoke testing identified approximately 0.05 mgd of removable inflow.

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 $11,480,900 allotted through the Program's Phases 1 - 10, the community has $5,935,600 remaining in funding assistance.

40. WILMINGTON: North System

Background Information:
- Miles of Sewer: 20
- Sewered Population: 21,612
- Three Year ('11 - '13) Annual Average I/I: 0.45 mgd
- MassDEP Administrative Actions: None

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

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

I/I Rehabilitation Projects in Design or Construction:

- Defects to the Main Street Interceptor Sewer Rehabilitation Project discovered during warranty inspection were corrected by the contractor. Those corrective measures will be re-inspected during high groundwater in Fall 2014 or Spring 2015.

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 $2,462,000 allotted through the Program's Phases 1 - 10, the community has $1,074,000 remaining in funding assistance.

41. WINCHESTER: North System

Background Information:
- Miles of Sewer: 83
- Sewered Population: 21,572
- Three Year ('11 - '13) Annual Average I/I: 1.17 mgd
- MassDEP Administrative Actions: None (Draft ACO in 2001 was not finalized).

Latest I/I or SSES Report:

West Side Building Inspection Report (May 2009)
Squire Road & Meter #4 Area Sewer System Evaluation Survey Final Report (June 2013)
Stowell & Marshall Road Sewer System Evaluation (June 2013)

Private Source Inflow Removal Program: The Town's Private Inflow Source Removal Program is ongoing. The Town removed one (1) sump pump from the sewer system during this period.

I/I Rehabilitation Projects in Design or Construction: The Squire Road Sanitary Sewer Rehabilitation Project Design was completed. Bids were accepted on May 8, 2014 with New England Pipe Cleaning Co. being the low bidder.

Reporting Period Activity:

- In February 2014, funds were distributed for the Squire Road Sanitary Sewer Rehabilitation Project. This sewer rehabilitation project includes the repair of sewer defects and sewer rehabilitations identified during the Squire Road & Meter #4 Areas Sanitary Sewer Evaluation Survey Project. The approximate scope of work includes but is not necessarily limited to: installation of 60 LF of sewer main; replacement of 20 sewer building connections; chemical root treatment of 8148 LF of sewers; root treatment of 12 manholes; installation of 3954 LF of CIP pipe; installation of 181 LF of CIP short liners; inspection, testing and sealing of 256 service connections; cementitious lining of 746 VF of manholes; replacement of eight manhole frames and covers; resetting of 19 manhole frames and covers; raising of five manhole frames and covers two feet above grade; building of 20 manhole benches and inverts; and installation of 22 manhole inflow dishes. This project consists of the construction and engineering construction services. The estimated annual I/I removal is 0.21mgd (MWRA Project No. WRA-P8-41-3-823).

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the $4,183,000 allotted through the Program's Phases 1 - 10, the community has $1,406,000 remaining in funding assistance.

42. WINTHROP: North System

Background Information:
- Miles of Sewer: 36
- Sewered Population: 17,737
- Three Year ('11 - '13) Annual Average I/I: 1.04 mgd
- MassDEP Administrative Actions: None

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

Private Source Inflow Removal Program: The DPW, in partnership with the Building & Plumbing Inspectors, continues to actively seek out illegal sump pump connections to the Town's sewer system.

I/I Rehabilitation Projects in Design or Construction:

- Contract 3 – Sewer, Water and Drain Improvements Phase which included replacing 940 LF of 8-inch sewer on Walden Street; replacing 180 LF of 12-inch sewer on Lincoln Street and 880 LF feet of 12-inch sewer on Read Street was completed December 2013.

Reporting Period Activity: See "I/I Rehabilitation Projects in Design or Construction" section above.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the $3,393,400 allotted through the Program's Phases 1 - 10, the community has $1,467,000 remaining in funding assistance.

43. WOBURN: North System

Background Information:

- Miles of Sewer: 141
- Sewered Population: 37,364
- Three Year ('11 - '13) Annual Average I/I: 2.80 mgd
- MassDEP Administrative Actions: ACO 2005 (September 2005)
  ACO-NE-01-1005 (August 2001)
  Revised AO Docket No. 619 (November 1984)

Latest I/I or SSES Report:

Area #3 Sanitary Sewer Rehabilitation – Post Rehabilitation Flow Evaluation Report (May 2011)
Arlington Road Area Sanitary Sewer Rehabilitation – Post Rehabilitation Flow Evaluation Report (May 2011)
East Woburn Sewer Collection System Capital Improvement Plan (October 2011)
CIP Smoke Testing – Project 1 Final Report (February 2014)
CIP Project 1 – Sewer Investigation and Evaluation Final Report (March 2014)

Private Source Inflow Removal Program: Under the current ACO, a 10:1 flow reduction is required. No illicit connections were found or removed during this period.

I/I Rehabilitation Projects in Design or Construction: Main Street Sanitary Sewer Rehabilitation Construction is complete. Warranty inspection work completed April 2014.

Reporting Period Activity:

- Sewer blockages were repaired/cleared at 19 separate locations.

- One (1) property was repaired/upgraded to mitigate potential infiltration. The CIP Project 1 Smoke Testing Program has commenced. Smoke testing was completed on 140,095 LF of sewer main. Smoke testing, dyed water testing and dyed water flooding identified four direct sources and 32 indirect sources that are connected to the sanitary sewer. These sources contribute an estimated 19,010 gpd of peak design storm inflow, 2160 gpd of infiltration and 275,904 gpd of rain-induced infiltration to the collection system.

In June 2013, funds were distributed for the following three projects: (1) Main Street Sanitary Sewer Rehabilitation Project: This sanitary sewer rehabilitation project is to be performed in the following areas: Alfred Street, Border Street, Bradford Road, Bryant Street, Campbell Street, Commerce Way, Conn Street, Cross Street, Eaton Avenue, Fletcher Road, Green Street, Harold Avenue, Main Street, Pickering Street, Van Norden Road, and Wade Avenue. The estimated I/I removal for the Main Street Sewer Rehabilitation Project is 0.02 mgd annually; (2) Investigation of Sewers for Infiltration: This infiltration investigation project will be completed in the Cross Street and Garfield Avenue sewer subareas. This sewer investigation will include topside inspection of 378 manholes; flow isolation of 99,218 LF of sewer; light cleaning and TV inspection of 67,987 LF of sewer main; heavy cleaning and TV inspection of 7554 LF of sewer main; and (3) Inflow Investigation in CIP Project Area 1: This inflow investigation project will be completed in the following sewer subareas: Bradford Road, Cross Street, Draper Street and Garfield Avenue. This sewer investigation will include smoke testing of 131,000 LF feet of sewer main and dye water testing of up to 68 sites and dye water flooding of up to ten sites to confirm potential sources of inflow identified during the smoke testing (MWRA Project No. WRA-P8-43-3-813).

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 $10,695,500 allotted through the Program's Phases 1 - 10, the community has $3,466,000 remaining in funding assistance.

ATTACHMENT 6
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY14
Reporting Period – July 2013 Through June 2014

CY13 COMMUNITY WASTEWATER FLOW DATA

This attachment contains calendar year 2013 wastewater flow data for the 43 MWRA member sewer communities. There are four separate data tables as detailed below.

TABLE 1 (one page - page number 2) presents the CY13 MWRA Wastewater Metering System Community Flow Estimates. This data is monthly total wastewater flow estimates for each of the 43 member sewer communities derived from MWRA's wastewater metering system. Each community's percent share average daily flow and percent share maximum month flow are used as components of MWRA's annual wholesale sewer charge.

TABLE 2 (one page - page number 3) presents the CY13 MWRA Community Wastewater Flow Component Estimates. This data is developed through an engineering analysis by MWRA staff to estimate wastewater flow components, including: dry day average daily flow, average daily infiltration, average sanitary flow, and average daily inflow. The data in TABLE 2 is annual data. The percent share for each estimated flow component is also presented. The data presented in TABLE 2 is a summary of the more detailed monthly flow component analysis presented in TABLE 4. The estimated average sanitary flow includes: residential, commercial, industrial, and institutional (non-I/I) flows.

TABLE 3 (three pages - page numbers 4 through 6) presents the CY13 Community Wastewater Flow Component Estimates in two formats: Alphabetical Detail is presented on page 1 of 3; Ranked Detail is presented on pages 2 of 3 and 3 of 3. Ranked data tables are presented to allow for community comparison.

TABLE 4 (13 pages - page numbers 7 through 19) presents the Estimated Community Wastewater Flow Components for CY13. This data is developed through an engineering analysis by MWRA staff of each community's monthly wastewater flow (derived from MWRA's wastewater metering system) to estimate flow components, including: dry day average daily flow, average daily infiltration, average sanitary flow, and average daily inflow. The data listed as MWRA Estimated Infiltration is a calculated estimate of the infiltration entering MWRA-owned sewers that are upstream of wastewater flow meters within a community. The calculation is a weighted allocation of the Raw Estimated Infiltration to the portion of the sewer system that is MWRA-owned versus community-owned. The weighted allocation is based on inch-diameter miles of MWRA-owned and community-owned sewer. The data presented in TABLE 4 is also presented in TABLE 2 as an annual summary.

TABLE 1 - CY13 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

Community	Total Population	Sewered Population	CY13 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	43,290	42,857	5.05	5.07	7.41	4.71	3.81	5.83	3.52	3.14	2.92	2.67	2.78	3.56	4.20	1.4%	7.41	1.5%
Ashland	16,767	12,743	1.31	1.31	1.75	1.27	1.15	1.46	1.10	1.05	1.07	1.07	1.09	1.14	1.23	0.4%	1.75	0.4%
Bedford	13,455	12,379	2.57	2.50	3.62	2.75	2.35	3.15	2.17	1.98	1.85	1.85	1.83	2.04	2.39	0.8%	3.62	0.7%
Belmont	24,987	24,537	3.12	3.45	5.42	2.97	2.16	3.83	2.23	2.05	1.80	1.54	1.66	2.23	2.70	0.9%	5.42	1.1%
BWSC	625,087	624,462	84.69	106.51	116.08	84.67	82.05	134.85	86.84	76.06	78.59	69.69	75.26	83.68	89.74	30.0%	134.85	27.6%
Braintree	35,990	34,910	6.42	7.87	10.99	7.20	5.88	10.25	5.99	5.02	4.43	4.13	4.31	6.12	6.54	2.2%	10.99	2.2%
Brookline	59,132	59,073	8.62	10.15	13.66	8.96	7.54	14.07	7.90	7.11	6.85	6.20	6.52	8.44	8.82	2.9%	14.07	2.9%
Burlington	24,755	24,507	3.45	3.48	5.08	3.64	3.11	4.43	3.06	2.83	2.47	2.33	2.25	2.58	3.22	1.1%	5.08	1.0%
Cambridge	106,038	105,932	15.33	19.72	20.77	15.78	16.29	23.48	17.06	14.93	14.18	12.75	14.28	16.34	16.72	5.6%	23.48	4.8%
Canton	21,710	14,459	2.74	3.16	4.64	2.72	2.57	4.28	2.90	2.75	2.41	2.28	2.35	2.78	2.96	1.0%	4.64	0.9%
Chelsea	35,649	35,649	4.09	6.01	6.10	4.38	4.39	7.66	4.56	4.23	3.79	3.41	4.08	5.37	4.83	1.6%	7.66	1.6%
Dedham	24,895	23,650	3.84	4.32	6.55	3.57	2.87	6.00	2.91	2.46	2.45	2.14	2.11	2.94	3.51	1.2%	6.55	1.3%
Everett	42,101	42,101	4.82	5.56	6.31	4.65	4.72	7.15	4.77	4.43	4.03	4.13	4.18	5.12	4.98	1.7%	7.15	1.5%
Framingham	68,991	62,092	7.50	7.57	11.10	8.12	6.99	10.19	6.20	5.64	5.55	5.47	5.47	6.18	7.16	2.4%	11.10	2.3%
Hingham	7,201	6,652	1.34	1.65	2.63	1.33	1.04	2.19	1.16	1.00	0.77	0.71	0.72	1.11	1.30	0.4%	2.63	0.5%
Holbrook	10,866	9,557	1.00	1.13	1.49	0.97	0.84	1.16	0.77	0.74	0.70	0.66	0.68	0.85	0.91	0.3%	1.49	0.3%
Lexington	31,718	30,557	5.14	5.19	9.83	6.25	4.70	7.76	4.62	3.40	2.92	2.61	2.65	3.14	4.85	1.6%	9.83	2.0%
Malden	60,071	60,011	9.23	9.95	12.77	8.69	7.54	12.13	7.50	6.78	6.36	6.03	6.16	7.91	8.41	2.8%	12.77	2.6%
Medford	56,738	56,681	7.94	8.86	12.12	7.74	6.69	11.74	6.67	5.67	5.26	4.79	5.04	6.75	7.43	2.5%	12.12	2.5%
Melrose	27,263	27,236	4.73	4.84	8.40	4.19	3.37	6.40	3.49	2.81	2.64	2.45	2.41	3.44	4.09	1.4%	8.40	1.7%
Milton	27,182	25,279	3.10	3.86	6.67	3.34	2.56	5.89	2.48	2.06	1.86	1.68	1.75	2.70	3.16	1.1%	6.67	1.4%
Natick	33,349	29,481	3.29	3.33	4.78	3.23	2.74	4.42	2.75	2.33	2.44	2.13	2.05	2.55	3.00	1.0%	4.78	1.0%
Needham	29,083	28,152	3.72	3.87	6.40	3.70	2.92	5.50	2.81	2.34	2.58	2.26	2.18	3.04	3.44	1.1%	6.40	1.3%
Newton	85,945	84,914	17.16	18.22	25.48	14.33	12.25	23.29	12.51	10.05	9.37	8.23	8.18	11.18	14.16	4.7%	25.48	5.2%
Norwood	28,801	28,254	5.38	6.15	9.01	5.18	4.48	8.41	4.21	3.78	3.68	3.14	3.35	4.57	5.10	1.7%	9.01	1.8%
Quincy	92,909	92,909	12.64	14.83	21.39	13.80	12.19	20.42	13.74	11.47	10.58	9.57	9.45	11.94	13.49	4.5%	21.39	4.4%
Randolph	32,336	32,304	3.78	4.35	7.13	3.83	3.12	5.49	3.21	2.77	2.40	2.16	2.25	2.98	3.62	1.2%	7.13	1.5%
Reading	25,001	24,751	3.17	3.07	5.03	3.20	2.55	4.05	2.54	1.94	1.80	1.73	1.77	2.30	2.76	0.9%	5.03	1.0%
Revere	52,459	52,407	6.58	8.06	10.01	6.27	5.22	10.58	6.16	5.40	4.44	4.33	4.69	5.82	6.45	2.2%	10.58	2.2%
Somerville	76,519	76,519	9.42	14.64	13.69	9.42	10.71	17.40	8.39	7.54	7.67	7.17	7.42	10.17	10.27	3.4%	17.40	3.6%
Stoneham	21,659	21,269	3.46	3.59	5.39	3.10	2.46	4.97	2.47	2.00	1.95	1.79	1.78	2.37	2.94	1.0%	5.39	1.1%
Stoughton	27,150	18,191	2.68	2.96	5.01	3.01	2.28	4.07	2.39	1.88	1.82	1.60	1.66	2.22	2.63	0.9%	5.01	1.0%
Wakefield	25,191	24,687	4.32	4.24	7.15	4.32	3.23	6.16	3.44	2.47	2.20	2.05	2.12	2.68	3.69	1.2%	7.15	1.5%
Walpole	24,234	17,448	2.14	2.12	3.18	2.21	1.84	2.80	1.88	1.62	1.48	1.38	1.41	1.76	1.98	0.7%	3.18	0.7%
Waltham	61,181	61,120	9.87	10.14	14.12	9.34	8.16	12.68	7.78	6.66	6.29	5.97	6.13	7.22	8.69	2.9%	14.12	2.9%
Watertown	32,248	32,248	3.60	3.85	5.41	3.50	2.92	4.92	3.04	2.66	2.51	2.33	2.37	2.76	3.32	1.1%	5.41	1.1%
Wellesley	28,152	27,420	3.48	3.62	5.80	3.55	2.83	5.14	2.63	2.24	2.53	2.20	2.14	2.62	3.23	1.1%	5.80	1.2%
Westwood	14,721	13,985	1.47	1.51	2.34	1.47	1.26	2.30	1.22	1.06	1.06	0.98	0.97	1.18	1.40	0.5%	2.34	0.5%
Weymouth	54,116	52,276	7.98	10.07	15.02	8.14	6.67	11.76	6.55	5.84	4.84	4.52	4.65	6.24	7.67	2.6%	15.02	3.1%
Wilmington	22,557	4,196	1.22	1.25	1.48	1.29	1.18	1.33	1.11	1.08	1.06	1.11	1.07	1.08	1.19	0.4%	1.48	0.3%
Winchester	21,594	21,572	2.64	2.47	4.41	2.65	1.84	3.58	1.78	1.44	1.30	1.18	1.18	1.55	2.17	0.7%	4.41	0.9%
Winthrop	17,737	17,737	1.86	2.39	2.87	1.93	1.79	3.01	1.99	1.76	1.63	1.57	1.58	1.89	2.02	0.7%	3.01	0.6%
Woburn	38,520	37,364	8.05	8.15	11.61	8.37	6.84	10.06	6.75	5.44	5.08	5.04	5.19	5.97	7.21	2.4%	11.61	2.4%
Total/Average	2,209,348	2,134,527	303.94	355.04	460.10	303.74	272.10	456.24	277.25	239.91	231.61	211.03	221.17	268.51	299.57	100%	488.81	100%

TABLE 2 - 2013 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY13-12 MONTHS)

04-Jun-14

						2013 Averages (1)			Components of Average Daily Flow (Estimated) (2)							
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
COMMUNITY	Community Demographics		No. of Connects	Miles of	No. of Meters for	Average Daily Flow	Percent Average	Selected Dry Day	Average Daily	Infiltration As a % of	Average Sanitary	Sanitary As a % of	Average Daily	Inflow As a % of	Peak Month	Percent Peak
	Total Population	Sewered Population	to MWRA System	Local Sewers (3)	Permanent System	ADF (MGD)	Daily Flow (6)	ADF (MGD)	Infiltration (MGD)	Average Daily Flow	Flow (MGD)	Average Daily Flow	Inflow (4) (MGD)	Average Daily Flow	ADF (MGD)	Month ADF (6)
Arlington	43,290	42,857	327	106	7	4.20	1.40%	3.87	1.27	30.2%	2.60	61.9%	0.33	7.9%	7.41	1.52%
Ashland	16,767	12,743	2	66	2	1.23	0.41%	1.18	0.38	30.9%	0.80	65.0%	0.05	4.1%	1.75	0.36%
Bedford	13,455	12,379	1	78	4	2.39	0.80%	2.30	1.00	41.8%	1.30	54.4%	0.09	3.8%	3.62	0.74%
Belmont	24,987	24,537	2	78	2	2.70	0.90%	2.40	0.81	30.0%	1.58	58.5%	0.30	11.1%	5.42	1.11%
BWSC (5)	625,087	624,462	255	858	33	89.74	29.96%	77.15	19.15	21.3%	58.00	64.6%	12.59	14.0%	134.85	27.59%
Braintree	35,990	34,910	21	140	8	6.54	2.18%	5.98	2.78	42.5%	3.20	48.9%	0.56	8.6%	10.99	2.25%
Brookline (5)	59,132	59,073	10	111	13	8.82	2.94%	7.72	3.22	36.5%	4.50	51.0%	1.10	12.5%	14.07	2.88%
Burlington	24,755	24,507	1	115	1	3.22	1.07%	3.06	1.06	32.9%	2.00	62.1%	0.16	5.0%	5.08	1.04%
Cambridge (5)	106,038	105,932	127	148	10	16.72	5.58%	13.96	2.96	17.7%	11.00	65.8%	2.76	16.5%	23.48	4.80%
Canton	21,710	14,459	65	62	6	2.96	0.99%	2.74	1.34	45.3%	1.40	47.3%	0.23	7.8%	4.64	0.95%
Chelsea (5)	35,649	35,649	47	41	8	4.83	1.61%	3.85	1.05	21.7%	2.80	58.0%	0.98	20.3%	7.66	1.57%
Dedham	24,895	23,650	30	95	8	3.51	1.17%	3.15	1.35	38.5%	1.80	51.3%	0.36	10.3%	6.55	1.34%
Everett	42,101	42,101	21	57	7	4.98	1.66%	4.54	1.04	20.9%	3.50	70.3%	0.44	8.8%	7.15	1.46%
Framingham	68,991	62,092	2	275	4	7.16	2.39%	6.83	2.33	32.5%	4.50	62.8%	0.33	4.6%	11.10	2.27%
Hingham	7,201	6,652	1	33	1	1.30	0.43%	1.15	0.65	50.0%	0.50	38.5%	0.15	11.5%	2.63	0.54%
Holbrook	10,866	9,557	2	31	2	0.91	0.30%	0.85	0.35	38.5%	0.50	54.9%	0.06	6.6%	1.49	0.30%
Lexington	31,718	30,557	17	170	6	4.85	1.62%	4.55	2.35	48.5%	2.20	45.4%	0.29	6.0%	9.83	2.01%
Malden	60,071	60,011	242	100	6	8.41	2.81%	7.74	2.54	30.2%	5.20	61.8%	0.67	8.0%	12.77	2.61%
Medford	56,738	56,681	74	113	6	7.43	2.48%	6.55	2.05	27.6%	4.50	60.6%	0.88	11.8%	12.12	2.48%
Melrose	27,263	27,236	188	74	5	4.09	1.37%	3.71	1.81	44.3%	1.90	46.5%	0.38	9.3%	8.40	1.72%
Milton	27,182	25,279	56	83	13	3.16	1.05%	2.74	1.34	42.4%	1.40	44.3%	0.41	13.0%	6.67	1.36%
Natick	33,349	29,481	30	135	4	3.00	1.00%	2.81	1.01	33.7%	1.80	60.0%	0.19	6.3%	4.78	0.98%
Needham	29,083	28,152	21	132	2	3.44	1.15%	3.15	1.15	33.4%	2.00	58.1%	0.29	8.4%	6.40	1.31%
Newton	85,945	84,914	52	271	7	14.16	4.73%	12.68	5.68	40.1%	7.00	49.4%	1.48	10.5%	25.48	5.21%
Norwood	28,801	28,254	31	83	6	5.10	1.70%	4.57	2.17	42.5%	2.40	47.1%	0.54	10.6%	9.01	1.84%
Quincy	92,909	92,909	56	202	6	13.49	4.50%	12.43	4.23	31.4%	8.20	60.8%	1.06	7.9%	21.39	4.38%
Randolph	32,336	32,304	2	101	2	3.62	1.21%	3.34	1.34	37.0%	2.00	55.2%	0.28	7.7%	7.13	1.46%
Reading	25,001	24,751	2	96	2	2.76	0.92%	2.60	1.20	43.5%	1.40	50.7%	0.16	5.8%	5.03	1.03%
Revere	52,459	52,407	3	98	2	6.45	2.15%	5.50	1.90	29.5%	3.60	55.8%	0.95	14.7%	10.58	2.16%
Somerville (5)	76,519	76,519	43	128	8	10.27	3.43%	8.01	2.71	26.4%	5.30	51.6%	2.26	22.0%	17.40	3.56%
Stoneham	21,659	21,269	27	63	7	2.94	0.98%	2.62	1.02	34.7%	1.60	54.4%	0.32	10.9%	5.39	1.10%
Stoughton	27,150	18,191	1	85	2	2.63	0.88%	2.45	1.05	39.9%	1.40	53.2%	0.17	6.5%	5.01	1.02%
Wakefield	25,191	24,687	11	93	2	3.69	1.23%	3.40	1.90	51.5%	1.50	40.7%	0.30	8.1%	7.15	1.46%
Walpole	24,234	17,448	1	59	2	1.98	0.66%	1.89	0.69	34.8%	1.20	60.6%	0.10	5.1%	3.18	0.65%
Waltham	61,181	61,120	5	138	4	8.69	2.90%	8.09	2.29	26.4%	5.80	66.7%	0.59	6.8%	14.12	2.89%
Watertown	32,248	32,248	14	75	3	3.32	1.11%	3.06	0.76	22.9%	2.30	69.3%	0.26	7.8%	5.41	1.11%
Wellesley	28,152	27,420	2	130	3	3.23	1.08%	2.97	1.27	39.3%	1.70	52.6%	0.26	8.0%	5.80	1.19%
Westwood	14,721	13,985	3	77	3	1.40	0.47%	1.29	0.49	35.0%	0.80	57.1%	0.11	7.9%	2.34	0.48%
Weymouth	54,116	52,276	19	238	4	7.67	2.56%	6.89	3.19	41.6%	3.70	48.2%	0.79	10.3%	15.02	3.07%
Wilmington	22,557	4,196	2	20	1	1.19	0.40%	1.15	0.35	29.4%	0.80	67.2%	0.03	2.5%	1.48	0.30%
Winchester	21,594	21,572	102	83	7	2.17	0.72%	1.98	0.88	40.6%	1.10	50.7%	0.18	8.3%	4.41	0.90%
Winthrop	17,737	17,737	22	36	4	2.02	0.67%	1.81	0.71	35.1%	1.10	54.5%	0.21	10.4%	3.01	0.62%
Woburn	38,520	37,364	18	141	13	7.21	2.41%	6.72	2.22	30.8%	4.50	62.4%	0.48	6.7%	11.61	2.38%
Totals/Averages	2,209,348	2,134,527	1,958	5,318		299.57	100.00%	265.43	89.04	29.7%	176.38	58.9%	34.13	11.4%	488.81	100.00%

FOOTNOTES:

(1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2013.

(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 October 2013 divided by 304 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

TABLE 3 - 2013 Final Community Wastewater Flow Component Estimates (Alphabetical Detail page 1 of 3)

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	42,857	106	954	4.20	1.27	0.33	2.60	4,403	1,677	1,331	346	3,113	61
Ashland	12,743	66	594	1.23	0.38	0.05	0.80	2,071	724	640	84	758	63
Bedford	12,379	78	738	2.39	1.00	0.09	1.30	3,238	1,477	1,355	122	1,154	105
Belmont	24,537	78	708	2.70	0.81	0.30	1.58	3,814	1,568	1,144	424	3,846	64
BWSC	624,462	858	14,024	89.74	19.15	12.59	58.00	6,399	2,263	1,366	898	14,674	93
Braintree	34,910	140	1,300	6.54	2.78	0.56	3.20	5,031	2,569	2,138	431	4,000	92
Brookline	59,073	111	1,332	8.82	3.22	1.10	4.50	6,622	3,243	2,417	826	9,910	76
Burlington	24,507	115	1,150	3.22	1.06	0.16	2.00	2,800	1,061	922	139	1,391	82
Cambridge	105,932	148	2,368	16.72	2.96	2.76	11.00	7,061	2,416	1,250	1,166	18,649	104
Canton	14,459	62	567	2.96	1.34	0.23	1.40	5,220	2,769	2,363	406	3,710	97
Chelsea	35,649	41	618	4.83	1.05	0.98	2.80	7,816	3,285	1,699	1,586	23,902	79
Dedham	23,650	95	832	3.51	1.35	0.36	1.80	4,219	2,055	1,623	433	3,789	76
Everett	42,101	57	686	4.98	1.04	0.44	3.50	7,259	2,157	1,516	641	7,719	83
Framingham	62,092	275	2,750	7.16	2.33	0.33	4.50	2,604	967	847	120	1,200	72
Hingham	6,652	33	297	1.30	0.65	0.15	0.50	4,377	2,694	2,189	505	4,545	75
Holbrook	9,557	31	312	0.91	0.35	0.06	0.50	2,917	1,314	1,122	192	1,935	52
Lexington	30,557	170	1,763	4.85	2.35	0.29	2.20	2,751	1,497	1,333	164	1,706	72
Malden	60,011	100	1,000	8.41	2.54	0.67	5.20	8,410	3,210	2,540	670	6,700	87
Medford	56,681	113	1,130	7.43	2.05	0.88	4.50	6,575	2,593	1,814	779	7,788	79
Melrose	27,236	74	641	4.09	1.81	0.38	1.90	6,381	3,417	2,824	593	5,167	70
Milton	25,279	83	747	3.16	1.34	0.41	1.40	4,230	2,343	1,794	549	4,940	55
Natick	29,481	135	1,180	3.00	1.01	0.19	1.80	2,542	1,017	856	161	1,407	61
Needham	28,152	132	1,232	3.44	1.15	0.29	2.00	2,792	1,169	933	235	2,197	71
Newton	84,914	271	2,710	14.16	5.68	1.48	7.00	5,225	2,642	2,096	546	5,461	82
Norwood	28,254	83	763	5.10	2.17	0.54	2.40	6,684	3,552	2,844	708	6,506	85
Quincy	92,909	202	2,020	13.49	4.23	1.06	8.20	6,678	2,619	2,094	525	5,248	88
Randolph	32,304	101	1,138	3.62	1.34	0.28	2.00	3,181	1,424	1,178	246	2,772	62
Reading	24,751	96	864	2.76	1.20	0.16	1.40	3,194	1,574	1,389	185	1,667	57
Revere	52,407	98	1,434	6.45	1.90	0.95	3.60	4,498	1,987	1,325	662	9,694	69
Somerville	76,519	128	1,920	10.27	2.71	2.26	5.30	5,349	2,589	1,411	1,177	17,656	69
Stoneham	21,269	63	567	2.94	1.02	0.32	1.60	5,185	2,363	1,799	564	5,079	75
Stoughton	18,191	85	864	2.63	1.05	0.17	1.40	3,044	1,412	1,215	197	2,000	77
Wakefield	24,687	93	888	3.69	1.90	0.30	1.50	4,155	2,477	2,140	338	3,226	61
Walpole	17,448	59	577	1.98	0.69	0.10	1.20	3,432	1,369	1,196	173	1,695	69
Waltham	61,120	138	1,380	8.69	2.29	0.59	5.80	6,297	2,087	1,659	428	4,275	95
Watertown	32,248	75	675	3.32	0.76	0.26	2.30	4,919	1,511	1,126	385	3,467	71
Wellesley	27,420	130	1,300	3.23	1.27	0.26	1.70	2,485	1,177	977	200	2,000	62
Westwood	13,985	77	693	1.40	0.49	0.11	0.80	2,020	866	707	159	1,429	57
Weymouth	52,276	238	2,380	7.67	3.19	0.79	3.70	3,223	1,672	1,340	332	3,319	71
Wilmington	4,196	20	280	1.19	0.35	0.03	0.80	4,250	1,357	1,250	107	1,500	191
Winchester	21,572	83	747	2.17	0.88	0.18	1.10	2,905	1,419	1,178	241	2,169	51
Winthrop	17,737	36	324	2.02	0.71	0.21	1.10	6,235	2,840	2,191	648	5,833	62
Woburn	37,364	141	1,410	7.21	2.22	0.48	4.50	5,113	1,915	1,574	340	3,404	120
Total	2,134,528	5,318	59,857	299.6	89.0	34.1	176.4						
Average	49,640	124	1,392	7.0	2.1	0.8	4.1	4,595	2,008	1,551	457	5,177	78

TABLE 3 - 2013 Final Community Wastewater Flow Component Estimates (Ranked Detail page 2 of 3)

Community	Sewered Population
BWSC	624,462
Cambridge	105,932
Quincy	92,909
Newton	84,914
Somerville	76,519
Framingham	62,092
Waltham	61,120
Malden	60,011
Brookline	59,073
Medford	56,681
Revere	52,407
Weymouth	52,276
Arlington	42,857
Everett	42,101
Woburn	37,364
Chelsea	35,649
Braintree	34,910
Randolph	32,304
Watertown	32,248
Lexington	30,557
Natick	29,481
Norwood	28,254
Needham	28,152
Wellesley	27,420
Melrose	27,236
Milton	25,279
Reading	24,751
Wakefield	24,687
Belmont	24,537
Burlington	24,507
Dedham	23,650
Winchester	21,572
Stoneham	21,269
Stoughton	18,191
Winthrop	17,737
Walpole	17,448
Canton	14,459
Westwood	13,985
Ashland	12,743
Bedford	12,379
Holbrook	9,557
Hingham	6,652
Wilmington	4,196
Total	2,134,528
Average	49,640

Community	Miles of Local Sewers
BWSC	858
Framingham	275
Newton	271
Weymouth	238
Quincy	202
Lexington	170
Cambridge	148
Woburn	141
Braintree	140
Waltham	138
Natick	135
Needham	132
Wellesley	130
Somerville	128
Burlington	115
Medford	113
Brookline	111
Arlington	106
Randolph	101
Malden	100
Revere	98
Reading	96
Dedham	95
Wakefield	93
Stoughton	85
Milton	83
Norwood	83
Winchester	83
Bedford	78
Belmont	78
Westwood	77
Watertown	75
Melrose	74
Ashland	66
Stoneham	63
Canton	62
Walpole	59
Everett	57
Chelsea	41
Winthrop	36
Hingham	33
Holbrook	31
Wilmington	20
Total	5,318
Average	124

Community	IDM of Local Sewers
BWSC	14,024
Framingham	2,750
Newton	2,710
Weymouth	2,380
Cambridge	2,368
Quincy	2,020
Somerville	1,920
Lexington	1,763
Revere	1,434
Woburn	1,410
Waltham	1,380
Brookline	1,332
Braintree	1,300
Wellesley	1,300
Needham	1,232
Natick	1,180
Burlington	1,150
Randolph	1,138
Medford	1,130
Malden	1,000
Arlington	954
Wakefield	888
Reading	864
Stoughton	864
Dedham	832
Norwood	763
Milton	747
Winchester	747
Bedford	738
Belmont	708
Westwood	693
Everett	686
Watertown	675
Melrose	641
Chelsea	618
Ashland	594
Walpole	577
Canton	567
Stoneham	567
Winthrop	324
Holbrook	312
Hingham	297
Wilmington	280
Total	59,857
Average	1,392

Community	Average Daily Flow ADF (MGD)
BWSC	89.74
Cambridge	16.72
Newton	14.16
Quincy	13.49
Somerville	10.27
Brookline	8.82
Waltham	8.69
Malden	8.41
Weymouth	7.67
Medford	7.43
Woburn	7.21
Framingham	7.16
Braintree	6.54
Revere	6.45
Norwood	5.10
Everett	4.98
Lexington	4.85
Chelsea	4.83
Arlington	4.20
Melrose	4.09
Wakefield	3.69
Randolph	3.62
Dedham	3.51
Needham	3.44
Watertown	3.32
Wellesley	3.23
Burlington	3.22
Milton	3.16
Natick	3.00
Canton	2.96
Stoneham	2.94
Reading	2.76
Belmont	2.70
Stoughton	2.63
Bedford	2.39
Winchester	2.17
Winthrop	2.02
Walpole	1.98
Westwood	1.40
Hingham	1.30
Ashland	1.23
Wilmington	1.19
Holbrook	0.91
Total	300
Average	7

Community	Average Annual Infiltration (MGD)
BWSC	19.15
Newton	5.68
Quincy	4.23
Brookline	3.22
Weymouth	3.19
Cambridge	2.96
Braintree	2.78
Somerville	2.71
Malden	2.54
Lexington	2.35
Framingham	2.33
Waltham	2.29
Woburn	2.22
Norwood	2.17
Medford	2.05
Revere	1.90
Wakefield	1.90
Melrose	1.81
Dedham	1.35
Canton	1.34
Milton	1.34
Randolph	1.34
Arlington	1.27
Wellesley	1.27
Reading	1.20
Needham	1.15
Burlington	1.06
Chelsea	1.05
Stoughton	1.05
Everett	1.04
Stoneham	1.02
Natick	1.01
Bedford	1.00
Winchester	0.88
Belmont	0.81
Watertown	0.76
Winthrop	0.71
Walpole	0.69
Hingham	0.65
Westwood	0.49
Ashland	0.38
Holbrook	0.35
Wilmington	0.35
Total	89
Average	2

Community	Average Annual Inflow (MGD)
BWSC	12.59
Cambridge	2.76
Somerville	2.26
Newton	1.48
Brookline	1.10
Quincy	1.06
Chelsea	0.98
Revere	0.95
Medford	0.88
Weymouth	0.79
Malden	0.67
Waltham	0.59
Braintree	0.56
Norwood	0.54
Woburn	0.48
Everett	0.44
Milton	0.41
Melrose	0.38
Dedham	0.36
Arlington	0.33
Framingham	0.33
Stoneham	0.32
Belmont	0.30
Wakefield	0.30
Lexington	0.29
Needham	0.29
Randolph	0.28
Watertown	0.26
Wellesley	0.26
Canton	0.23
Winthrop	0.21
Natick	0.19
Winchester	0.18
Stoughton	0.17
Burlington	0.16
Reading	0.16
Hingham	0.15
Westwood	0.11
Walpole	0.10
Bedford	0.09
Holbrook	0.06
Ashland	0.05
Wilmington	0.03
Total	34
Average	1

Community	Average Sanitary Flow (MGD)
BWSC	58.00
Cambridge	11.00
Quincy	8.20
Newton	7.00
Waltham	5.80
Somerville	5.30
Malden	5.20
Brookline	4.50
Framingham	4.50
Medford	4.50
Woburn	4.50
Weymouth	3.70
Revere	3.60
Everett	3.50
Braintree	3.20
Chelsea	2.80
Arlington	2.60
Norwood	2.40
Watertown	2.30
Lexington	2.20
Burlington	2.00
Needham	2.00
Randolph	2.00
Melrose	1.90
Dedham	1.80
Natick	1.80
Wellesley	1.70
Stoneham	1.60
Belmont	1.58
Wakefield	1.50
Canton	1.40
Milton	1.40
Reading	1.40
Stoughton	1.40
Bedford	1.30
Walpole	1.20
Winchester	1.10
Winthrop	1.10
Ashland	0.80
Westwood	0.80
Wilmington	0.80
Hingham	0.50
Holbrook	0.50
Total	176
Average	4

TABLE 3 - 2013 Final Community Wastewater Flow Component Estimates (Ranked Detail page 3 of 3)

Community	ADF (GPD Per IDM)
Malden	8,410
Chelsea	7,816
Everett	7,259
Cambridge	7,061
Norwood	6,684
Quincy	6,678
Brookline	6,622
Medford	6,575
BWSC	6,399
Melrose	6,381
Waltham	6,297
Winthrop	6,235
Somerville	5,349
Newton	5,225
Canton	5,220
Stoneham	5,185
Woburn	5,113
Braintree	5,031
Watertown	4,919
Revere	4,498
Arlington	4,403
Hingham	4,377
Wilmington	4,250
Milton	4,230
Dedham	4,219
Wakefield	4,155
Belmont	3,814
Walpole	3,432
Bedford	3,238
Weymouth	3,223
Reading	3,194
Randolph	3,181
Stoughton	3,044
Holbrook	2,917
Winchester	2,905
Burlington	2,800
Needham	2,792
Lexington	2,751
Framingham	2,604
Natick	2,542
Wellesley	2,485
Ashland	2,071
Westwood	2,020
Average	4,595

Community	I/I (GPD Per IDM)
Norwood	3,552
Melrose	3,417
Chelsea	3,285
Brookline	3,243
Malden	3,210
Winthrop	2,840
Canton	2,769
Hingham	2,694
Newton	2,642
Quincy	2,619
Medford	2,593
Somerville	2,589
Braintree	2,569
Wakefield	2,477
Cambridge	2,416
Stoneham	2,363
Milton	2,343
BWSC	2,263
Everett	2,157
Waltham	2,087
Dedham	2,055
Revere	1,987
Woburn	1,915
Arlington	1,677
Weymouth	1,672
Reading	1,574
Belmont	1,568
Watertown	1,511
Lexington	1,497
Bedford	1,477
Randolph	1,424
Winchester	1,419
Stoughton	1,412
Walpole	1,369
Wilmington	1,357
Holbrook	1,314
Wellesley	1,177
Needham	1,169
Burlington	1,061
Natick	1,017
Framingham	967
Westwood	866
Ashland	724
Average	2,008

Community	Infiltration (GPD Per IDM)
Norwood	2,844
Melrose	2,824
Malden	2,540
Brookline	2,417
Canton	2,363
Winthrop	2,191
Hingham	2,189
Wakefield	2,140
Braintree	2,138
Newton	2,096
Quincy	2,094
Medford	1,814
Stoneham	1,799
Milton	1,794
Chelsea	1,699
Waltham	1,659
Dedham	1,623
Woburn	1,574
Everett	1,516
Somerville	1,411
Reading	1,389
BWSC	1,366
Bedford	1,355
Weymouth	1,340
Lexington	1,333
Arlington	1,331
Revere	1,325
Cambridge	1,250
Wilmington	1,250
Stoughton	1,215
Walpole	1,196
Winchester	1,178
Randolph	1,178
Belmont	1,144
Watertown	1,126
Holbrook	1,122
Wellesley	977
Needham	933
Burlington	922
Natick	856
Framingham	847
Westwood	707
Ashland	640
Average	1,551

Community	Inflow (GPD Per IDM)
Chelsea	1,586
Somerville	1,177
Cambridge	1,166
BWSC	898
Brookline	826
Medford	779
Norwood	708
Malden	670
Revere	662
Winthrop	648
Everett	641
Melrose	593
Stoneham	564
Milton	549
Newton	546
Quincy	525
Hingham	505
Dedham	433
Braintree	431
Waltham	428
Belmont	424
Canton	406
Watertown	385
Arlington	346
Woburn	340
Wakefield	338
Weymouth	332
Randolph	246
Winchester	241
Needham	235
Wellesley	200
Stoughton	197
Holbrook	192
Reading	185
Walpole	173
Lexington	164
Natick	161
Westwood	159
Burlington	139
Bedford	122
Framingham	120
Wilmington	107
Ashland	84
Total Average	456

Community	Inflow (GPD Per Sewer Mile)
Chelsea	23,902
Cambridge	18,649
Somerville	17,656
BWSC	14,674
Brookline	9,910
Revere	9,694
Medford	7,788
Everett	7,719
Malden	6,700
Norwood	6,506
Winthrop	5,833
Newton	5,461
Quincy	5,248
Melrose	5,167
Stoneham	5,079
Milton	4,940
Hingham	4,545
Waltham	4,275
Braintree	4,000
Belmont	3,846
Dedham	3,789
Canton	3,710
Watertown	3,467
Woburn	3,404
Weymouth	3,319
Wakefield	3,226
Arlington	3,113
Randolph	2,772
Needham	2,197
Winchester	2,169
Stoughton	2,000
Wellesley	2,000
Holbrook	1,935
Lexington	1,706
Walpole	1,695
Reading	1,667
Wilmington	1,500
Westwood	1,429
Natick	1,407
Burlington	1,391
Framingham	1,200
Bedford	1,154
Ashland	758
Average	5,174

Community	Average Sanitary (GPD Per Sew. Pop.)
Wilmington	191
Woburn	120
Bedford	105
Cambridge	104
Canton	97
Waltham	95
BWSC	93
Braintree	92
Quincy	88
Malden	87
Norwood	85
Everett	83
Newton	82
Burlington	82
Medford	79
Chelsea	79
Stoughton	77
Brookline	76
Dedham	76
Stoneham	75
Hingham	75
Framingham	72
Lexington	72
Watertown	71
Needham	71
Weymouth	71
Melrose	70
Somerville	69
Walpole	69
Revere	69
Belmont	64
Ashland	63
Winthrop	62
Wellesley	62
Randolph	62
Natick	61
Wakefield	61
Arlington	61
Westwood	57
Reading	57
Milton	55
Holbrook	52
Winchester	51
Average	78

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Table 4 - Estimated Community Wastewater Flow Components for 2013 4-Jun-14 PAGE 1

Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Ashland	Average Daily Flow	1.31	1.31	1.75	1.27	1.15	1.46	1.10	1.05	1.07	1.07	1.09	1.14	1.23
	Dry Day Average Daily Flow	1.28	1.24	1.64	1.23	1.13	1.27	1.05	1.01	1.06	1.06	1.08	1.13	1.18
	Estimated Infiltration	0.48	0.44	0.84	0.43	0.33	0.47	0.25	0.21	0.26	0.26	0.28	0.33	0.38
	Estimated Sanitary Flow	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	Estimated Inflow	0.03	0.07	0.11	0.04	0.02	0.19	0.05	0.04	0.01	0.01	0.01	0.01	0.05
Boston (South Only)	Raw Average Daily Flow	20.03	22.48	35.14	19.13	15.90	37.60	17.77	14.68	14.78	10.96	11.77	16.06	19.66
	Raw Dry Day Average Daily Flow	18.29	17.62	28.68	17.34	14.88	27.58	16.62	14.29	11.63	10.40	11.25	15.67	17.02
	Raw Estimated Infiltration	10.29	9.62	20.68	9.34	6.88	19.58	8.62	6.29	3.63	2.40	3.25	7.67	9.02
	MWRA Estimated Infiltration	4.30	4.02	8.64	3.90	2.87	8.18	3.60	2.63	1.52	1.00	1.36	3.21	3.77
	Final Average Daily Flow	15.73	18.46	26.50	15.23	13.03	29.42	14.17	12.05	13.26	9.96	10.41	12.85	15.89
	Final Dry Day Average Daily Flow	13.99	13.60	20.04	13.44	12.01	19.40	13.02	11.66	10.11	9.40	9.89	12.46	13.25
	Final Estimated Infiltration	5.99	5.60	12.04	5.44	4.01	11.40	5.02	3.66	2.11	1.40	1.89	4.46	5.25
	Estimated Sanitary Flow	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
	Estimated Inflow	1.74	4.86	6.46	1.79	1.02	10.02	1.15	0.39	3.15	0.56	0.52	0.39	2.64
Braintree	Raw Average Daily Flow	6.95	8.41	12.24	7.83	6.35	11.24	6.44	5.32	4.62	4.30	4.46	6.65	7.06
	Raw Dry Day Average Daily Flow	6.57	6.65	11.20	7.24	6.20	9.54	6.08	5.12	4.39	4.26	4.16	6.59	6.50
	Raw Estimated Infiltration	3.37	3.45	8.00	4.04	3.00	6.34	2.88	1.92	1.19	1.06	0.96	3.39	3.30
	MWRA Estimated Infiltration	0.53	0.54	1.25	0.63	0.47	0.99	0.45	0.30	0.19	0.17	0.15	0.53	0.52
	Final Average Daily Flow	6.42	7.87	10.99	7.20	5.88	10.25	5.99	5.02	4.43	4.13	4.31	6.12	6.54
	Final Dry Day Average Daily Flow	6.04	6.11	9.95	6.61	5.73	8.55	5.63	4.82	4.20	4.09	4.01	6.06	5.98
	Final Estimated Infiltration	2.84	2.91	6.75	3.41	2.53	5.35	2.43	1.62	1.00	0.89	0.81	2.86	2.78
	Estimated Sanitary Flow	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
	Estimated Inflow	0.38	1.76	1.04	0.59	0.15	1.70	0.36	0.20	0.23	0.04	0.30	0.06	0.56
Brookline (South Only)	Average Daily Flow	5.82	6.90	9.64	5.80	4.65	10.02	4.59	3.87	3.72	3.25	3.55	3.22	5.40
	Dry Day Average Daily Flow	5.19	4.94	8.12	5.21	4.39	6.81	4.07	3.53	3.35	3.11	3.35	3.04	4.59
	Estimated Infiltration	2.69	2.44	5.62	2.71	1.89	4.31	1.57	1.03	0.85	0.61	0.85	0.54	2.09
	Estimated Sanitary Flow	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
	Estimated Inflow	0.63	1.96	1.52	0.59	0.26	3.21	0.52	0.34	0.37	0.14	0.20	0.18	0.81
Canton	Raw Average Daily Flow	2.92	3.33	5.02	2.89	2.74	4.59	3.10	2.94	2.55	2.40	2.48	2.97	3.16
	Raw Dry Day Average Daily Flow	2.81	2.71	4.39	2.71	2.71	3.85	2.96	2.87	2.50	2.38	2.41	2.88	2.93
	Raw Estimated Infiltration	1.41	1.31	2.99	1.31	1.31	2.45	1.56	1.47	1.10	0.98	1.01	1.48	1.53
	MWRA Estimated Infiltration	0.18	0.17	0.38	0.17	0.17	0.31	0.20	0.19	0.14	0.12	0.13	0.19	0.20
	Final Average Daily Flow	2.74	3.16	4.64	2.72	2.57	4.28	2.90	2.75	2.41	2.28	2.35	2.78	2.96
	Final Dry Day Average Daily Flow	2.63	2.54	4.01	2.54	2.54	3.54	2.76	2.68	2.36	2.26	2.28	2.69	2.74
	Final Estimated Infiltration	1.23	1.14	2.61	1.14	1.14	2.14	1.36	1.28	0.96	0.86	0.88	1.29	1.34
	Estimated Sanitary Flow	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	Estimated Inflow	0.11	0.62	0.63	0.18	0.03	0.74	0.14	0.07	0.05	0.02	0.07	0.09	0.23
Dedham	Average Daily Flow	3.84	4.32	6.55	3.57	2.87	6.00	2.91	2.46	2.45	2.14	2.11	2.94	3.51
	Dry Day Average Daily Flow	3.67	3.44	5.60	3.32	2.76	4.69	2.68	2.34	2.23	2.13	2.00	2.91	3.15
	Estimated Infiltration	1.87	1.64	3.80	1.52	0.96	2.89	0.88	0.54	0.43	0.33	0.20	1.11	1.35
	Estimated Sanitary Flow	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
	Estimated Inflow	0.17	0.88	0.95	0.25	0.11	1.31	0.23	0.12	0.22	0.01	0.11	0.03	0.36

Table 4 - Estimated Community Wastewater Flow Components for 2013											4-Jun-14		PAGE 2	Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Framingham	Raw Average Daily Flow	7.53	7.60	11.16	8.15	7.02	10.24	6.22	5.65	5.56	5.48	5.48	6.20	7.19
	Raw Dry Day Average Daily Flow	7.31	7.10	10.34	7.67	6.98	9.19	5.96	5.48	5.40	5.38	5.36	6.14	6.86
	Raw Estimated Infiltration	2.81	2.60	5.84	3.17	2.48	4.69	1.46	0.98	0.90	0.88	0.86	1.64	2.36
	MWRA Estimated Infiltration	0.03	0.03	0.06	0.03	0.03	0.05	0.02	0.01	0.01	0.01	0.01	0.02	0.03
	Final Average Daily Flow	7.50	7.57	11.10	8.12	6.99	10.19	6.20	5.64	5.55	5.47	5.47	6.18	7.16
	Final Dry Day Average Daily Flow	7.28	7.07	10.28	7.64	6.95	9.14	5.94	5.47	5.39	5.37	5.35	6.12	6.83
	Final Estimated Infiltration	2.78	2.57	5.78	3.14	2.45	4.64	1.44	0.97	0.89	0.87	0.85	1.62	2.33
	Estimated Sanitary Flow	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	Estimated Inflow	0.22	0.50	0.82	0.48	0.04	1.05	0.26	0.17	0.16	0.10	0.12	0.06	0.33
Hingham	Average Daily Flow	1.34	1.65	2.63	1.33	1.04	2.19	1.16	1.00	0.77	0.71	0.72	1.11	1.30
	Dry Day Average Daily Flow	1.22	1.20	2.13	1.24	1.02	1.73	1.09	0.95	0.74	0.69	0.69	1.10	1.15
	Estimated Infiltration	0.72	0.70	1.63	0.74	0.52	1.23	0.59	0.45	0.24	0.19	0.19	0.60	0.65
	Estimated Sanitary Flow	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Estimated Inflow	0.12	0.45	0.50	0.09	0.02	0.46	0.07	0.05	0.03	0.02	0.03	0.01	0.15
Holbrook	Average Daily Flow	1.00	1.13	1.49	0.97	0.84	1.16	0.77	0.74	0.70	0.66	0.68	0.85	0.91
	Dry Day Average Daily Flow	0.97	0.98	1.30	0.93	0.81	0.92	0.75	0.74	0.69	0.66	0.65	0.84	0.85
	Estimated Infiltration	0.47	0.48	0.80	0.43	0.31	0.42	0.25	0.24	0.19	0.16	0.15	0.34	0.35
	Estimated Sanitary Flow	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Estimated Inflow	0.03	0.15	0.19	0.04	0.03	0.24	0.02	0.00	0.01	0.00	0.03	0.01	0.06
Milton (South Only)	Average Daily Flow	2.84	3.60	6.22	3.04	2.34	5.51	2.30	1.89	1.66	1.51	1.58	2.51	2.91
	Dry Day Average Daily Flow	2.57	2.64	5.17	2.72	2.26	3.99	2.09	1.81	1.52	1.46	1.47	2.43	2.51
	Estimated Infiltration	1.32	1.39	3.92	1.47	1.01	2.74	0.84	0.56	0.27	0.21	0.22	1.18	1.26
	Estimated Sanitary Flow	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
	Estimated Inflow	0.27	0.96	1.05	0.32	0.08	1.52	0.21	0.08	0.14	0.05	0.11	0.08	0.40
Natick	Average Daily Flow	3.29	3.33	4.78	3.23	2.74	4.42	2.75	2.33	2.44	2.13	2.05	2.55	3.00
	Dry Day Average Daily Flow	3.14	2.96	4.33	3.10	2.66	3.80	2.63	2.24	2.25	2.10	2.00	2.51	2.81
	Estimated Infiltration	1.34	1.16	2.53	1.30	0.86	2.00	0.83	0.44	0.45	0.30	0.20	0.71	1.01
	Estimated Sanitary Flow	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
	Estimated Inflow	0.15	0.37	0.45	0.13	0.08	0.62	0.12	0.09	0.19	0.03	0.05	0.04	0.19
Needham	Average Daily Flow	3.72	3.87	6.40	3.70	2.92	5.50	2.81	2.34	2.58	2.26	2.18	3.04	3.44
	Dry Day Average Daily Flow	3.52	3.31	5.75	3.42	2.80	4.54	2.70	2.25	2.33	2.24	2.07	2.91	3.15
	Estimated Infiltration	1.52	1.31	3.75	1.42	0.80	2.54	0.70	0.25	0.33	0.24	0.07	0.91	1.15
	Estimated Sanitary Flow	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Estimated Inflow	0.20	0.56	0.65	0.28	0.12	0.96	0.11	0.09	0.25	0.02	0.11	0.13	0.29
Newton (South Only)	Average Daily Flow	10.35	11.68	14.70	7.51	5.97	14.10	6.43	4.06	4.07	3.73	3.45	6.62	7.69
	Dry Day Average Daily Flow	9.87	9.13	12.02	6.91	5.10	10.17	6.30	4.02	3.92	3.61	3.25	5.91	6.67
	Estimated Infiltration	6.77	6.03	8.92	3.81	2.00	7.07	3.20	0.92	0.82	0.51	0.15	2.81	3.57
	Estimated Sanitary Flow	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
	Estimated Inflow	0.48	2.55	2.68	0.60	0.87	3.93	0.13	0.04	0.15	0.12	0.20	0.71	1.02

Table 4 - Estimated Community Wastewater Flow Components for 2013												4-Jun-14	PAGE 3	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Norwood	Raw Average Daily Flow	5.87	6.61	10.00	5.64	4.84	9.13	4.49	4.02	3.85	3.26	3.48	4.97	5.50
	Raw Dry Day Average Daily Flow	5.54	5.35	8.73	5.36	4.68	7.00	4.21	3.92	3.48	3.19	3.24	4.94	4.97
	Raw Estimated Infiltration	3.14	2.95	6.33	2.96	2.28	4.60	1.81	1.52	1.08	0.79	0.84	2.54	2.57
	MWRA Estimated Infiltration	0.49	0.46	0.99	0.46	0.36	0.72	0.28	0.24	0.17	0.12	0.13	0.40	0.40
	Final Average Daily Flow	5.38	6.15	9.01	5.18	4.48	8.41	4.21	3.78	3.68	3.14	3.35	4.57	5.10
	Final Dry Day Average Daily Flow	5.05	4.89	7.74	4.90	4.32	6.28	3.93	3.68	3.31	3.07	3.11	4.54	4.57
	Final Estimated Infiltration	2.65	2.49	5.34	2.50	1.92	3.88	1.53	1.28	0.91	0.67	0.71	2.14	2.17
	Estimated Sanitary Flow	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	Estimated Inflow	0.33	1.26	1.27	0.28	0.16	2.13	0.28	0.10	0.37	0.07	0.24	0.03	0.54
Quincy	Average Daily Flow	12.64	14.83	21.39	13.80	12.19	20.42	13.74	11.47	10.58	9.57	9.45	11.94	13.49
	Dry Day Average Daily Flow	11.86	11.67	18.99	13.34	11.51	17.10	13.22	10.97	10.06	9.46	9.19	11.77	12.43
	Estimated Infiltration	3.66	3.47	10.79	5.14	3.31	8.90	5.02	2.77	1.86	1.26	0.99	3.57	4.23
	Estimated Sanitary Flow	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20
	Estimated Inflow	0.78	3.16	2.40	0.46	0.68	3.32	0.52	0.50	0.52	0.11	0.26	0.17	1.06
Randolph	Average Daily Flow	3.78	4.35	7.13	3.83	3.12	5.49	3.21	2.77	2.40	2.16	2.25	2.98	3.62
	Dry Day Average Daily Flow	3.68	3.53	6.31	3.65	3.04	4.64	3.02	2.72	2.27	2.15	2.09	2.96	3.34
	Estimated Infiltration	1.68	1.53	4.31	1.65	1.04	2.64	1.02	0.72	0.27	0.15	0.09	0.96	1.34
	Estimated Sanitary Flow	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Estimated Inflow	0.10	0.82	0.82	0.18	0.08	0.85	0.19	0.05	0.13	0.01	0.16	0.02	0.28
Stoughton	Raw Average Daily Flow	2.69	2.97	5.03	3.02	2.29	4.08	2.40	1.88	1.82	1.60	1.66	2.23	2.64
	Raw Dry Day Average Daily Flow	2.60	2.54	4.77	2.78	2.26	3.34	2.30	1.84	1.76	1.56	1.58	2.21	2.46
	Raw Estimated Infiltration	1.20	1.14	3.37	1.38	0.86	1.94	0.90	0.44	0.36	0.16	0.18	0.81	1.06
	MWRA Estimated Infiltration	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
	Final Average Daily Flow	2.68	2.96	5.01	3.01	2.28	4.07	2.39	1.88	1.82	1.60	1.66	2.22	2.63
	Final Dry Day Average Daily Flow	2.59	2.53	4.75	2.77	2.25	3.33	2.29	1.84	1.76	1.56	1.58	2.20	2.45
	Final Estimated Infiltration	1.19	1.13	3.35	1.37	0.85	1.93	0.89	0.44	0.36	0.16	0.18	0.80	1.05
	Estimated Sanitary Flow	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	Estimated Inflow	0.09	0.43	0.26	0.24	0.03	0.74	0.10	0.04	0.06	0.04	0.08	0.02	0.17
Walpole	Average Daily Flow	2.14	2.12	3.18	2.21	1.84	2.80	1.88	1.62	1.48	1.38	1.41	1.76	1.98
	Dry Day Average Daily Flow	2.04	2.04	3.10	2.07	1.81	2.54	1.82	1.57	1.35	1.31	1.29	1.70	1.89
	Estimated Infiltration	0.84	0.84	1.90	0.87	0.61	1.34	0.62	0.37	0.15	0.11	0.09	0.50	0.69
	Estimated Sanitary Flow	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
	Estimated Inflow	0.10	0.08	0.08	0.14	0.03	0.26	0.06	0.05	0.13	0.07	0.12	0.06	0.10
Wellesley	Average Daily Flow	3.48	3.62	5.80	3.55	2.83	5.14	2.63	2.24	2.53	2.20	2.14	2.62	3.23
	Dry Day Average Daily Flow	3.24	3.12	5.35	3.29	2.72	4.16	2.47	2.13	2.31	2.13	2.12	2.57	2.97
	Estimated Infiltration	1.54	1.42	3.65	1.59	1.02	2.46	0.77	0.43	0.61	0.43	0.42	0.87	1.27
	Estimated Sanitary Flow	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
	Estimated Inflow	0.24	0.50	0.45	0.26	0.11	0.98	0.16	0.11	0.22	0.07	0.02	0.05	0.26
Westwood	Average Daily Flow	1.47	1.51	2.34	1.47	1.26	2.30	1.22	1.06	1.06	0.98	0.97	1.18	1.40
	Dry Day Average Daily Flow	1.39	1.33	2.09	1.40	1.22	1.88	1.18	1.02	1.00	0.96	0.91	1.09	1.29
	Estimated Infiltration	0.59	0.53	1.29	0.60	0.42	1.08	0.38	0.22	0.20	0.16	0.11	0.29	0.49
	Estimated Sanitary Flow	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	Estimated Inflow	0.08	0.18	0.25	0.07	0.04	0.42	0.04	0.04	0.06	0.02	0.06	0.09	0.11

Table 4 - Estimated Community Wastewater Flow Components for 2013										4-Jun-14			PAGE 4	Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Weymouth	Average Daily Flow	7.98	10.07	15.02	8.14	6.67	11.76	6.55	5.84	4.84	4.52	4.65	6.24	7.67
	Dry Day Average Daily Flow	7.40	7.45	12.65	7.73	6.54	9.21	6.36	5.78	4.71	4.47	4.23	6.14	6.89
	Estimated Infiltration	3.70	3.75	8.95	4.03	2.84	5.51	2.66	2.08	1.01	0.77	0.53	2.44	3.19
	Estimated Sanitary Flow	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
	Estimated Inflow	0.58	2.62	2.37	0.41	0.13	2.55	0.19	0.06	0.13	0.05	0.42	0.10	0.79
Subtotal (Southern System)	Raw Average Daily Flow	110.99	125.69	187.61	110.08	91.57	175.15	94.47	79.23	75.53	66.27	67.61	89.78	105.99
	Raw Dry Day Average Daily Flow	104.16	100.95	162.66	102.66	87.48	137.95	89.56	76.60	68.95	64.71	64.39	87.44	95.61
	Raw Estimated Infiltration	51.41	48.20	109.91	49.91	34.73	85.20	36.81	23.85	16.20	11.96	11.64	34.69	42.86
	MWRA Estimated Infiltration	5.54	5.23	11.34	5.20	3.91	10.26	4.56	3.37	2.03	1.42	1.78	4.36	4.92
	Final Average Daily Flow	105.45	120.46	176.27	104.88	87.66	164.89	89.91	75.86	73.50	64.85	65.83	85.42	101.08
	Final Dry Day Average Daily Flow	98.62	95.72	151.32	97.46	83.57	127.69	85.00	73.23	66.92	63.29	62.61	83.08	90.69
	Final Estimated Infiltration	45.87	42.97	98.57	44.71	30.82	74.94	32.25	20.48	14.17	10.54	9.86	30.33	37.94
	Estimated Sanitary Flow	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75	52.75
	Estimated Inflow	6.83	24.74	24.95	7.42	4.09	37.20	4.91	2.63	6.58	1.56	3.22	2.34	10.39
South System Pump Station as Reported by NPDES	Average Daily Flow	114.40	130.40	197.30	116.20	97.40	186.50	101.40	86.80	79.30	70.30	71.10	98.50	112.31

Table 4 - Estimated Community Wastewater Flow Components for 2013														4-Jun-14 PAGE 5 Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Arlington	Raw Average Daily Flow	5.14	5.14	7.57	4.78	3.86	5.93	3.56	3.16	2.93	2.67	2.78	3.59	4.25
	Raw Dry Day Average Daily Flow	4.82	4.30	6.73	4.48	3.75	5.17	3.50	3.01	2.74	2.61	2.61	3.39	3.92
	Raw Estimated Infiltration	2.22	1.70	4.13	1.88	1.15	2.57	0.90	0.41	0.14	0.01	0.01	0.79	1.32
	MWRA Estimated Infiltration	0.09	0.07	0.16	0.07	0.05	0.10	0.04	0.02	0.01	0.00	0.00	0.03	0.05
	Final Average Daily Flow	5.05	5.07	7.41	4.71	3.81	5.83	3.52	3.14	2.92	2.67	2.78	3.56	4.20
	Final Dry Day Average Daily Flow	4.73	4.23	6.57	4.41	3.70	5.07	3.46	2.99	2.73	2.61	2.61	3.36	3.87
	Final Estimated Infiltration	2.13	1.63	3.97	1.81	1.10	2.47	0.86	0.39	0.13	0.01	0.01	0.76	1.27
	Estimated Sanitary Flow	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
	Estimated Inflow	0.32	0.84	0.84	0.30	0.11	0.76	0.06	0.15	0.19	0.06	0.17	0.20	0.33
Bedford	Average Daily Flow	2.57	2.50	3.62	2.75	2.35	3.15	2.17	1.98	1.85	1.85	1.83	2.04	2.39
	Dry Day Average Daily Flow	2.51	2.36	3.51	2.62	2.26	2.85	2.10	1.92	1.81	1.81	1.80	2.00	2.30
	Estimated Infiltration	1.21	1.06	2.21	1.32	0.96	1.55	0.80	0.62	0.51	0.51	0.50	0.70	1.00
	Estimated Sanitary Flow	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	Estimated Inflow	0.06	0.14	0.11	0.13	0.09	0.30	0.07	0.06	0.04	0.04	0.03	0.04	0.09
Belmont	Average Daily Flow	3.12	3.45	5.42	2.97	2.16	3.83	2.23	2.05	1.80	1.54	1.66	2.23	2.70
	Dry Day Average Daily Flow	2.97	2.48	4.60	2.68	2.11	3.05	2.13	1.98	1.62	1.52	1.56	2.05	2.40
	Estimated Infiltration	1.37	0.88	3.00	1.08	0.51	1.45	0.53	0.38	0.02	0.02	0.06	0.45	0.81
	Estimated Sanitary Flow	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.50	1.50	1.60	1.58
	Estimated Inflow	0.15	0.97	0.82	0.29	0.05	0.78	0.10	0.07	0.18	0.02	0.10	0.18	0.30
Boston (North Only)														
Charlestown	Raw Average Daily Flow	2.72	3.86	4.10	3.04	3.31	4.72	3.31	2.92	2.92	2.73	2.92	3.42	3.33
	Raw Dry Day Average Daily Flow	2.29	2.94	3.26	2.86	2.47	3.23	3.20	2.73	2.38	2.64	2.77	2.92	2.81
	Raw Estimated Infiltration	0.89	1.54	1.86	1.46	1.07	1.83	1.80	1.33	0.98	1.24	1.37	1.52	1.41
	MWRA Estimated Infiltration	0.14	0.24	0.29	0.23	0.17	0.28	0.28	0.21	0.15	0.19	0.21	0.24	0.22
	Final Average Daily Flow	2.58	3.62	3.81	2.81	3.14	4.44	3.03	2.71	2.77	2.54	2.71	3.18	3.11
	Final Dry Day Average Daily Flow	2.15	2.70	2.97	2.63	2.30	2.95	2.92	2.52	2.23	2.45	2.56	2.68	2.59
	Final Estimated Infiltration	0.75	1.30	1.57	1.23	0.90	1.55	1.52	1.12	0.83	1.05	1.16	1.28	1.19
	Estimated Sanitary Flow	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	Estimated Inflow	0.43	0.92	0.84	0.18	0.84	1.49	0.11	0.19	0.54	0.09	0.15	0.50	0.52
Columbus Park	Raw Average Daily Flow	25.67	35.57	40.49	29.18	29.59	49.91	31.34	26.88	27.71	22.78	26.05	32.00	31.38
	Raw Dry Day Average Daily Flow	22.72	25.07	33.84	26.22	23.49	30.82	27.22	24.03	25.36	21.13	23.55	27.37	25.90
	Raw Estimated Infiltration	2.72	5.07	13.84	6.22	3.49	10.82	7.22	4.03	5.36	1.13	3.55	7.37	5.90
	MWRA Estimated Infiltration	0.08	0.16	0.43	0.19	0.11	0.34	0.23	0.13	0.17	0.04	0.11	0.23	0.19
	Final Average Daily Flow	25.59	35.41	40.06	28.99	29.48	49.57	31.11	26.75	27.54	22.74	25.94	31.77	31.19
	Final Dry Day Average Daily Flow	22.64	24.91	33.41	26.03	23.38	30.48	26.99	23.90	25.19	21.09	23.44	27.14	25.72
	Final Estimated Infiltration	2.64	4.91	13.41	6.03	3.38	10.48	6.99	3.90	5.19	1.09	3.44	7.14	5.72
	Estimated Sanitary Flow	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
	Estimated Inflow	2.95	10.50	6.65	2.96	6.10	19.09	4.12	2.85	2.35	1.65	2.50	4.63	5.48
East Boston	Raw Average Daily Flow	5.53	7.73	7.19	5.37	5.58	8.77	6.12	5.66	5.24	5.06	5.25	6.37	6.14
	Raw Dry Day Average Daily Flow	4.90	5.22	5.77	4.98	4.72	5.77	5.49	5.21	4.89	4.79	5.20	5.62	5.21
	Raw Estimated Infiltration	1.30	1.62	2.17	1.38	1.12	2.17	1.89	1.61	1.29	1.19	1.60	2.02	1.61
	MWRA Estimated Infiltration	0.12	0.15	0.20	0.13	0.10	0.20	0.18	0.15	0.12	0.11	0.15	0.19	0.15
	Final Average Daily Flow	5.41	7.58	6.99	5.24	5.48	8.57	5.94	5.51	5.12	4.95	5.10	6.18	5.99
	Final Dry Day Average Daily Flow	4.78	5.07	5.57	4.85	4.62	5.57	5.31	5.06	4.77	4.68	5.05	5.43	5.06
	Final Estimated Infiltration	1.18	1.47	1.97	1.25	1.02	1.97	1.71	1.46	1.17	1.08	1.45	1.83	1.46
	Estimated Sanitary Flow	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
	Estimated Inflow	0.63	2.51	1.42	0.39	0.86	3.00	0.63	0.45	0.35	0.27	0.05	0.75	0.93

Table 4 - Estimated Community Wastewater Flow Components for 2013														4-Jun-14 PAGE 6 Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Ward Street	Raw Average Daily Flow	37.20	43.55	40.34	33.47	31.62	44.11	33.22	29.44	30.63	30.08	32.06	29.95	34.56
	Raw Dry Day Average Daily Flow	36.89	38.79	35.56	31.99	29.55	33.19	29.09	27.61	29.79	28.79	31.27	26.63	31.54
	Raw Estimated Infiltration	11.89	13.79	10.56	6.99	4.55	8.19	4.09	2.61	4.79	3.79	6.27	1.63	6.54
	MWRA Estimated Infiltration	1.82	2.11	1.62	1.07	0.70	1.26	0.63	0.40	0.73	0.58	0.96	0.25	1.00
	Final Average Daily Flow	35.38	41.44	38.72	32.40	30.92	42.85	32.59	29.04	29.90	29.50	31.10	29.70	33.56
	Final Dry Day Average Daily Flow	35.07	36.68	33.94	30.92	28.85	31.93	28.46	27.21	29.06	28.21	30.31	26.38	30.54
	Final Estimated Infiltration	10.07	11.68	8.94	5.92	3.85	6.93	3.46	2.21	4.06	3.21	5.31	1.38	5.54
	Estimated Sanitary Flow	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
	Estimated Inflow	0.31	4.76	4.78	1.48	2.07	10.92	4.13	1.83	0.84	1.29	0.79	3.32	3.02
Boston (North Total)	Raw Average Daily Flow	71.12	90.71	92.12	71.06	70.10	107.51	73.99	64.90	66.50	60.65	66.28	71.74	75.41
	Raw Dry Day Average Daily Flow	66.80	72.02	78.43	66.05	60.23	73.01	65.00	59.58	62.42	57.35	62.79	62.54	65.46
	Raw Estimated Infiltration	16.80	22.02	28.43	16.05	10.23	23.01	15.00	9.58	12.42	7.35	12.79	12.54	15.46
	MWRA Estimated Infiltration	2.16	2.66	2.54	1.62	1.08	2.08	1.32	0.89	1.17	0.92	1.43	0.91	1.56
	Final Average Daily Flow	68.96	88.05	89.58	69.44	69.02	105.43	72.67	64.01	65.33	59.73	64.85	70.83	73.85
	Final Dry Day Average Daily Flow	64.64	69.36	75.89	64.43	59.15	70.93	63.68	58.69	61.25	56.43	61.36	61.63	63.90
	Final Estimated Infiltration	14.64	19.36	25.89	14.43	9.15	20.93	13.68	8.69	11.25	6.43	11.36	11.63	13.90
	Estimated Sanitary Flow	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Estimated Inflow	4.32	18.69	13.69	5.01	9.87	34.50	8.99	5.32	4.08	3.30	3.49	9.20	9.95
Brookline (North Only)	Average Daily Flow	2.80	3.25	4.02	3.16	2.89	4.05	3.31	3.24	3.13	2.95	2.97	5.22	3.42
	Dry Day Average Daily Flow	2.61	2.73	3.72	2.90	2.78	3.33	3.17	3.09	2.93	2.86	2.91	4.49	3.13
	Estimated Infiltration	0.61	0.73	1.72	0.90	0.78	1.33	1.17	1.09	0.93	0.86	0.91	2.49	1.13
	Estimated Sanitary Flow	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Estimated Inflow	0.19	0.52	0.30	0.26	0.11	0.72	0.14	0.15	0.20	0.09	0.06	0.73	0.29
Burlington	Average Daily Flow	3.45	3.48	5.08	3.64	3.11	4.43	3.06	2.83	2.47	2.33	2.25	2.58	3.22
	Dry Day Average Daily Flow	3.37	3.18	4.76	3.44	2.97	4.04	2.96	2.62	2.41	2.27	2.19	2.54	3.06
	Estimated Infiltration	1.37	1.18	2.76	1.44	0.97	2.04	0.96	0.62	0.41	0.27	0.19	0.54	1.06
	Estimated Sanitary Flow	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Estimated Inflow	0.08	0.30	0.32	0.20	0.14	0.39	0.10	0.21	0.06	0.06	0.06	0.04	0.16
Cambridge	Raw Average Daily Flow	15.89	20.25	21.81	16.32	16.78	24.30	17.75	15.30	14.43	13.02	14.58	16.83	17.25
	Raw Dry Day Average Daily Flow	14.70	14.52	17.82	14.57	14.21	16.40	15.57	13.44	12.63	12.79	12.95	14.24	14.49
	Raw Estimated Infiltration	3.70	3.52	6.82	3.57	3.21	5.40	4.57	2.44	1.63	1.79	1.95	3.24	3.49
	MWRA Estimated Infiltration	0.56	0.53	1.04	0.54	0.49	0.82	0.69	0.37	0.25	0.27	0.30	0.49	0.53
	Final Average Daily Flow	15.33	19.72	20.77	15.78	16.29	23.48	17.06	14.93	14.18	12.75	14.28	16.34	16.72
	Final Dry Day Average Daily Flow	14.14	13.99	16.78	14.03	13.72	15.58	14.88	13.07	12.38	12.52	12.65	13.75	13.96
	Final Estimated Infiltration	3.14	2.99	5.78	3.03	2.72	4.58	3.88	2.07	1.38	1.52	1.65	2.75	2.96
	Estimated Sanitary Flow	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
	Estimated Inflow	1.19	5.73	3.99	1.75	2.57	7.90	2.18	1.86	1.80	0.23	1.63	2.59	2.76
Chelsea	Raw Average Daily Flow	4.18	6.17	6.32	4.51	4.49	7.87	4.68	4.33	3.86	3.47	4.14	5.58	4.96
	Raw Dry Day Average Daily Flow	3.66	4.24	4.84	3.99	3.72	4.75	3.92	3.75	3.47	3.33	3.32	4.72	3.97
	Raw Estimated Infiltration	0.86	1.44	2.04	1.19	0.92	1.95	1.12	0.95	0.67	0.53	0.52	1.92	1.17
	MWRA Estimated Infiltration	0.09	0.16	0.22	0.13	0.10	0.21	0.12	0.10	0.07	0.06	0.06	0.21	0.13
	Final Average Daily Flow	4.09	6.01	6.10	4.38	4.39	7.66	4.56	4.23	3.79	3.41	4.08	5.37	4.83
	Final Dry Day Average Daily Flow	3.57	4.08	4.62	3.86	3.62	4.54	3.80	3.65	3.40	3.27	3.26	4.51	3.85
	Final Estimated Infiltration	0.77	1.28	1.82	1.06	0.82	1.74	1.00	0.85	0.60	0.47	0.46	1.71	1.05
	Estimated Sanitary Flow	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
	Estimated Inflow	0.52	1.93	1.48	0.52	0.77	3.12	0.76	0.58	0.39	0.14	0.82	0.86	0.98

Table 4 - Estimated Community Wastewater Flow Components for 2013														4-Jun-14 PAGE 7
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average (MGD)
Everett	Average Daily Flow	4.82	5.56	6.31	4.65	4.72	7.15	4.77	4.43	4.03	4.13	4.18	5.12	4.98
	Dry Day Average Daily Flow	4.60	4.44	5.35	4.64	4.33	5.61	4.49	4.10	3.98	4.05	3.94	4.98	4.54
	Estimated Infiltration	1.10	0.94	1.85	1.14	0.83	2.11	0.99	0.60	0.48	0.55	0.44	1.48	1.04
	Estimated Sanitary Flow	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
	Estimated Inflow	0.22	1.12	0.96	0.01	0.39	1.54	0.28	0.33	0.05	0.08	0.24	0.14	0.44
Lexington	Raw Average Daily Flow	5.47	5.50	10.71	6.68	5.00	8.36	4.90	3.52	2.99	2.66	2.69	3.25	5.14
	Raw Dry Day Average Daily Flow	5.20	4.98	10.18	6.10	4.89	7.61	4.75	3.29	2.86	2.62	2.55	3.15	4.85
	Raw Estimated Infiltration	3.00	2.78	7.98	3.90	2.69	5.41	2.55	1.09	0.66	0.42	0.35	0.95	2.65
	MWRA Estimated Infiltration	0.33	0.31	0.88	0.43	0.30	0.60	0.28	0.12	0.07	0.05	0.04	0.11	0.29
	Final Average Daily Flow	5.14	5.19	9.83	6.25	4.70	7.76	4.62	3.40	2.92	2.61	2.65	3.14	4.85
	Final Dry Day Average Daily Flow	4.87	4.67	9.30	5.67	4.59	7.01	4.47	3.17	2.79	2.57	2.51	3.04	4.55
	Final Estimated Infiltration	2.67	2.47	7.10	3.47	2.39	4.81	2.27	0.97	0.59	0.37	0.31	0.84	2.35
	Estimated Sanitary Flow	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
	Estimated Inflow	0.27	0.52	0.53	0.58	0.11	0.75	0.15	0.23	0.13	0.04	0.14	0.10	0.29
Malden	Raw Average Daily Flow	9.66	10.29	13.57	9.04	7.79	12.70	7.75	6.94	6.46	6.12	6.24	8.22	8.72
	Raw Dry Day Average Daily Flow	9.16	8.28	12.55	8.44	7.47	10.40	7.47	6.67	6.16	6.07	5.94	8.03	8.05
	Raw Estimated Infiltration	3.96	3.08	7.35	3.24	2.27	5.20	2.27	1.47	0.96	0.87	0.74	2.83	2.85
	MWRA Estimated Infiltration	0.43	0.34	0.80	0.35	0.25	0.57	0.25	0.16	0.10	0.09	0.08	0.31	0.31
	Final Average Daily Flow	9.23	9.95	12.77	8.69	7.54	12.13	7.50	6.78	6.36	6.03	6.16	7.91	8.41
	Final Dry Day Average Daily Flow	8.73	7.94	11.75	8.09	7.22	9.83	7.22	6.51	6.06	5.98	5.86	7.72	7.74
	Final Estimated Infiltration	3.53	2.74	6.55	2.89	2.02	4.63	2.02	1.31	0.86	0.78	0.66	2.52	2.54
	Estimated Sanitary Flow	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20	5.20
	Estimated Inflow	0.50	2.01	1.02	0.60	0.32	2.30	0.28	0.27	0.30	0.05	0.30	0.19	0.67
Medford	Raw Average Daily Flow	8.36	9.21	12.99	8.13	6.93	12.44	6.94	5.81	5.32	4.82	5.07	7.00	7.74
	Raw Dry Day Average Daily Flow	7.69	7.13	11.05	7.47	6.34	9.81	6.52	5.55	4.93	4.75	4.76	6.38	6.86
	Raw Estimated Infiltration	3.19	2.63	6.55	2.97	1.84	5.31	2.02	1.05	0.43	0.25	0.26	1.88	2.36
	MWRA Estimated Infiltration	0.42	0.35	0.87	0.39	0.24	0.70	0.27	0.14	0.06	0.03	0.03	0.25	0.31
	Final Average Daily Flow	7.94	8.86	12.12	7.74	6.69	11.74	6.67	5.67	5.26	4.79	5.04	6.75	7.43
	Final Dry Day Average Daily Flow	7.27	6.78	10.18	7.08	6.10	9.11	6.25	5.41	4.87	4.72	4.73	6.13	6.55
	Final Estimated Infiltration	2.77	2.28	5.68	2.58	1.60	4.61	1.75	0.91	0.37	0.22	0.23	1.63	2.05
	Estimated Sanitary Flow	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	Estimated Inflow	0.67	2.08	1.94	0.66	0.59	2.63	0.42	0.26	0.39	0.07	0.31	0.62	0.88
Melrose	Raw Average Daily Flow	5.29	5.28	9.92	4.64	3.68	7.11	3.82	3.00	2.79	2.57	2.50	3.79	4.53
	Raw Dry Day Average Daily Flow	4.78	4.18	9.73	4.21	3.47	5.57	3.61	2.89	2.67	2.54	2.38	3.71	4.15
	Raw Estimated Infiltration	2.88	2.28	7.83	2.31	1.57	3.67	1.71	0.99	0.77	0.64	0.48	1.81	2.25
	MWRA Estimated Infiltration	0.56	0.44	1.52	0.45	0.31	0.71	0.33	0.19	0.15	0.12	0.09	0.35	0.44
	Final Average Daily Flow	4.73	4.84	8.40	4.19	3.37	6.40	3.49	2.81	2.64	2.45	2.41	3.44	4.09
	Final Dry Day Average Daily Flow	4.22	3.74	8.21	3.76	3.16	4.86	3.28	2.70	2.52	2.42	2.29	3.36	3.71
	Final Estimated Infiltration	2.32	1.84	6.31	1.86	1.26	2.96	1.38	0.80	0.62	0.52	0.39	1.46	1.81
	Estimated Sanitary Flow	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
	Estimated Inflow	0.51	1.10	0.19	0.43	0.21	1.54	0.21	0.11	0.12	0.03	0.12	0.08	0.38
Milton (North Only)	Average Daily Flow	0.26	0.26	0.45	0.30	0.22	0.38	0.18	0.17	0.20	0.17	0.17	0.19	0.25
	Dry Day Average Daily Flow	0.25	0.24	0.41	0.29	0.21	0.34	0.18	0.16	0.19	0.16	0.16	0.18	0.23
	Estimated Infiltration	0.10	0.09	0.26	0.14	0.06	0.19	0.03	0.01	0.04	0.01	0.01	0.03	0.08
	Estimated Sanitary Flow	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	Estimated Inflow	0.01	0.02	0.04	0.01	0.01	0.04	0.00	0.01	0.01	0.01	0.01	0.01	0.01

Table 4 - Estimated Community Wastewater Flow Components for 2013										4-Jun-14			PAGE 8	Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Newton (North Only)	Average Daily Flow	6.81	6.54	10.78	6.82	6.28	9.19	6.08	5.99	5.30	4.50	4.73	4.56	6.46
	Dry Day Average Daily Flow	6.10	5.57	10.00	6.34	5.82	8.71	5.51	5.59	5.03	4.37	4.64	4.43	6.01
	Estimated Infiltration	2.20	1.67	6.10	2.44	1.92	4.81	1.61	1.69	1.13	0.47	0.74	0.53	2.11
	Estimated Sanitary Flow	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
	Estimated Inflow	0.71	0.97	0.78	0.48	0.46	0.48	0.57	0.40	0.27	0.13	0.09	0.13	0.45
Reading	Average Daily Flow	3.17	3.07	5.03	3.20	2.55	4.05	2.54	1.94	1.80	1.73	1.77	2.30	2.76
	Dry Day Average Daily Flow	3.06	2.71	4.65	3.01	2.47	3.55	2.48	1.88	1.75	1.72	1.68	2.21	2.60
	Estimated Infiltration	1.66	1.31	3.25	1.61	1.07	2.15	1.08	0.48	0.35	0.32	0.28	0.81	1.20
	Estimated Sanitary Flow	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	Estimated Inflow	0.11	0.36	0.38	0.19	0.08	0.50	0.06	0.06	0.05	0.01	0.09	0.09	0.16
Revere	Average Daily Flow	6.58	8.06	10.01	6.27	5.22	10.58	6.16	5.40	4.44	4.33	4.69	5.82	6.45
	Dry Day Average Daily Flow	6.20	5.44	7.77	6.01	4.72	7.44	5.52	5.04	4.05	4.17	4.20	5.44	5.50
	Estimated Infiltration	2.60	1.84	4.17	2.41	1.12	3.84	1.92	1.44	0.45	0.57	0.60	1.84	1.90
	Estimated Sanitary Flow	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
	Estimated Inflow	0.38	2.62	2.24	0.26	0.50	3.14	0.64	0.36	0.39	0.16	0.49	0.38	0.95
Somerville	Raw Average Daily Flow	9.64	14.96	14.07	9.65	10.93	17.72	8.54	7.64	7.74	7.30	7.46	10.35	10.46
	Raw Dry Day Average Daily Flow	8.58	9.99	10.96	8.65	8.50	10.05	7.55	6.78	6.36	7.23	5.89	7.99	8.20
	Raw Estimated Infiltration	3.28	4.69	5.66	3.35	3.20	4.75	2.25	1.48	1.06	1.93	0.59	2.69	2.90
	MWRA Estimated Infiltration	0.22	0.32	0.38	0.23	0.22	0.32	0.15	0.10	0.07	0.13	0.04	0.18	0.20
	Final Average Daily Flow	9.42	14.64	13.69	9.42	10.71	17.40	8.39	7.54	7.67	7.17	7.42	10.17	10.27
	Final Dry Day Average Daily Flow	8.36	9.67	10.58	8.42	8.28	9.73	7.40	6.68	6.29	7.10	5.85	7.81	8.01
	Final Estimated Infiltration	3.06	4.37	5.28	3.12	2.98	4.43	2.10	1.38	0.99	1.80	0.55	2.51	2.71
	Estimated Sanitary Flow	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30
	Estimated Inflow	1.06	4.97	3.11	1.00	2.43	7.67	0.99	0.86	1.38	0.07	1.57	2.36	2.26
Stoneham	Raw Average Daily Flow	3.82	3.89	6.11	3.36	2.61	5.56	2.66	2.07	2.01	1.81	1.80	2.52	3.18
	Raw Dry Day Average Daily Flow	3.49	3.15	5.38	2.96	2.41	4.69	2.59	1.97	1.89	1.68	1.71	2.40	2.86
	Raw Estimated Infiltration	1.89	1.55	3.78	1.36	0.81	3.09	0.99	0.37	0.29	0.08	0.11	0.80	1.26
	MWRA Estimated Infiltration	0.36	0.30	0.72	0.26	0.15	0.59	0.19	0.07	0.06	0.02	0.02	0.15	0.24
	Final Average Daily Flow	3.46	3.59	5.39	3.10	2.46	4.97	2.47	2.00	1.95	1.79	1.78	2.37	2.94
	Final Dry Day Average Daily Flow	3.13	2.85	4.66	2.70	2.26	4.10	2.40	1.90	1.83	1.66	1.69	2.25	2.62
	Final Estimated Infiltration	1.53	1.25	3.06	1.10	0.66	2.50	0.80	0.30	0.23	0.06	0.09	0.65	1.02
	Estimated Sanitary Flow	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
	Estimated Inflow	0.33	0.74	0.73	0.40	0.20	0.87	0.07	0.10	0.12	0.13	0.09	0.12	0.32
Wakefield	Raw Average Daily Flow	4.33	4.25	7.17	4.33	3.24	6.18	3.45	2.47	2.20	2.05	2.12	2.68	3.70
	Raw Dry Day Average Daily Flow	4.07	3.56	6.47	3.96	3.13	5.24	3.30	2.38	2.14	2.03	2.02	2.57	3.41
	Raw Estimated Infiltration	2.57	2.06	4.97	2.46	1.63	3.74	1.80	0.88	0.64	0.53	0.52	1.07	1.91
	MWRA Estimated Infiltration	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01
	Final Average Daily Flow	4.32	4.24	7.15	4.32	3.23	6.16	3.44	2.47	2.20	2.05	2.12	2.68	3.69
	Final Dry Day Average Daily Flow	4.06	3.55	6.45	3.95	3.12	5.22	3.29	2.38	2.14	2.03	2.02	2.57	3.40
	Final Estimated Infiltration	2.56	2.05	4.95	2.45	1.62	3.72	1.79	0.88	0.64	0.53	0.52	1.07	1.90
	Estimated Sanitary Flow	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	Estimated Inflow	0.26	0.69	0.70	0.37	0.11	0.94	0.15	0.09	0.06	0.02	0.10	0.11	0.30

Table 4 - Estimated Community Wastewater Flow Components for 2013											4-Jun-14		PAGE 9	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Waltham	Raw Average Daily Flow	10.05	10.30	14.47	9.48	8.26	12.91	7.86	6.69	6.30	5.97	6.14	7.27	8.80
	Raw Dry Day Average Daily Flow	9.56	9.16	13.34	8.86	8.04	10.81	7.49	6.48	6.02	5.82	5.99	6.94	8.20
	Raw Estimated Infiltration	3.76	3.36	7.54	3.06	2.24	5.01	1.69	0.68	0.22	0.02	0.19	1.14	2.40
	MWRA Estimated Infiltration	0.18	0.16	0.35	0.14	0.10	0.23	0.08	0.03	0.01	0.00	0.01	0.05	0.11
	Final Average Daily Flow	9.87	10.14	14.12	9.34	8.16	12.68	7.78	6.66	6.29	5.97	6.13	7.22	8.69
	Final Dry Day Average Daily Flow	9.38	9.00	12.99	8.72	7.94	10.58	7.41	6.45	6.01	5.82	5.98	6.89	8.09
	Final Estimated Infiltration	3.58	3.20	7.19	2.92	2.14	4.78	1.61	0.65	0.21	0.02	0.18	1.09	2.29
	Estimated Sanitary Flow	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
	Estimated Inflow	0.49	1.14	1.13	0.62	0.22	2.10	0.37	0.21	0.28	0.15	0.15	0.33	0.59
Watertown	Average Daily Flow	3.60	3.85	5.41	3.50	2.92	4.92	3.04	2.66	2.51	2.33	2.37	2.76	3.32
	Dry Day Average Daily Flow	3.36	3.18	4.90	3.26	2.83	4.06	2.90	2.54	2.40	2.31	2.33	2.68	3.06
	Estimated Infiltration	1.06	0.88	2.60	0.96	0.53	1.76	0.60	0.24	0.10	0.01	0.03	0.38	0.76
	Estimated Sanitary Flow	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
	Estimated Inflow	0.24	0.67	0.51	0.24	0.09	0.86	0.14	0.12	0.11	0.02	0.04	0.08	0.26
Wilmington	Average Daily Flow	1.22	1.25	1.48	1.29	1.18	1.33	1.11	1.08	1.06	1.11	1.07	1.08	1.19
	Dry Day Average Daily Flow	1.17	1.21	1.43	1.26	1.17	1.25	1.09	1.06	1.05	1.06	1.05	1.06	1.15
	Estimated Infiltration	0.37	0.41	0.63	0.46	0.37	0.45	0.29	0.26	0.25	0.26	0.25	0.26	0.35
	Estimated Sanitary Flow	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	Estimated Inflow	0.05	0.04	0.05	0.03	0.01	0.08	0.02	0.02	0.01	0.05	0.02	0.02	0.03
Winchester	Average Daily Flow	2.64	2.47	4.41	2.65	1.84	3.58	1.78	1.44	1.30	1.18	1.18	1.55	2.17
	Dry Day Average Daily Flow	2.42	2.04	4.15	2.39	1.78	2.94	1.76	1.37	1.22	1.17	1.10	1.46	1.98
	Estimated Infiltration	1.32	0.94	3.05	1.29	0.68	1.84	0.66	0.27	0.12	0.07	0.00	0.36	0.88
	Estimated Sanitary Flow	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Estimated Inflow	0.22	0.43	0.26	0.26	0.06	0.64	0.02	0.07	0.08	0.01	0.08	0.09	0.18
Winthrop	Average Daily Flow	1.86	2.39	2.87	1.93	1.79	3.01	1.99	1.76	1.63	1.57	1.58	1.89	2.02
	Dry Day Average Daily Flow	1.73	1.80	2.41	1.85	1.64	2.30	1.88	1.68	1.58	1.55	1.50	1.77	1.81
	Estimated Infiltration	0.63	0.70	1.31	0.75	0.54	1.20	0.78	0.58	0.48	0.45	0.40	0.67	0.71
	Estimated Sanitary Flow	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Estimated Inflow	0.13	0.59	0.46	0.08	0.15	0.71	0.11	0.08	0.05	0.02	0.08	0.12	0.21
Woburn	Raw Average Daily Flow	8.55	8.61	12.52	8.95	7.20	10.79	7.08	5.51	5.18	5.12	5.28	6.18	7.57
	Raw Dry Day Average Daily Flow	8.02	7.75	10.92	8.56	7.02	9.65	6.82	5.01	5.18	5.07	5.15	5.99	7.09
	Raw Estimated Infiltration	3.52	3.25	6.42	4.06	2.52	5.15	2.32	0.51	0.68	0.57	0.65	1.49	2.59
	MWRA Estimated Infiltration	0.50	0.46	0.91	0.58	0.36	0.73	0.33	0.07	0.10	0.08	0.09	0.21	0.37
	Final Average Daily Flow	8.05	8.15	11.61	8.37	6.84	10.06	6.75	5.44	5.08	5.04	5.19	5.97	7.21
	Final Dry Day Average Daily Flow	7.52	7.29	10.01	7.98	6.66	8.92	6.49	4.94	5.08	4.99	5.06	5.78	6.72
	Final Estimated Infiltration	3.02	2.79	5.51	3.48	2.16	4.42	1.99	0.44	0.58	0.49	0.56	1.28	2.22
	Estimated Sanitary Flow	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	Estimated Inflow	0.53	0.86	1.60	0.39	0.18	1.14	0.26	0.50	0.00	0.05	0.13	0.19	0.48

Table 4 - Estimated Community Wastewater Flow Components for 2013										4-Jun-14			PAGE 10	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Subtotal (Northern System)	Raw Average Daily Flow	204.40	240.69	294.24	204.06	188.10	299.03	191.40	166.31	160.23	147.95	157.53	186.34	203.03
	Raw Dry Day Average Daily Flow	190.88	190.64	256.06	188.99	168.27	222.63	174.26	153.83	149.49	142.91	147.12	167.34	179.30
	Raw Estimated Infiltration	67.23	66.99	132.41	65.34	44.62	98.98	50.61	30.18	25.84	19.36	23.57	43.69	55.67
	MWRA Estimated Infiltration	5.91	6.11	10.41	5.20	3.66	7.68	4.06	2.26	2.12	1.77	2.19	3.25	4.54
	Final Average Daily Flow	198.49	234.58	283.83	198.86	184.44	291.35	187.34	164.05	158.11	146.18	155.34	183.09	198.49
	Final Dry Day Average Daily Flow	184.97	184.53	245.65	183.79	164.61	214.95	170.20	151.57	147.37	141.14	144.93	164.09	174.76
	Final Estimated Infiltration	61.32	60.88	122.00	60.14	40.96	91.30	46.55	27.92	23.72	17.59	21.38	40.44	51.13
	Estimated Sanitary Flow	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.55	123.55	123.65	123.63
	Estimated Inflow	13.52	50.05	38.18	15.07	19.83	76.40	17.14	12.48	10.74	5.04	10.41	19.00	23.73
Total (North and South)	Raw Average Daily Flow	315.39	366.38	481.85	314.14	279.67	474.18	285.87	245.54	235.76	214.22	225.14	276.12	309.02
	Raw Dry Day Average Daily Flow	295.04	291.59	418.72	291.65	255.75	360.58	263.82	230.43	218.44	207.62	211.51	254.78	274.91
	Raw Estimated Infiltration	118.64	115.19	242.32	115.25	79.35	184.18	87.42	54.03	42.04	31.32	35.21	78.38	98.52
	MWRA Estimated Infiltration	11.45	11.34	21.75	10.40	7.57	17.94	8.62	5.63	4.15	3.19	3.97	7.61	9.46
	Final Average Daily Flow	303.94	355.04	460.10	303.74	272.10	456.24	277.25	239.91	231.61	211.03	221.17	268.51	299.57
	Final Dry Day Average Daily Flow	283.59	280.25	396.97	281.25	248.18	342.64	255.20	224.80	214.29	204.43	207.54	247.17	265.45
	Final Estimated Infiltration	107.19	103.85	220.57	104.85	71.78	166.24	78.80	48.40	37.89	28.13	31.24	70.77	89.07
	Estimated Sanitary Flow	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.30	176.30	176.40	176.38
	Estimated Inflow	20.35	74.79	63.13	22.49	23.92	113.60	22.05	15.11	17.32	6.60	13.63	21.34	34.12
North System as Reported by NPDES	Average Daily Flow	205.10	245.40	300.50	208.40	194.70	311.90	198.10	172.00	165.10	153.20	161.10	188.60	208.34
Total System as Reported by NPDES	Average Daily Flow	319.50	375.80	497.80	324.60	292.10	498.40	299.50	258.80	244.40	223.50	232.20	287.10	320.65

Table 4 - Estimated Community Wastewater Flow Components for 2013														4-Jun-14 PAGE 11
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Chelsea Creek	Average Daily Flow	88.87	105.21	157.41	100.38	73.26	142.67	80.16	70.34	61.40	60.96	60.35	78.32	89.80
	Dry Day Average Daily Flow	82.97	80.42	137.84	91.36	64.97	102.27	72.41	65.14	58.23	58.85	58.89	75.18	79.05
	Estimated Infiltration	34.57	32.02	89.44	42.96	16.57	53.87	24.01	16.74	9.83	10.55	10.59	26.88	30.67
	Estimated Sanitary Flow	48.40	48.40	48.40	48.40	48.40	48.40	48.40	48.40	48.40	48.30	48.30	48.30	48.37
	Estimated Inflow	5.90	24.79	19.57	9.02	8.29	40.40	7.75	5.20	3.17	2.11	1.46	3.14	10.76
Columbus Park	Average Daily Flow	26.42	36.40	41.72	29.98	30.61	52.08	32.07	27.39	28.22	23.05	26.52	32.68	32.21
	Dry Day Average Daily Flow	23.48	25.83	34.55	27.00	24.12	31.52	27.56	24.27	25.71	21.36	23.77	27.68	26.40
	Estimated Infiltration	3.33	5.68	14.40	6.85	3.97	11.37	7.41	4.12	5.56	1.21	3.62	7.53	6.25
	Estimated Sanitary Flow	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15	20.15
	Estimated Inflow	2.94	10.57	7.17	2.98	6.49	20.56	4.51	3.12	2.51	1.69	2.75	5.00	5.80
Ward Street	Average Daily Flow	65.84	75.54	86.65	66.16	62.50	88.80	64.28	58.22	57.61	54.66	56.85	57.30	66.11
	Dry Day Average Daily Flow	63.86	65.21	76.56	62.50	59.42	70.36	58.57	55.69	55.38	52.96	55.61	52.74	60.70
	Estimated Infiltration	18.56	19.91	31.26	17.20	14.12	25.06	13.27	10.39	10.08	7.66	10.31	7.44	15.40
	Estimated Sanitary Flow	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30	45.30
	Estimated Inflow	1.98	10.33	10.09	3.66	3.08	18.44	5.71	2.53	2.23	1.70	1.24	4.56	5.41
Winthrop Terminal	Average Daily Flow	17.15	20.60	22.65	15.89	14.94	22.75	15.95	15.60	12.81	11.76	13.49	16.00	16.60
	Dry Day Average Daily Flow	15.18	14.69	18.19	13.94	14.11	12.99	15.92	14.72	10.93	11.59	13.35	15.40	14.26
	Estimated Infiltration	5.38	4.89	8.39	4.14	4.31	3.19	6.12	4.92	1.13	1.79	3.55	5.60	4.46
	Estimated Sanitary Flow	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80
	Estimated Inflow	1.97	5.91	4.46	1.95	0.83	9.76	0.03	0.88	1.88	0.17	0.14	0.60	2.34
Subtotal - Northern Headworks	Average Daily Flow	198.28	237.75	308.43	212.41	181.31	306.30	192.46	171.55	160.04	150.43	157.21	184.30	204.73
	Dry Day Average Daily Flow	185.49	186.15	267.14	194.80	162.62	217.14	174.46	159.82	150.25	144.76	151.62	171.00	180.41
	Estimated Infiltration	61.84	62.50	143.49	71.15	38.97	93.49	50.81	36.17	26.60	21.21	28.07	47.45	56.79
	Estimated Sanitary Flow	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.65	123.55	123.55	123.55	123.62
	Estimated Inflow	12.79	51.60	41.29	17.61	18.69	89.16	18.00	11.73	9.79	5.67	5.59	13.30	24.31
Headworks as Reported by NPDES	SUM of ADF's	205.10	245.40	300.50	208.40	194.70	311.90	198.10	172.00	165.10	153.20	161.10	188.60	208.34
Chelsea Creek	Average Daily Flow	95.50	111.30	150.10	96.40	86.20	147.80	85.70	70.70	66.10	63.30	64.10	81.30	93.06
Columbus Park	Average Daily Flow	26.60	37.10	41.70	30.10	30.90	52.40	32.20	27.60	28.50	23.40	26.80	33.00	32.47
Ward Street	Average Daily Flow	65.70	76.00	86.10	65.90	62.40	88.80	64.10	58.00	57.50	54.60	56.60	57.30	65.99
Winthrop Terminal	Average Daily Flow	17.30	21.00	22.60	16.00	15.20	22.90	16.10	15.70	13.00	11.90	13.60	17.00	16.83
Total System Flow	Raw Average Daily Flow	309.27	363.44	496.04	322.49	272.88	481.45	286.93	250.78	235.57	216.70	224.82	274.08	310.72
	Raw Dry Day Average Daily Flow	289.65	287.10	429.80	297.46	250.10	355.09	264.02	236.42	219.20	209.47	216.01	258.44	276.02
	Raw Estimated Infiltration	113.25	110.70	253.40	121.06	73.70	178.69	87.62	60.02	42.80	33.17	39.71	82.14	99.64
	MWRA Estimated Infiltration	5.54	5.23	11.34	5.20	3.91	10.26	4.56	3.37	2.03	1.42	1.78	4.36	4.92
(Southern Collection System Plus Northern Headworks)	Final Average Daily Flow	303.73	358.21	484.70	317.29	268.97	471.19	282.37	247.41	233.54	215.28	223.04	269.72	305.81
	Final Dry Day Average Daily Flow	284.11	281.87	418.46	292.26	246.19	344.83	259.46	233.05	217.17	208.05	214.23	254.08	271.10
	Final Estimated Infiltration	107.71	105.47	242.06	115.86	69.79	168.43	83.06	56.65	40.77	31.75	37.93	77.78	94.73
	Estimated Sanitary Flow	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.40	176.30	176.30	176.30	176.37
	Estimated Inflow	19.62	76.34	66.24	25.03	22.78	126.36	22.91	14.36	16.37	7.23	8.81	15.64	34.70

Table 4 - Estimated Community Wastewater Flow Components for 2013														4-Jun-14 PAGE 12
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Boston (Total)	Raw Average Daily Flow	91.15	113.19	127.26	90.19	86.00	145.11	91.76	79.58	81.28	71.61	78.05	87.80	95.06
	Raw Dry Day Average Daily Flow	85.09	89.64	107.11	83.39	75.11	100.59	81.62	73.87	74.05	67.75	74.04	78.21	82.48
	Raw Estimated Infiltration	27.09	31.64	49.11	25.39	17.11	42.59	23.62	15.87	16.05	9.75	16.04	20.21	24.48
	MWRA Estimated Infiltration	6.46	6.68	11.18	5.52	3.95	10.26	4.92	3.52	2.69	1.92	2.79	4.12	5.32
	Final Average Daily Flow	84.69	106.51	116.08	84.67	82.05	134.85	86.84	76.06	78.59	69.69	75.26	83.68	89.74
	Final Dry Day Average Daily Flow	78.63	82.96	95.93	77.87	71.16	90.33	76.70	70.35	71.36	65.83	71.25	74.09	77.15
	Final Estimated Infiltration	20.63	24.96	37.93	19.87	13.16	32.33	18.70	12.35	13.36	7.83	13.25	16.09	19.15
	Estimated Sanitary Flow	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00
	Estimated Inflow	6.06	23.55	20.15	6.80	10.89	44.52	10.14	5.71	7.23	3.86	4.01	9.59	12.59
Brookline (Total)	Average Daily Flow	8.62	10.15	13.66	8.96	7.54	14.07	7.90	7.11	6.85	6.20	6.52	8.44	8.82
	Dry Day Average Daily Flow	7.80	7.67	11.84	8.11	7.17	10.14	7.24	6.62	6.28	5.97	6.26	7.53	7.72
	Estimated Infiltration	3.30	3.17	7.34	3.61	2.67	5.64	2.74	2.12	1.78	1.47	1.76	3.03	3.22
	Estimated Sanitary Flow	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	Estimated Inflow	0.82	2.48	1.82	0.85	0.37	3.93	0.66	0.49	0.57	0.23	0.26	0.91	1.10
Milton (Total)	Average Daily Flow	3.10	3.86	6.67	3.34	2.56	5.89	2.48	2.06	1.86	1.68	1.75	2.70	3.16
	Dry Day Average Daily Flow	2.82	2.88	5.58	3.01	2.47	4.33	2.27	1.97	1.71	1.62	1.63	2.61	2.74
	Estimated Infiltration	1.42	1.48	4.18	1.61	1.07	2.93	0.87	0.57	0.31	0.22	0.23	1.21	1.34
	Estimated Sanitary Flow	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	Estimated Inflow	0.28	0.98	1.09	0.33	0.09	1.56	0.21	0.09	0.15	0.06	0.12	0.09	0.41
Newton (Total)	Average Daily Flow	17.16	18.22	25.48	14.33	12.25	23.29	12.51	10.05	9.37	8.23	8.18	11.18	14.16
	Dry Day Average Daily Flow	15.97	14.70	22.02	13.25	10.92	18.88	11.81	9.61	8.95	7.98	7.89	10.34	12.68
	Estimated Infiltration	8.97	7.70	15.02	6.25	3.92	11.88	4.81	2.61	1.95	0.98	0.89	3.34	5.68
	Estimated Sanitary Flow	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Estimated Inflow	1.19	3.52	3.46	1.08	1.33	4.41	0.70	0.44	0.42	0.25	0.29	0.84	1.48

Table 4 - Estimated Community Wastewater Flow Components for 2013											4-Jun-14		PAGE 13	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Subtotal	Raw Average Daily Flow	100.83	132.09	134.32	101.54	102.30	157.40	104.96	92.17	92.53	84.44	92.46	104.50	108.07
Northern System CSO	Raw Dry Day Average Daily Flow	93.74	100.77	112.05	93.26	86.66	104.21	92.04	83.55	84.88	80.70	84.95	89.49	92.13
Communities Only:	Raw Estimated Infiltration	24.64	31.67	42.95	24.16	17.56	35.11	22.94	14.45	15.78	11.60	15.85	20.39	23.03
	MWRA Estimated Infiltration	3.03	3.67	4.18	2.52	1.89	3.43	2.28	1.46	1.56	1.38	1.83	1.79	2.41
[Sum of Boston (North),	Final Average Daily Flow	97.80	128.42	130.14	99.02	100.41	153.97	102.68	90.71	90.97	83.06	90.63	102.71	105.66
Cambridge, Chelsea,	Final Dry Day Average Daily Flow	90.71	97.10	107.87	90.74	84.77	100.78	89.76	82.09	83.32	79.32	83.12	87.70	89.72
and Somerville]	Final Estimated Infiltration	21.61	28.00	38.77	21.64	15.67	31.68	20.66	12.99	14.22	10.22	14.02	18.60	20.62
	Estimated Sanitary Flow	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10	69.10
	Estimated Inflow	7.09	31.32	22.27	8.28	15.64	53.19	12.92	8.62	7.65	3.74	7.51	15.01	15.94
Subtotal	Raw Average Daily Flow	103.57	108.60	159.92	102.52	85.80	141.63	86.44	74.14	67.70	63.51	65.07	81.84	94.96
Northern System Without	Raw Dry Day Average Daily Flow	97.14	89.87	144.01	95.73	81.61	118.42	82.22	70.28	64.61	62.21	62.17	77.85	87.18
North CSO Communities:	Raw Estimated Infiltration	42.59	35.32	89.46	41.18	27.06	63.87	27.67	15.73	10.06	7.76	7.72	23.30	32.64
	MWRA Estimated Infiltration	2.88	2.44	6.23	2.68	1.77	4.25	1.78	0.80	0.56	0.39	0.36	1.46	2.13
	Final Average Daily Flow	100.69	106.16	153.69	99.84	84.03	137.38	84.66	73.34	67.14	63.12	64.71	80.38	92.83
	Final Dry Day Average Daily Flow	94.26	87.43	137.78	93.05	79.84	114.17	80.44	69.48	64.05	61.82	61.81	76.39	85.04
	Final Estimated Infiltration	39.71	32.88	83.23	38.50	25.29	59.62	25.89	14.93	9.50	7.37	7.36	21.84	30.51
	Estimated Sanitary Flow	54.55	54.55	54.55	54.55	54.55	54.55	54.55	54.55	54.55	54.45	54.45	54.55	54.53
	Estimated Inflow	6.43	18.73	15.91	6.79	4.19	23.21	4.22	3.86	3.09	1.30	2.90	3.99	7.78
Subtotal	Raw Average Daily Flow	214.56	234.29	347.53	212.60	177.37	316.78	180.91	153.37	143.23	129.78	132.68	171.62	200.95
North/South Systems Without	Raw Dry Day Average Daily Flow	201.30	190.82	306.67	198.39	169.09	256.37	171.78	146.88	133.56	126.92	126.56	165.29	182.78
North CSO Communites:	Raw Estimated Infiltration	94.00	83.52	199.37	91.09	61.79	149.07	64.48	39.58	26.26	19.72	19.36	57.99	75.50
	MWRA Estimated Infiltration	8.42	7.67	17.57	7.88	5.68	14.51	6.34	4.17	2.59	1.81	2.14	5.82	7.05
	Final Average Daily Flow	206.14	226.62	329.96	204.72	171.69	302.27	174.57	149.20	140.64	127.97	130.54	165.80	193.91
	Final Dry Day Average Daily Flow	192.88	183.15	289.10	190.51	163.41	241.86	165.44	142.71	130.97	125.11	124.42	159.47	175.73
	Final Estimated Infiltration	85.58	75.85	181.80	83.21	56.11	134.56	58.14	35.41	23.67	17.91	17.22	52.17	68.45
	Estimated Sanitary Flow	107.30	107.30	107.30	107.30	107.30	107.30	107.30	107.30	107.30	107.20	107.20	107.30	107.28
	Estimated Inflow	13.26	43.47	40.86	14.21	8.28	60.41	9.13	6.49	9.67	2.86	6.12	6.33	18.17