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August 29, 2023

Mr. Todd Borci
Office of Environmental Stewardship
US EPA Region 1
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Mail Code OES04-4
Boston MA, 02109-3912

Ms. Susannah King, NPDES Section Chief
Wastewater Management Section
Department of Environmental Protection
1 Winter Street - 5th Floor
Boston, MA 02108

RE: Massachusetts Water Resources Authority NPDES Permit Number MA0103284 – MWRA Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2023

Dear Mr. Borci and Ms. King:

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 2023.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan
Attachment 2 – MWRA Regional I/I Reduction Plan – FY23 Progress Update and Detailed Implementation Schedule for FY24 Activities
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY23
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 – CY22 Community Wastewater Flow Data

Should you require additional information, please contact Stephen Estes-Smargiassi, Director of Planning and Sustainability at Stephen.Estes-Smargiassi@mwra.com.

Sincerely,

David W. Coppes, P.E.
Chief Operating Officer

cc: Areeg Abd-Alla, Environmental Engineer III, MassDEP
Betsy Reilley, Director, MWRA, Environmental Quality
Wendy Leo, Senior Program Manager, MWRA, Environmental Quality
Jon Szarek, P.E., Senior Program Manager, MWRA Community Support Program

ATTACHMENT 1
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY23
Reporting Period – July 2022 Through June 2023

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 MassDEP as required under MWRA's NPDES Permit. The plan was submitted to EPA and MassDEP in June 2001 and MassDEP 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, MassDEP, 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 MassDEP, 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, MassDEP 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, MassDEP 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 MassDEP regulations or guidance documents.

4. MWRA will work cooperatively with member communities, MassDEP 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, MassDEP 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 FY23
Reporting Period – July 2022 Through June 2023

MWRA REGIONAL I/I REDUCTION PLAN - FY23 PROGRESS UPDATE AND DETAILED IMPLEMENTATION SCHEDULE FOR FY24 ACTIVITIES

This document provides a progress update for FY23 accomplishments and a description of the activities to be accomplished during FY24 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 FY23, 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 FY23 are detailed in Attachment 3. Additional information on MWRA's FY23 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.

During FY24, 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 ongoing.

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.

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, rollout of the SSO reporting/record keeping electronic database was not completed.

In January 2013, MassDEP developed the most recent revised Reporting Form "Sanitary Sewer Overflow (SSO)/Bypass Notification Form" (pdf version - rev 01/2013). As of July 2020, this pdf form is available on the MassDEP web site (a Word version of the form is also available – rev 1/2018) and reporting using the form is via FAX or by mail.

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.

During FY16, MWRA added more specific information on SSOs on the MWRA web site at: http://www.mwra.com/03sewer/html/sso.html. This information includes information on what an SSO is, public health impacts, how SSOs can be prevented, and what MWRA does when an SSO occurs. The web site also includes an interactive GIS site map for SSOs that have been reported by MWRA for the following SSO event display selections: currently active, past 2 days, past 30 days, and past 12 months.

In January 2021, Governor Baker signed *An Act Promoting Awareness of Sewage in Public Waters* into law: https://malegislature.gov/Laws/SessionLaws/Acts/2020/Chapter322. This law ensures that the public knows when untreated sewage flows into Massachusetts waters. The regulations apply to owners of outfalls from which there are sewage discharges that either directly or indirectly discharge to a receiving water. MassDEP had twelve (12) months to develop regulations to support the implementation of the law (January 2022). Communities had six (6) months thereafter to comply with the regulations (July 2022). MWRA was part of the stakeholder group providing input to MassDEP's development of the regulations.

In FY22, MWRA enhanced its existing CSO public notification program to add notifications of SSOs (in compliance with the new sewage notification regulation 314 CMR 16.00). Additionally, MWRA updated its SSO notification website. In response to a request from MassDEP, MWRA assisted in notifying member communities of their responsibilities under the new regulation. MWRA also provided comment on the draft regulation.

Starting July 6, 2022, MWRA sends notifications to media outlets (as required by 314 CMR 16.00). Along with Cambridge and Somerville, MWRA held a public meeting on CSO control in the Charles River and Mystic River/Alewife Brook watersheds that included discussion of flooding, system capacity and I/I reduction requirements. This was the second meeting in a series that will continue over the next year and a half. MWRA also continued outreach and education efforts with local Boards of Health in preparation for the new sewage notification regulation.

In FY23, MWRA continued its existing sewage notification program which includes notifications of SSOs (in compliance with the new sewage notification regulation 314 CMR 16.00). MWRA also completed its Final Sewage Notification Plan, submitted it to MassDEP, and published it for public comment as required by 314 CMR 16.00. Beginning July 6, 2022, MWRA also enters notifications into the MassDEP database within a few hours of the start of each discharge, so information can be made available in MassDEP's portal. MWRA believes the database and portal developed by MassDEP to comply with the Sewage Notification Regulation 314 CMR 16.00 meets the intent of this strategy.

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 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 standard design storm for inflow 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 May 2017). 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 FY23, MWRA continued its ongoing priority program to clean and inspect 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 FY24.

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)

MassDEP's roll-out of the SSO reporting/record keeping electronic database was not completed (see Strategy A above). However, the database and portal developed by MassDEP to comply with the Sewage Notification Regulation 314 CMR 16.00 may meet the intent of this strategy.

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 local/regional SSO problems. MWRA also offers member communities financial assistance for I/I reduction projects. During FY24, at the request of member communities, MWRA will continue to provide technical and financial 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 standard design storm for inflow 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 May 2017). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard for inflow, 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 standard design storm for inflow 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 May 2017). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard for inflow, additional work under this strategy is not necessary.

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 include a requirement for all public entities that own a sewer system to complete an I/I analysis by December 31, 2017 and submit it to MassDEP for review. The analysis also must include an assessment of the risk of SSOs. In FY18, MWRA submitted the required I/I analysis as a chapter in the MWRA Wastewater Collection System Operation & Maintenance Plan (December 2017).

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 local/regional SSO problems. MWRA also offers member communities financial assistance for I/I reduction projects. During FY24, at the request of member communities, MWRA will continue to provide technical and financial assistance on local sewer system projects. MWRA will also continue to work on projects in the MWRA Capital Improvement Program, as summarized in Attachment 3.

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 standard design storm for inflow 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 May 2017). The one-year, six-hour storm produces approximately 1.72 inches of rainfall in the Boston area.

During FY23, MWRA continued its ongoing priority program to clean and inspect 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 FY24.

During extreme storm events that exceed the MassDEP recommended standard design storm for inflow, I/I entering the upstream community-owned collection systems may cause an occasional SSO in the MWRA regional interceptor system. 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 (beginning in September 2022), an additional $100 million in 75% grants and 25% interest-free loans was added as Phase 14 of the I/I Local Financial Assistance Program to help fund community I/I reduction projects. MWRA's commitment to fund local sewer rehabilitation projects under the I/I Local Financial Assistance Program totals $860.75 million. Through FY23, $532 million in grants and interest-free loans has been distributed to 43 member sewer communities to fund 664 local projects (see details in Attachment 4).

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. Currently this type of information is widely available via the internet.

Specific information on SSOs and backups into homes is provided on the MWRA web site at: http://www.mwra.com/03sewer/html/sso.html. This site includes information on what an SSO is, public health impacts, how SSOs can be prevented, and what MWRA does when an SSO occurs. Links on the site include:

- **DEP's Home Care Guide on Flooding and Sewage Backups;**
- **Cleanup Procedures After a Sewer Backup, from the Boston Water and Sewer Commission; and,**
- **FEMA and Red Cross Guide on Flooded Property Hazards and Repair.**

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.

The second MWRA Wastewater Meter Replacement project was completed March 2023. The metering system upgrade project was completed at a design cost of $3.2 million and an installation cost of $3.6 million. Installation was completed at the end of 2021. An additional $9.1 million for future meter equipment asset protection is included within the MWRA CIP after FY28.

During FY23, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. CY22 community wastewater flow data is included as Attachment 6. These flow data tables are available to all users on MWRA's website (https://www.mwra.com/harbor/html/archive.htm#infinf). Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis.

During FY24, MWRA will continue to estimate community infiltration and inflow rates 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 Deer Island Treatment Plant 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 first Wastewater Meter Replacement project was completed in FY06. The system was used to monitor wastewater flow at key locations within the regional collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels.

The second MWRA Wastewater Meter Replacement project was completed March 2023. The metering system upgrade project was completed at a design cost of $3.2 million and an installation cost of $3.6 million. Installation was completed at the end of 2021. Project work included a complete review of metering equipment and software technologies, review of MWRA's community metering methodologies and subsequent design and construction of upgrades. An additional $9.1 million for future meter equipment asset protection is included within the MWRA CIP after FY28.

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 (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 include a requirement for all public entities that own a sewer system to complete an I/I analysis by December 31, 2017 and submit it to MassDEP for review. The analysis also must include an assessment of the risk of SSOs. In FY18, MWRA submitted the required I/I analysis as a chapter in the MWRA Wastewater Collection System Operation & Maintenance Plan (December 2017).

During FY23, 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 discuss what sewer system rehabilitation actions other communities are pursuing. MWRA's Advisory Board Operation Committee meetings, as well as Wastewater Advisory Committee (WAC) meetings, are used as platforms for member communities to share information on projects and lessons learned. All member sewer communities are actively participating in MWRA's $860.75 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 May 2017 I/I Guidelines. This work will continue in FY24.

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. 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.

Beginning in FY14 and continuing through FY23, 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 member communities have signed nondisclosure agreements that detail security protocols necessary to safeguard 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 FY24.

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 enhanced Phase 9 and 10 of its grant/loan community funding program by increasing the grant portion from 45% to 75%. Also, the loan portion repayment period was extended from 5 to 10 years.

In June 2018, the MWRA Board of Directors approved an additional $200 million ($150 million in 75% grants and $50 million in 25% interest-free 10-year loans). The additional $200 million ($100 million each for Phases 11 and 12) in financial assistance funds became available to the communities in FY19. Also in June 2018, the MWRA Board of Directors approved an additional $100 million 10-year interest-free loan only Phase 13 to be used by communities if their grant/loan funds have all been distributed (prior to the initiation of the next grant/loan funding phase). These approved funding phases increased the total I/I Local Financial Assistance Program budget to $760.75 million and extended program distributions through FY30.

In September 2022, the MWRA Board of Directors approved an additional $100 million ($75 million in 75% grants and $25 million in 25% interest-free 10-year loans). This funding phase (Phase 14) increased the total I/I Local Financial Assistance Program budget to $860.75 million. The additional $100 million in financial assistance funds became available to the communities on September 30, 2022.

As of FY23, MWRA's commitment to fund local sewer rehabilitation projects under the I/I Local Financial Assistance Program totals $860.75 million. During FY23, 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 $21.7 million was distributed during FY23. Since program inception in May 1993, $532 million has been distributed to fund 664 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 FY24, 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 FY30.

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 FY23, MWRA continued to provide emergency assistance to member communities, as requested. These efforts typically included internal CCTV inspection of local sewers and associated sewer cleaning, as well as other emergency assistance. During FY24, 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 including information on both the wastewater and water systems.

During FY23, MWRA distributed technical information to member community Public Works Directors, City/Town Engineers, local wastewater/water system operators, community consultants and local watershed groups, including:

- **MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. These flow data tables are available to all users on MWRA's web site (www.mwra.com). CY22 community wastewater flow data is included as Attachment 6. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis.**
- **March 2023: Local Water System Assistance Program funding (interest-free 10-year loans) update e-mails were distributed to each member community. Information on MWRA's Lead Service Line Replacement Loan Program was also provided.**
- **March 2023: MWRA staff distributed correspondence to all sewer member communities with an update on funds available under the I/I Local Financial Assistance Program (grant/loan funds) with a link to the MWRA Community Support Program's web page for more information.**
- **March 15, 2023: MWRA staff provided an update presentation on the I/I Local Financial Assistance Program to the MWRA Board of Directors. All Staff Summaries to the MWRA Board of Directors are posted on MWRA web site at www.mwra.com.**
- **March 15, 2023: MWRA staff provided an update presentation on the Local Water System Assistance Program to the MWRA Board of Directors. All Staff Summaries to the MWRA Board of Directors are posted on MWRA web site at www.mwra.com.**

- **June 2023: Annual community I/I questionnaires were distributed to member sewer communities to acquire information on FY23 local I/I reduction programs for development of MWRA's Annual I/I Reduction Report (see Attachment 5).**

During FY24, 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 2001 joint private inflow reduction workshop, 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 and submit it to MassDEP for review. The analysis also must include an assessment of the risk of SSOs. In FY18, MWRA submitted the required I/I analysis as a chapter in the MWRA Wastewater Collection System Operation & Maintenance Plan (December 2017).

During FY17 (as of May 2017), MassDEP revised its *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys*.

On October 6, 2017, both MassDEP and MWRA staff provided an update presentation and had discussions with the MWRA Wastewater Advisory Committee.

On November 29, 2017, staff from USEPA, MassDEP, and MWRA met to discuss mutual areas of interest regarding wastewater metering and I/I reduction programs.

On an annual basis, MWRA staff provide an update presentation to the MWRA Board of Directors on both the 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, Lead Service Line Replacement Loan Program, water and wastewater metering, water and wastewater flow data, rate assessment methodologies, water and wastewater permitting and regulations, etc.

During FY24, 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 ongoing.

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. Links to educational materials are provided on www.mwra.com.

In FY23, the MWRA School Education Program distributed "It's a Toilet, Not a Trash Can" brochures and "What To Flush – the 3 Ps Only (Pee, Poop, Paper)" window clings to schools and community groups. The brochure can be downloaded from the School Program page on www.mwra.com and the window clings can be ordered. The MWRA School Program developed a new classroom activity involving reading and designing wet wipe labels to establish which materials are dispersible vs. flushable. The activity has been well received by both teachers and students.

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 website contains links to the communities' websites and links to other organizations. Based on current broad use of the web, additional work under this strategy is not needed. MWRA continues to revise and upgrade its website www.mwra.com and the MWRA Community Support Program page: 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 spanning 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. In FY23, MWRA continued its existing sewage notification program which includes notifications of SSOs (in compliance with the new sewage notification regulation 314 CMR 16.00). MWRA also completed its Final Sewage Notification Plan, submitted it to MassDEP, and published it for public comment as required by 314 CMR 16.00. Beginning July 6, 2022, MWRA also enters notifications into the MassDEP database within a few hours of the start of each discharge, so information can be made available in MassDEP's portal. MWRA believes the database and portal developed by MassDEP to comply with the Sewage Notification Regulation 314 CMR 16.00 meets the intent of this strategy.

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. Starting July 6, 2022, MWRA sends notifications to media outlets (as required by 314 CMR 16.00). Along with Cambridge and Somerville, MWRA held a public meeting on CSO control in the Charles River and Mystic River/Alewife Brook watersheds that included discussion of flooding, system capacity and I/I reduction requirements. This was the second meeting in a series that will continue over the next year and a half. MWRA also continued outreach and education efforts with local Boards of Health in preparation for the new sewage notification regulation.

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. Web links to information provided by MassDEP, USEPA, and NEIWPCC are posted on MWRA's Community Support Program web page at: http://www.mwra.com/comsupport/communitysupportmain.html.

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.

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*****.**

During FY17 (as of May 2017), MassDEP revised its ***Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys*****.**

ATTACHMENT 3
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY23
Reporting Period – July 2022 Through June 2023

MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY23

During FY23, the MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 34 miles of Authority-owned interceptors, internally inspected 49 inverted siphon barrels with sonar inspection equipment, and physically inspected 652 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.). Throughout the internal inspection process, problems such as physical defects, manhole frame and cover defects, infiltration/inflow sources, sediment, grease deposits, etc. are noted and stored in MWRA's electronic maintenance (MAXIMO) database. Maintenance work is then scheduled based on the identified problem.

Through FY23, MWRA's maintenance work included hydraulic/mechanical cleaning of 38 miles of Authority-owned sewers, cleaning of 46 siphon barrels and replacing of 38 sewer manhole frames and covers. In addition, 38 sewer manholes were rehabilitated via cement mortar lining under MWRA's annual sewer manhole rehabilitation contract (MWRA's FY24 annual sewer manhole rehabilitation contract is scheduled to rehabilitate 45 sewer manholes). 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 rehabilitate portions of Authority-owned interceptors and provide additional hydraulic capacity. Updates on these projects are included below:

1. During FY23, 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 over $200 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 proposed FY24 CIP at a cost of nearly $130 million. Interceptor Renewal/Asset Protection Projects #1 through #7 include:

    1. Interceptor Renewal/Asset Protection Project #1: Rehabilitation design and construction of 12,240 linear feet of the Reading Extension Sewer Sections 75, 74 and 73 primarily in Stoneham, with short reaches in Wakefield and Woburn. Also, included was rehabilitation of 2,280 linear feet of Metropolitan Sewer Section 46 in Stoneham, as well as, rehabilitation of 62 sewer manholes and structures along the pipeline route. Construction began in FY17 and was completed during FY19. Total design, construction and construction services costs were approximately $2.9 million.

2. Interceptor Renewal/Asset Protection Project #2: Rehabilitation design and construction of Sections 4, 5, 6 and 186 on the North Metropolitan Sewer in Winthrop (just upstream of the Deer Island Treatment Plant). Work will include rehabilitation of approximately 3,700 linear feet of 108-inch brick sewer. Portions of this sewer were previously rehabilitated using a shotcrete process in the 1990s. A preliminary design study for this project was completed in April 2018. The design contract phase is scheduled to begin prior to the start of FY25 with a design/construction budget of $9.4 million.

3. Interceptor Renewal/Asset Protection Project #3: Rehabilitation design and construction of Dorchester Interceptor Sewer Sections 240, 241 and 242. Design for this project began in FY18. Construction/construction services phases completed December 2021. The overall design, construction and construction services costs are estimated at $5.8 million.

4. Interceptor Renewal/Asset Protection Project #4A: Rehabilitation design and construction of Cambridge Branch Sewer Sections 26 and 27 in Charlestown, Somerville and Cambridge. A preliminary design study for Cambridge Branch Sewer Sections 23 - 24 and 26 - 27 was completed in FY18. The design contract phase is scheduled to begin prior to the start of FY25 with a design/construction budget of $36 million.

5. Interceptor Renewal/Asset Protection Project #4B: Rehabilitation design and construction of the Cambridge Branch Sewer Sections 23 and 24 in Everett and Charlestown. A preliminary design study for Cambridge Branch Sewer Sections 23 - 24 and 26 - 27 was completed in FY18. The design contract phase is scheduled to begin prior to the start of FY25 with a design/construction budget of $36 million.

6. Interceptor Renewal/Asset Protection Project #5: Rehabilitation design and construction of portions of New Neponset Valley Sewer Sections 607, 609 and 610 in Milton. The design contract phase is scheduled to begin in FY28 with a design/ construction budget of $16.2 million.

7. Interceptor Renewal/Asset Protection Project #6: Rehabilitation design and construction of portions of Sections 12, 14, 15 and 62 in Chelsea. The design contract phase is scheduled to begin in FY30 with a design/construction budget of $13.2 million.

8. Interceptor Renewal/Asset Protection Project #7: Rehabilitation design and construction of portions of Sections 41, 42, 49, 54 and 65 in Malden and Melrose. Design Notice To Proceed issued August 2020 with a design cost of $2.6 million. Construction budget estimated at $9.4 million. Anticipated Construction Notice To Proceed date is July 2024.

ATTACHMENT 4
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY23
Reporting Period: July 2022 Through June 2023

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

Financial Assistance Update

All 43-member sewer communities are participating in MWRA's $860.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY23, $532 million has been distributed to fund 664 local I/I reduction and sewer system rehabilitation projects. The program budget of $860.75 million includes the most recent addition of $100 million (Phase 14) approved by the MWRA Board of Directors for distribution beginning on September 30, 2022. For Phase 14, the grant component remains as 75% of the eligible project cost. In June 2018, the MWRA Board of Directors approved the addition of $300 million for distribution beginning in FY19, including: Phase 11 ($100 million in grant/loan funds), Phase 12 ($100 million in grant/loan funds) and Phase 13 ($100 million in loan only funds). For Phases 11 and 12, the grant component remained as 75% of the eligible project cost. 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 FY30. 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 $860.75 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 through 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 enhanced for distribution of Phases 9 through 12 funds (total of $360 million) to a 75 percent grant and a 25 percent interest-free loan. The interest-free loan repayment period for Program Phases 9 through 12 was extended to ten years from the previous five (again beginning one year after the date the funds are distributed). Phase 13 is a $100 million loan-only phase also with a ten-year repayment. Phase 13 loan funds are to be used by communities if their grant/loan funds have all been distributed (prior to the initiation of the next grant/loan funding phase). The grant/loan split for distribution of Program Phase 14 funds (total of $100 million) remains at a 75 percent grant and a 25 percent interest-free loan. The interest-free loan repayment period for Program Phase 14 funds also remains at a ten years.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
COMMUNITY FUNDING SUMMARY AS OF JULY 2023

Community	Total Allocations (Phases 1 - 14)	Total Distributions (Phases 1 - 14)	Percent Distributed	Funds Remaining
Arlington	$15,473,000	$12,215,900	79%	$3,257,100
Ashland	$4,348,500	$2,020,060	46%	$2,328,440
Bedford	$6,354,600	$3,109,158	49%	$3,245,442
Belmont	$9,325,100	$5,135,100	55%	$4,190,000
Boston	$246,921,200	$122,344,709	50%	$124,576,491
Braintree	$16,449,000	$12,040,400	73%	$4,408,600
Brookline	$24,005,200	$15,895,200	66%	$8,110,000
Burlington	$9,632,800	$8,522,800	88%	$1,110,000
Cambridge	$44,640,100	$28,830,100	65%	$15,810,000
Canton	$7,565,900	$3,126,850	41%	$4,439,050
Chelsea	$13,510,100	$11,760,100	87%	$1,750,000
Dedham	$10,400,000	$8,060,000	78%	$2,340,000
Everett	$15,251,500	$11,611,500	76%	$3,640,000
Framingham	$23,045,000	$13,671,000	59%	$9,374,000
Hingham	$3,202,500	$2,412,500	75%	$790,000
Holbrook	$3,149,600	$1,349,600	43%	$1,800,000
Lexington	$13,715,300	$10,565,300	77%	$3,150,000
Malden	$23,373,900	$6,725,900	29%	$16,648,000
Medford	$22,077,600	$7,961,600	36%	$14,116,000
Melrose	$11,456,300	$10,106,300	88%	$1,350,000
Milton	$10,164,500	$9,014,500	89%	$1,150,000
Natick	$10,522,600	$6,832,600	65%	$3,690,000
Needham	$11,267,600	$4,018,600	36%	$7,249,000
Newton	$39,277,400	$39,277,400	100%	$0
Norwood	$13,239,400	$6,879,400	52%	$6,360,000
Quincy	$36,950,000	$32,325,000	87%	$4,625,000
Randolph	$11,400,800	$4,971,058	44%	$6,429,742
Reading	$8,789,100	$6,709,100	76%	$2,080,000
Revere	$19,090,900	$6,302,900	33%	$12,788,000
Somerville	$29,265,800	$12,116,900	41%	$17,148,900
Stoneham	$8,919,900	$6,859,900	77%	$2,060,000
Stoughton	$8,962,900	$7,902,900	88%	$1,060,000
Wakefield	$11,116,900	$8,526,900	77%	$2,590,000
Walpole	$6,940,000	$4,806,050	69%	$2,133,950
Waltham	$25,062,400	$19,214,560	77%	$5,847,840
Watertown	$11,475,800	$8,865,800	77%	$2,610,000
Wellesley	$10,429,700	$4,739,700	45%	$5,690,000
Westwood	$4,932,300	$2,591,300	53%	$2,341,000
Weymouth	$21,750,900	$13,949,584	64%	$7,801,316
Wilmington	$4,822,000	$2,462,000	51%	$2,360,000
Winchester	$7,673,000	$5,923,000	77%	$1,750,000
Winthrop	$6,293,400	$5,083,400	81%	$1,210,000
Woburn	$18,505,500	$14,675,500	79%	$3,830,000
Totals	$860,750,000	$531,512,129	62%	$329,237,871

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
FY15	Aug 2014	$4,053,000	Nov 2014	$7,647,400	Feb 2015	$10,128,648	May 2015	$4,803,450	$26,632,498
FY16	Aug 2015	$3,983,100	Nov 2015	$5,783,000	Feb 2016	$7,195,116	May 2016	$5,483,000	$22,444,216
FY17	Aug 2016	$2,352,100	Nov 2016	$6,553,210	Feb 2017	$2,918,900	May 2017	$10,434,030	$22,258,240
FY18	Aug 2017	$8,085,900	Nov 2017	$10,311,545	Feb 2018	$1,377,800	May 2018	$1,909,730	$21,684,975
FY19	Aug 2018	$4,107,370	Nov 2018	$12,150,449	Feb 2019	$19,027,200	May 2019	$11,067,748	$46,352,767
FY20	Aug 2019	$14,287,100	Nov 2019	$10,990,840	Feb 2020	$9,635,048	May 2020	$5,454,250	$40,367,238
FY21	Aug 2020	$6,087,196	Nov 2020	$9,789,250	Feb 2021	$9,642,573	May 2021	$11,878,316	$37,397,335
FY22	Aug 2021	$5,582,842	Nov 2021	$7,692,520	Feb 2022	$4,149,000	May 2022	$13,903,765	$31,328,127
FY23	Aug 2022	$4,897,221	Nov 2022	$4,024,558	Feb 2023	$4,076,134	May 2023	$8,736,800	$21,734,713
Total		$127,063,182		$121,910,440		$124,580,097		$157,947,592	$531,512,129

MWRA funding is provided to a community following execution of a standard financial assistance 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 project construction, MWRA staff perform site visits to document sewer rehabilitation progress.

Program Goals

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

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-nine 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:	$ 51.8	$ 10.9	$ 62.7 (12%)
Design:	17.4	5.8	23.2 (4%)
Construction:	313.5	107.9	421.4 (79%)
Eng. Services During Const.:	19.7	4.5	24.2 (5%)
TOTAL	$ 402.4 (76%)	$ 129.1 (24%)	$ 531.5 (100%)

Program Results

The I/I Local Financial Assistance Program began in May 1993. Through FY23, a total of 664 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's grant/loan program. During FY23, MWRA distributed a total of $21.7 million in grants and loans to member communities to help fund 18 local I/I reduction projects (see Section Pages 4-10 to 4-42 for community project details). Cumulative results for the program are summarized below.

Results for all projects (FY93 through FY23) for planning/inspection include the following:

- 2,486 miles of sewer TV inspected
- 1,716 miles of sewer flow isolated
- 1,489 miles of sewer smoke tested
- 68,204 sewer manholes inspected
- 79,232 buildings inspected.

Results for all projects (FY93 through FY23) targeting infiltration reduction include the following:

- 83 miles sewer replaced
- 341 miles sewer CIPP lined
- 192 miles sewer tested/chemically sealed
- 3,372 sewer spot repairs
- 19,035 service connection repairs
- 4.8 miles underdrains sealed.

Results for all projects (FY93 through FY23) targeting inflow reduction include the following:

- 1,208 catch basins disconnected
- 49 miles of new or replaced storm drains
- 24,067 manholes rehabilitated/sealed
- 4,022 manhole covers replaced or inflow seals installed
- 551 sump pumps redirected
- 5,839 downspouts/area drains disconnected.

Stormwater and Infiltration/Inflow Impacts to the Collection System

Wastewater discharged by member sewer communities to MWRA is influenced by seasonal and wet-weather conditions related to stormwater in combined sewer systems, groundwater infiltration, and stormwater and tidal inflow. Infiltration/Inflow (I/I) is extraneous water that enters all wastewater collection systems through a variety of sources.

Infiltration into a Sanitary Sewer

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes/manholes or deteriorated joints. Typically, many sewer pipes and sewer service laterals are below the surrounding groundwater table. Therefore, leakage into the sewer (infiltration) is a broad problem that is difficult and expensive to identify and reduce.

Inflow is extraneous flow entering the collection system through point sources and may be directly related to storm water run-off from sources such as roof leaders, yard and area drains, basement sump pumps, ponded manhole covers, cross connections from storm drains or catch basins, leaking tide gates, etc. Inflow causes a rapid increase in wastewater flow that occurs during and continuing after storms and extreme high tides. The volume of inflow entering a collection system typically depends on the magnitude and duration of rainfall, as well as related impacts from snowmelt, flooding, and storm surge.

Inflow into a Sewer Manhole

Stormwater in Combined Sewers is, by design, collected in the combined sewer system to be transported to a downstream treatment facility. Additional system capacity is available via combined sewer overflow (CSO) storage facilities and outfalls that may be active during rainfall events.

Regional Wastewater Flow Trends

Wastewater Flow Graph 1 (page 4-7) provides long-term regional flow data for the Deer Island Treatment Plant collection system and annual rainfall. The long-term average daily flow for the total system is about 349 mgd (last 34 years from 1989-2022) and the average annual rainfall is 43.3 inches (Boston Logan Airport Data). Wastewater Flow Graph 2 (page 4-8) shows the five-year running averages (flow and rainfall) as a means of smoothing the annual variability in the long-term data displayed in Wastewater Flow Graph 1. The five-year running average daily flow has declined from approximately 391 mgd (in the five year period beginning in 1989) to approximately 324 mgd (in the most recent 5-year period), a reduction of 67 mgd or 17% of wastewater flow tributary to the Deer Island Treatment Plant.

During dry summer months, total system minimum flows drop to as low as 220 mgd. Few problems exist within local and regional sewer systems during dry weather or as a result of small and medium storm events. In contrast, peak wet-weather flow, during occasional periods of significant rainfall, exceeds the 1,270 mgd plant capacity, more than 3.5 times the average flow due to the influence of combined sewer flow, as well as, infiltration and inflow. The collection system has additional capacity available at combined sewer overflow (CSO) storage facilities and outfalls. Extreme storm events that occur during periods of high groundwater, may cause sewer system surcharging and sanitary sewer overflows (SSOs).

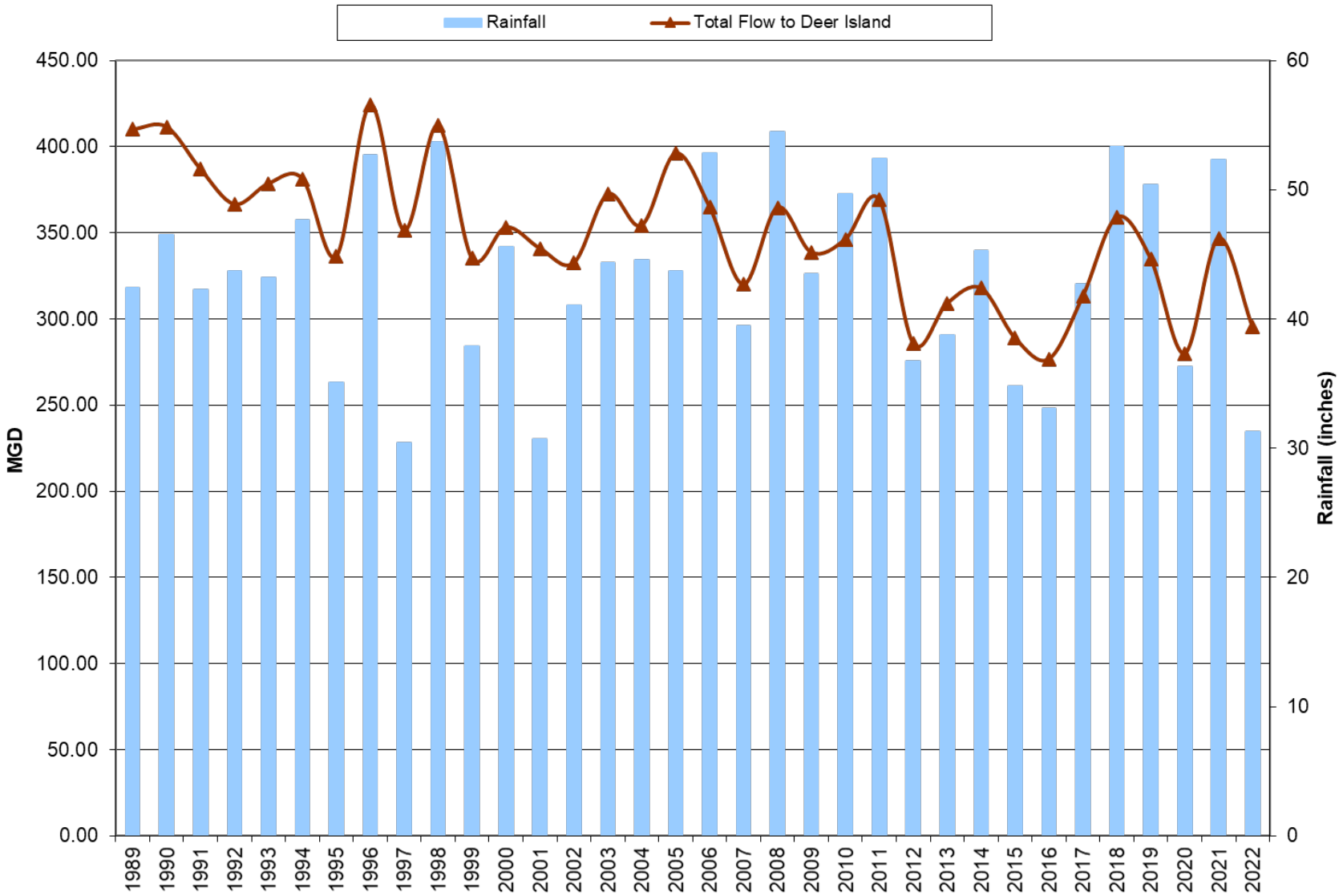
Over the last five years (2018-2022), MWRA's average daily flow of 323 mgd has been about 7% below the long-term average of 349 mgd. The five-year average rainfall of 44.4 inches is consistent with the long-term average of 43.3 inches.

The estimated average daily flow reduction associated with completed local I/I reduction projects that have received MWRA financial assistance is about 101 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. The estimated I/I reduction represents groundwater and stormwater that no longer enter the collection system at the point of sewer repair.

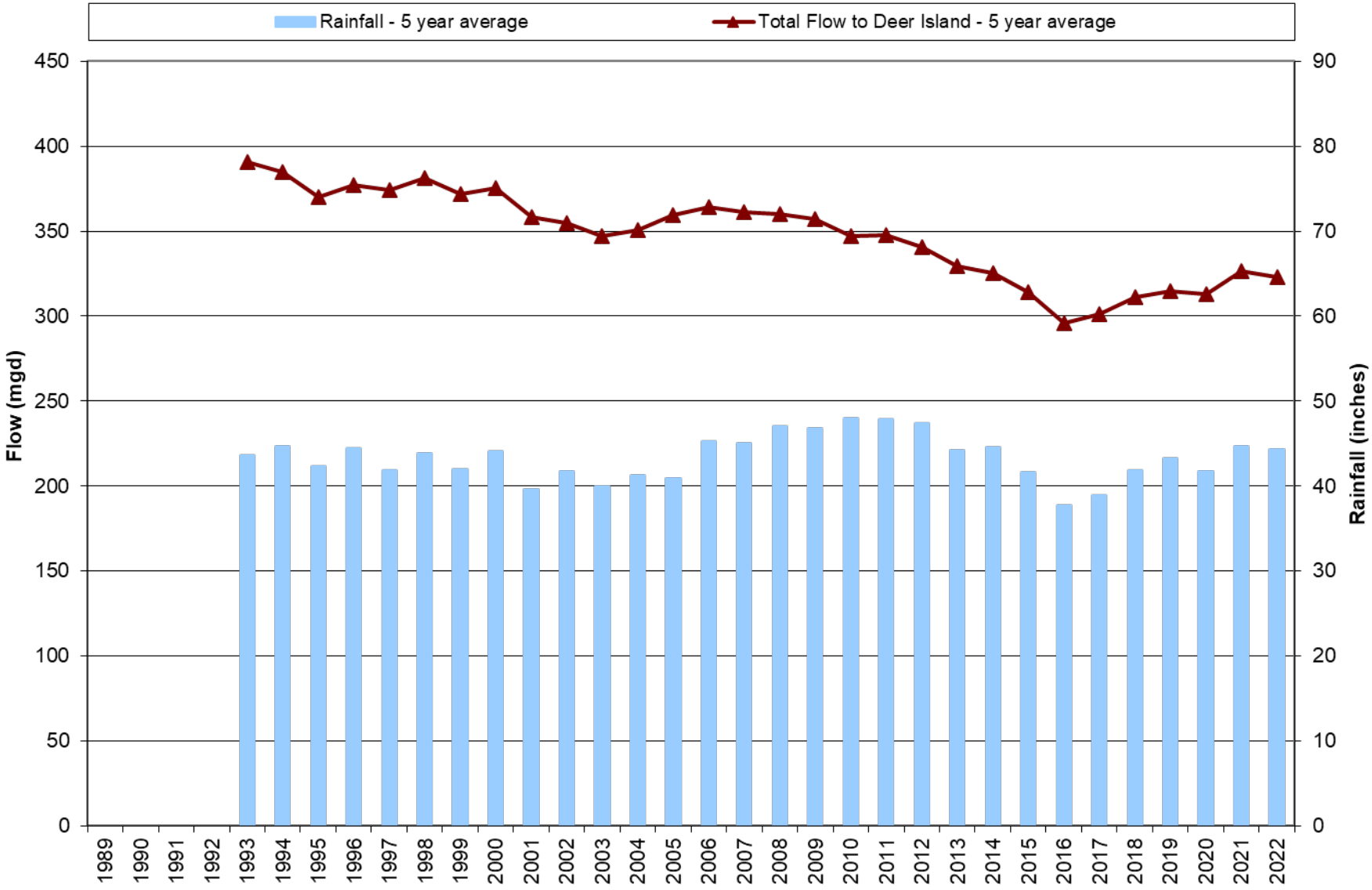
Regional wastewater flow trends are influenced by many factors, including:

- MWRA's financial assistance for local I/I reduction and sewer rehabilitation projects provide gradual improvements to the regional collection system by reducing I/I and stormwater sources. However, each year the regional collection system gets older and continues to deteriorate, which increases I/I;
- Sewer capacity gained by elimination of I/I in one subsystem may allow additional I/I to enter the collection system at a different location (known as infiltration migration), resulting in less net flow reduction at the end of the collection system;
- CSO separation projects reduce stormwater tributary to the combined sewer system leading to decreased flows. However, MWRA's pumping and interceptor relief upgrades, as well as CSO optimization projects, are intended to maximize sewer flow to the treatment plant leading to increased flows;
- 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 are dwarfed by regional flow fluctuations; and,
- Over the last 20 years, the decline in per capita indoor water use within the MWRA service area could account for about 20 mgd in wastewater flow reduction after the increase in wastewater flow from increased sewered population is accounted for.

Wastewater Flow Graph 1
MWRA Long-Term Regional Flow Data
NOAA Annual Rainfall at Logan Airport



Wastewater Flow Graph 2
MWRA Long-Term Regional Flow Data
5-year Running Averages
5 year running NOAA Rainfall Average at Logan Airport



Community Projects Funded During FY23

During FY23, MWRA distributed a total of $21.7 million in grants and loans to member communities to help fund 18 local I/I reduction projects. Community projects are funded quarterly under the MWRA I/I Local Financial Assistance Program. Attached (following this page) are funding summaries for the four quarterly funding distributions during FY23:

- First Quarter FY23 - August 2022 Funding Cycle with $4,897,221 distributed to four communities: Holbrook, Quincy, Revere and Weymouth (see Section Pages 4-10 to 4-19);

- Second Quarter FY23 - November 2022 Funding Cycle with $4,024,558 distributed to three communities: Bedford, Brookline and Watertown; (see Section Pages 4-20 to 4-24);

- Third Quarter FY23 - February 2023 Funding Cycle with $4,076,134 distributed to five communities: Arlington, Braintree (2 projects), Stoughton, Walpole and Weymouth (see Section Pages 4-25 to 4-34); and

- Fourth Quarter FY23 - May 2023 Funding Cycle with $8,736,800 distributed to five communities: Boston, Burlington, Melrose, Newton and Quincy (see Section Pages 4-35 to 4-42).

MWRA I/I Local Financial Assistance Program Funding Summary

August 2022 Funding Cycle

Community	Funding Allocation
Holbrook	$ 442,221
Quincy	$ 2,875,000
Revere	$ 500,000
Weymouth	$ 1,080,000
Total	$ 4,897,221

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
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TOWN OF HOLBROOK, MASSACHUSETTS
ANNUAL I/I CONTROL PLAN - YEAR 1
MWRA PROJECT NO. WRA-P11-16-3-1193

SCOPE OF SERVICES

The purpose of this project is to identify and quantify community sub-areas that contribute excessive I/I and evaluate sewer system rehabilitation options. The Annual I/I Control Plan (Year 1) will include I/I identification planning, investigation and reporting. Project work includes:

Task 1. Design Flow Metering (I/I) Program: This task will include design and development of a work plan that outlines the I/I metering program to collect wastewater flow, rainfall and groundwater data.

Task 2. Flow Metering and Field Investigations: Task 2 will implement the field investigation work plan developed under Task 1. The Town's engineering consultant shall retain and oversee a field services specialty subcontractor to install, calibrate, maintain and monitor field instrumentation equipment. The quantity of the instrumentation and duration of their installation shall be based upon the MassDEP I/I Analysis Guidelines. The field program shall be installed for up to ten (10) weeks and will be implemented Town-wide in approximately eleven (11) sewer subareas. A field investigation data summary will be provided by the subcontractor. Project work will also include a Town-wide groundwater analysis to identify high groundwater/low elevation areas that may contribute private inflow and a limited sewer manhole inspection program (approximately 200 manhole inspections).

Task 3. Data Analysis: This task will involve quantitative analysis of data collected from the flow metering and field investigation program and will include quantifying the rate of infiltration and volume of inflow into each of the metered sewer subareas.

Task 4. I/I Analysis Report and Recommendations: Task 4 will develop a report and recommendations from the results of the overall I/I study. The report will include recommendations for further field investigations to isolate and identify specific I/I sources.

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 Holbrook and Weston and Sampson Engineers, Inc. and the approved MWRA I/I Local Financial Assistance Project Application (received July 6, 2022).

Total project cost is estimated at $442,221. Eligible MWRA I/I Local Financial Assistance is $442,221.

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TOWN OF HOLBROOK, MASSACHUSETTS
ANNUAL I/I CONTROL PLAN - YEAR 1
MWRA PROJECT NO. WRA-P11-16-3-1193

PROJECT SCHEDULE

Item	Start Date	Completion Date
I/I Investigation	September 2022	June 2023
Data Analysis	July 2023	August 2023
Summary Report	September 2023	December 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
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CITY OF QUINCY, MASSACHUSETTS

SSES AREAS 1&2 SUPPLEMENT / SSES AREA 3: STUDIES
I/I REHABILITATION: DESIGN & CONSTRUCTION

MWRA PROJECT NO. WRA-P11-26-3-1190

SCOPE OF SERVICES

Project Type: The City of Quincy will use MWRA I/I Assistance Program funds to execute several related sewer projects, all stemming from the June 9, 2021 Consent Decree between the US Department of Justice (USDOJ), US EPA, and the City of Quincy. All projects are directly related to identifying and removing infiltration and inflow from the sewer system, recognizing and remedying areas of potential but currently unidentified exfiltration, and maintaining compliance with the USEPA, MassDEP and City's programs. All projects are intended to systematically rehabilitate pipelines and manholes within the City for the protection of public health and safety, improvements to the environment and/or enhancements to sewer system capacity and operation. The proposed projects include:

A. Sewer System Evaluation Survey (SSES) Supplement described in the Consent Decree in paragraph VI.A.12 for portions of Quincy identified as having possible water quality impacts based upon the City and DCR testing of MS4 outfalls. This SSES Supplement is due in November 30, 2022. This supplement is an abbreviated analysis to fill in the previous SSES work performed prior to 2018 (going back to 2011 data where applicable) and to outline the remaining three SSESs to be completed for Area 3 (in 2025), Area 4 (in 2028) and Area 5(in 2031).

B. New SSES for "Area 3" which represents a costal portion of Quincy not yet evaluated in SSES Area 1 and Area 2. This SSES is described in Consent Decree Paragraphs VI.A.13 & 14 for portions of Quincy identified as having possible water quality impacts based upon the City and DCR testing of MS4 outfalls. The SSES will evaluate about 20% of the City's sewer system, or 40 miles of sewers, in accordance with the MassDEP I/I Evaluation Guidelines and the USEPA's requirements in the Consent Decree.

C. Engineering Design, during the Summer/Fall 2022, for sewer improvement projects to be constructed in Summer 2023. The City has been awarded a $7,128,700.00 low interest Massachusetts State Revolving Fund (SRF) loan for financing the sewer improvement construction in 2023. This project is the design phase of the $7.12M sewer improvements construction. This project will end with the public bid of the $7.12M in work in early 2023. At that point the SRF program will fund the remaining work.

D. Sewer Metering. The USA EPA is requiring a plan and actions by the City to monitor areas in the community where the City Hydraulic Model for the sewer system forecasts insufficient freeboard in manholes. This requirement is detailed in the US EPA Letter dated December 16, 2021. This sewer capacity monitoring will be done in two segments:

· Level monitors in select manholes identified by the US EPA [expected to be seven (7) sites] throughout the City for freeboard monitoring.

· City-wide sewer flow meter installations for hydraulic model calibration and refinement of the Area 4 and Area 5 boundaries.

E. Hydraulic Model Calibration and Refinements shall be performed to advance the City's InfoWorks Hydraulic Model to include more detail on the independence on the MWRA's five pumping stations which impact Quincy's sewer flows, and to evaluate input from the MWRA's master sewer flow meters (QU-1 at Quincy Pump Station / QU-2C Adams Street @ Furnace Brook / QU-4 at Squantum Pump Station / QU-5C, Braintree-Weymouth Pump Station / QU-6C at Quincy Point Pump Station / QU-7C at Fort Square Pump Station.). Project work will include, but not be limited to, the following:

· Review existing information and documentation related to the development and the calibration of the current sewer system hydraulic model.

· Coordinate with MWRA's modeling staff to confirm and validate the reference data used for the City's model to date. Request boundary conditions for various storm and tidal events as outputs from the MWRA's model.

· Review and update the piping network within the model using available GIS and limited field investigations,

· Evaluate the flow metering program and calibrate the updated model.

· Model and re-evaluate various storm event scenarios required by the US EPA per the Consent Decree.

· Document the results of the model scenarios in a technical memorandum, including findings and recommendations, for use with the US EPA.

Project Objectives: The high-level goal of the proposed work is to rehabilitate aging sewer pipe in the City of Quincy in order to reduce the infiltration and inflow (I/I) and prevent possible, but currently unidentified, exfiltration that contributes to water quality issues. Over the years, sewer investigation efforts have identified areas with I/I sources estimated to be 50% more than the drinking water consumed daily. The City's NS4 and IDDE investigations have identified problem and high priority catchments, both of which are caused by the City's aging sewer system according to the US EPA.

The City completed SSES reports in 2018 and 2021 for about 40% of the City. The community has completed a Hydraulic Sewer Model and Risk Analysis, which produced a City-wide consequence of failure (CoF) map and a likelihood of failure (LoF) analysis. These investigative analyses have led to a rolling prioritization of future investigation and sewer rehabilitation work. The objective of these projects is to continue the momentum over the past decade and specially to enhance the programmatic steps to improve the environment and operate an efficient sewer system.

Project Locations: The proposed project locations are:

A. Sewer System Evaluation Survey (SSES) Supplement for "SSES Area 1 and Area 2, as generally described in Consent Decree Paragraph VI.A.12.

B. New SSES for "Area 3," as described in Consent Decree Paragraphs VI.A.13 & 14.

C. Specific Sewers currently identified in previous SSES and MS4 / IDDE work are the next priorities for Engineering Design. The construction of which (Summer 2023) will be funded via the aforementioned $7.12M SRF award.

D. Sewer Metering and Level Monitors to be deployed throughout the City at sewer locations to represent areas where US EPA requires model calibration.

E. Hydraulic Model Calibration and Refinements shall be City-wide.

Phased Program: The City addresses their sewer system with an array of "Phase Programs" which overlap and inter-connect. In 2009, the City initiated a focused plan to address the sewers with the highest I/I, develop a schedule for rehabilitation of leaking pipe and structures, address water quality issues via the MS4 program, and programmatically remove I/I from the system via a rolling capital improvement program. In 2018 negotiations with the US EPA refined that annual rolling capital improvement program, and on June 9, 2021, it was formalized in a Consent Decree. The projects funded herein, are all part of a 15-year "phased" Consent Decree to be complete in 2035. The overlapping and interconnected phase programs include:

· Five (5) SSES Reports, each evaluating approximately 20% of the City's sewer system. Two (2) SSESs have been completed and the third is being funded herein. SSES 4 and SSES 5 must be completed by 2028 and 2031 respectively.

· Capacity Management, Operations and Maintenance (CMOM) programs include a phased execution of a CMOM Self Assessment, CMOM Program Document and CMOM Corrective Action Plan.

· MS4 Annual effort and five year NOI for the stormwater collection system follow the US EPA's phased program for the systematic evaluation and remedy of the stormwater system. The City'sMS4 and IDDE efforts will heavily influence sewer repair priorities.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Engineering Services Agreement By and Between the City of Quincy and Granite City Partners, LLC and the approved MWRA I/I Local Financial Assistance Project Application received April 14, 2022.

Total project cost is estimated at $2,875,000 (SSES Areas 1&2 Supplement Cost = $100,000 / SSES Area 3 Cost = $1,800,000 / Engineering Design & Construction Cost = $500,000 / Sewer Flow & Analysis Cost = $361,000 / Hydraulic Model Calibration & Refinements Cost = $114,000). Eligible MWRA I/I Local Financial Assistance is $2,875,000. As a result of the above work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

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CITY OF QUINCY, MASSACHUSETTS

SSES AREAS 1&2 SUPPLEMENT / SSES AREA 3: STUDIES
I/I REHABILITATION: DESIGN & CONSTRUCTION

MWRA PROJECT NO. WRA-P11-26-3-1190

PROJECT SCHEDULE

Item	Start Date	Completion Date
SSES Areas 1&2 Supplement	May 2022	December 2022
SSES Area 3	May 2022	September 2023
I/I Rehabilitation Design	May 2022	October 2022
I/I Rehabilitation	December 2022	December 2023
Sewer Metering	July 2022	December 2022
Hydraulic Model Calibration and Refinements	August 2022	December 2022

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
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CITY OF REVERE, MASSACHUSETTS
PHASE 13 DESIGN OF RECOMMENDED SEWER REAHABILTIAITONS
MWRA PROJECT NO. WRA-P11-29-2-1196

SCOPE OF SERVICES

The scope of work for this project will include the investigation and design of several projects, all of which have been developed based on recommendations from previous SSES-type investigations that are performed annually in the City. The City is currently in the 13th year of its phased construction program. The designs that will be performed under this project are part of the overall Program Management Contract with CDM Smith. The Program Management Contract includes activities that are both eligible and ineligible through the MWRA I/I Program. Project ineligible items will be funded through the City's Water and Sewer Enterprise Fund.

The eligible MWRA I/I portions of the project will include the following activities:

Design of Phase 13 CIPP Lining: This project will involve the design of the recommended sewer rehabilitations which will include, but not be limited to: cured-in-place pipe lining of approximately 30,000 LF of sewer; spot repairs; excavation and replacement of 100 LF of sewer; rehabilitation of approximately 175 sewer manholes; and service lateral lining of approximately 250 sewer services. The majority of this project will be performed in Revere Sewer Subarea FM-4 and other miscellaneous areas of the City which were not able to be included in the previous projects.

Design of Public and Private Inflow Removal: This project will involve redirecting approximately 100 sources of both public (catch basins and storm-drain cross connections) and private sources (roof drains, yard drains, driveway drains, sump pumps, etc.) of inflow from the sewer system to the storm drain. In order to adequately redirect the inflow sources from the sewer to the storm drain, additional drainage piping, manholes, and catch basins may need to be constructed. This project will be City-wide, and will address a variety of inflow types.

Flat Roof Inflow Source Removal: This project will involve redirecting approximately 40 sources of private inflow (primarily flat roofs that were identified during previous studies) from the sewer system to the storm drain. In order to adequately redirect the inflow sources from the sewer to the storm drain, additional drainage piping, manholes, and catch basins may need to be constructed. This project will be City-wide.

The resultant construction associated with the design of these I/I reduction projects will be funded by the Massachusetts State Revolving Fund (SRF) Loan Program. The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Engineering Services By and Between the City of Revere and CDM Smith and the approved MWRA I/I Local Financial Assistance Project Application received July 27, 2022. Overall project costs are estimated at $900,000. Eligible MWRA I/I Local Financial Assistance (Phase 8) is $500,000. Estimated quantities for I/I removal will be determined after completion of design work.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
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CITY OF REVERE, MASSACHUSETTS
PHASE 13 DESIGN OF RECOMMENDED SEWER REAHABILTIAITONS
MWRA PROJECT NO. WRA-P11-29-2-1196

PROJECT SCHEDULE

Item	Start Date	Completion Date
CIPP Lining Design	Fall 2022	Spring 2023
Public/Private Inflow Removal Design	Winter 2022	Summer 2023
Flat Roof Inflow Removal Design	Winter 2022	Summer 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
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TOWN OF WEYMOUTH, MASSACHUSETTS
YEARS 9 & 10 INFILTRATION REHABILITATION - CONSTRUCTION
MWRA PROJECT NO. WRA-P11-39-3-1195

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.

Year 9 & 10 Infiltration Rehabilitation - Construction (Estimated Cost = $1,080,000):

Project work will include approximately: 11,902 LF feet of cleaning and inspecting of 8 to 15-inch sewer; testing 2775 LF of 8 to 15-inch sewer; sealing 1388 LF of 8 to 15-inch sewer; 4051 LF of light cleaning and CCTV inspection of 6 to 30-inch sewer; 1567 LF of heavy cleaning and CCTV inspection of 8 to 12-inch sewer; installation of 10,663 LF of cured-in-place 8 and 12-inch pipe and structural cured-in-place 8-inch pipe; installation of 82 LF of 8 to 15-inch short liners and structural short liners; testing and grouting of 31 service laterals; cutting and grouting of three (3) service laterals; installing a CIP lateral liner at one (1) location; open cut point repairs at three (3) locations; manhole cementitious lining at 45 locations; manhole repairs at 22 locations; replacing 21 manhole frames & covers; and installing eight (8) manhole inflow dishes.

Total project cost is estimated at $1,080,000 (Construction: $950,000 / Construction Services: $130,000. Eligible MWRA I/I Local Financial Assistance is $1,080,000. Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received July 27, 2022) and the Agreements For Engineering Services By And Between The Town of Weymouth, MA And Weston & Sampson Engineers, Inc. As a result of the above work, an estimated 0.18 mgd of peak infiltration will be removed from the collection system upon contract completion.

PROJECT SCHEDULE

Item	Start Date	Completion Date
Years 9 & 10 Infiltration Rehabilitation:		
Design	March 2022	May 2022
Bid and Award	August 2022	September 2022
Infiltration Construction	October 2022	January 2023
Warranty Retesting	April 2023	May 2023

MWRA I/I Local Financial Assistance Program Funding Summary

November 2022 Funding Cycle

Community	Funding Allocation
Bedford	$ 265,558
Brookline	$ 2,229,000
Watertown	$ 1,530,000
Total	$ 4,024,558

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-03-3-1402

TOWN OF BEDFORD

PHASE #6 SMOKE TESTING /
SEWER AND MANHOLE REHABILITATION: DESIGN & CONSTRUCTION

SCOPE OF SERVICES

The purpose of this project is to reduce I/I through identifying, designing and rehabilitating sewer system infrastructure in specific community sewer areas. The project is part of an ongoing effort by the Town of Bedford to reduce infiltration and inflow. This project is part of a multi-phased sewer rehabilitation program for the Town and will include, but not be limited to, the following:

The Phase #6 Smoke Testing project will identify sources of public and private inflow such as catch basins, driveway drains, roof leaders, and other sources improperly connected to the sanitary sewer system.

The Phase #6 Sewer Rehabilitation Design project will create documents suitable for public bidding to repair structural defects and remove infiltration and inflow from the sanitary sewer system.

The Phase #6 Sewer Rehabilitation Construction project will repair structural defects and remove I/I from the sanitary sewer system as identified in the Phase #6 Sewer Rehabilitation Design project.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement for Engineering Services By and Between the Town of Bedford and Weston & Sampson Engineers, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received July 9, 2021.

Total project cost is estimated at $669,500. Eligible MWRA I/I Local Financial Assistance is $265,558. An I/I reduction estimate will be provided upon completion of the Phase #6 SSES and Design Projects.

PROJECT SCHEDULE

Description of Work	Start Date	Completion Date
Smoke Testing	September 2021	January 2022
Design, Bid, & Award	November 2021	March 2022
Rehabilitation Construction	April 2022	May 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-07-3-1403

TOWN OF BROOKLINE

DESIGN & CONSTRUCTION OF RECOMMENDED SEWER REHABILITATIONS IN SEWER SUBAREA NI-12

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. This project includes a combination of planning, investigation, design, and construction. In 2018, Brookline initiated a sewer system capital improvement program with the goal of rehabilitating all non-CIPP lined sanitary sewer mains and their associated manholes throughout Town from the period of 2018-2026 through sixteen (16) capital improvement projects.

The planning and investigation work includes, but is not limited to, the following: review of the closed-circuit television (CCTV) inspection for all sewer mains within Sewer Subarea NI-12; and field inspections of all sewer manholes within this subarea.

The design component of the project involves the preparation of biddable construction documents based on the planning and investigation work completed. Separate construction contracts will be administered for the CIPP lining of sewers in Sewer Subarea NI-12 and sewer manhole rehabilitation in Sewer Subarea NI-12.

The construction component of the project involves the construction of measures outlined in the biddable construction documents and construction administration. An estimate of the recommended sewer rehabilitations will include, but is not limited to:

- Installing approximately 21,150 LF of cured-in-place pipe (CIPP) lining;
- Performing heavy cleaning of approximately 3225 LF of sewer main;
- Performing cleaning and CCTV inspection of 3225 LF of sewer main;
- Installing epoxy lining on approximately 2200 VF of sewer manholes;
- Installing approximately 150 gallons of injection grout;
- Reconstruction of approximately 15 sewer manhole benches/inverts; and
- Adjusting and/or replacing 10 sewer manhole frame and covers.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Engineering Services By and Between the Town of Brookline and BETA Group, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received October 26, 2022. The total project cost is estimated at $2,679,590. Eligible MWRA I/I Local Financial Assistance is $2,229,000 (Planning/Design = $174,590; Construction = $2,054,410). At the completion of this project, it is estimated that 0.03 mgd of annual average infiltration will be removed from the collection system.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-07-3-1403

TOWN OF BROOKLINE

DESIGN & CONSTRUCTION OF RECOMMENDED SEWER REHABILITATIONS IN SEWER SUBAREA NI-12

PROJECT SCHEDULE

General Description of Work Performed	Start Date	Completion Date
I/I Planning & Investigations	December 2022	March 2023
Design of Recommended Sewer Rehabilitations	December 2022	March 2023
Construction of Sewer Rehabilitations	May 2023	October 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-36-3-1401

CITY OF WATERTOWN

CIP PROJECT 2 - SEWER REHABILITATION CONSTRUCTION

SCOPE OF SERVICES

The purpose of this project is to construct rehabilitations identified during sanitary sewer evaluation surveys completed in the CIP Project Areas 2, 3 and 4. The CIP Project 2 construction will eliminate infiltration and inflow to the sanitary sewer system and also eliminate cross connections between sanitary and stormwater systems.

This project is part of the city's sanitary sewer capital improvement plan. The construction project will be the fourth phase of rehabilitation construction. Using the information collected in the CIP Projects 2, 3 and 4 investigations, cost-effective rehabilitation design will be performed. In addition, specifications and plans (to remove excessive I/I identified during the investigations) will be prepared for public bidding. CIP Project 2 rehabilitation construction is scheduled to be bid over Winter 2022.

The total project cost is estimated at $1,530,000. Eligible MWRA I/I Local Financial Assistance is $1,530,000 (Rehabilitation Construction = $1,530,000).

Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received September 6, 2022) and the Agreement For Engineering Services By and Between the City of Watertown, MA and Weston & Sampson Engineers, Inc. At the completion of this sewer rehabilitation project, an estimated 0.07 mgd of peak infiltration and inflow will be removed from the sewer collection system.

PROJECT SCHEDULE

Description of Work	Start Date	Completion Date
Bid & Award	Winter 2022	Spring 2023
Rehabilitation Construction	Summer 2023	Fall 2023

MWRA I/I Local Financial Assistance Program Funding Summary

February 2023 Funding Cycle

Community	Funding Allocation
Arlington	$ 760,000
Braintree	$ 1,661,400
Stoughton	$ 1,060,000
Walpole	$ 316,050
Weymouth	$ 278,684
Total	$ 4,076,134

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF ARLINGTON
PHASE #15 SANITARY SEWER REHABILITATION CONSTRUCTION AND
PHASE #13 POST-CONSTRUCTION FLOW EVALUATION
MWRA PROJECT NO. WRA-P14-01-3-1404

SCOPE OF SERVICES

The Town of Arlington requests funding for the following projects which are part of the Town's Sewer System Capital Improvement Program, which is designed to reduce Inflow and Infiltration. Each phase of the Program includes the most cost-effective repairs remaining within the Town. The work included in the Phase #15 Design and Rehabilitation Construction projects (Task 1 & 2) will be located in various portions of Investigation Area #1 through Area #11.

Task 1 – Phase #15 Design, Bid, & Award:
The goal of the Phase #15 Design, Bid & Award project is to design the removal of cost-effective sources of infiltration and inflow (I/I) and produce contract documents suitable for public bidding in the investigation areas named above.

Task 2 – Phase #15 Rehabilitation Construction & Construction Services:
The goal of the Phase #15 Construction project is to rehabilitate and repair sewer infrastructure and remove sources of I/I identified during previous Sewer System Investigation Projects and included in the Phase #15 Design, Bid & Award project, within the investigation areas stated above.

Task 3 – Phase #13 Post Construction Flow Evaluation:
The Phase #13 Post-Construction Flow Evaluation will compare pre- and post-rehabilitation ground water levels and flow isolation data to estimate the quantity of peak infiltration removed from the sewer system from the Phase #13 Construction project. A draft & Final Report will be prepared evaluating the pre- and post-construction flows.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Engineering Services By and Between the Town of Arlington and Weston & Sampson Engineers, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received January 13, 2023. Total project cost is estimated at $760,000. Eligible MWRA I/I Local Financial Assistance is $760,000 (Eligible Phase #15 Design, Bid, & Award Cost = $95,000 / Eligible Phase #15 Construction Cost = $520,000 / Eligible Phase #15 Construction Services Cost = $130,000 / Eligible Phase #13 Post Construction Flow Evaluation Cost =$15,000). Upon contract completion, this work will result in an estimated removal of 0.06 mgd of peak I/I flows from the sanitary sewer system.

PROJECT SCHEDULE

Description of Work	Start Date	Completion Date
Phase #15 Design, Bid & Award	January 2023	June 2023
Phase #15 Construction Rehabilitation	August 2023	November 2023
Phase #15 Construction Warranty Retest	May 2024	June 2024
Phase #13 Post-Construction Flow Evaluation	June 2023	July 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A-1
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF BRAINTREE, MASSACHUSETTS
I/I REHABILITATION PROGRAM - YEAR 10 (FY22)
MWRA PROJECT NO. WRA-P14-06-3-1406

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community sewer 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:

Year 10 (FY22) I/I Rehabilitation – Design / Construction / Construction Services:

Construction plans and specifications (to remove cost-effective and value-effective I/I identified during the Year 10 I/I Investigation) will be developed and submitted, followed by rehabilitation construction. Project work will be undertaken within Braintree Sewer Subareas C1 / C2 / C4 / E1 / E2 and will include: cleaning, inspection, testing and sealing of joints in approximately 3500 LF of sewers; installing cured-in-place pipe in approximately 7200 LF of sewers; installing short liners in sections of sewer at six (6) locations; installing lateral liners at seven (7) locations; cutting five (5) intruding laterals at the connection to the main line; testing and grouting 15 laterals at the connection to the main line; performing an open cut point repair at one (1) location; manhole cementitious lining in 40 sewer manholes; installing six (6) sewer manhole inflow dishes; replacing two (2) sewer manhole frame and covers; raising four (4) manhole frame and covers 2-feet above grade; cleaning and television inspection of 375 LF of sewers not previously television inspected; and performing top-side visual inspection of 20 sewer manholes.

Total project cost is estimated at $750,000 (Design and Bid & Award = $80,000 / Construction = $550,000 / Construction Services = $120,000). Eligible MWRA I/I Local Financial Assistance is $681,400 (Program Phase 12 Distribution).

Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received January 19, 2023) and the Agreement For Engineering Services By And Between The Town of Braintree, MA And Weston & Sampson Engineers, Inc. As a result of the above work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

PROJECT SCHEDULE

Item	Start Date	Completion Date
Year 10 (FY22) I/I Rehabilitation:		
Design	March 2023	June 2023
Bid and Award	July 2023	August 2023
Construction	October 2023	December 2023
Warranty Retesting	April 2024	May 2024

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A-2
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF BRAINTREE, MASSACHUSETTS
I/I REHABILITATION PROGRAM - YEAR 11 (FY23)
MWRA PROJECT NO. WRA-P14-06-3-1407

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community sewer 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:

Year 11 (FY23) I/I Rehabilitation – Investigation & Reporting / Design / Construction / Construction Services:

Investigation work will include: clean, CCTV inspect and record as many as 41,700 LF of sewer main in Braintree Sewer Subareas M1 / S2 / S3; review CCTV inspection videos (as many as 41,700 LF) to locate problem areas and I/I sources within manhole-to-manhole segments of the sewer main; flow isolate as many as 34,600 LF of sewer main in Subareas M1 / S2 / S3; perform as many as 450 topside sewer manhole inspections in Subareas HC1 / HC2 / HC3 / M1 / S2 / S3; and submit a letter report summarizing the results of this work, identifying those areas which appear to contribute excessive I/I, and provide detailed conclusions and recommendations (including a cost-effectiveness analysis for identified I/I sources and a transportation & treatment cost calculation).

Construction plans and specifications (to remove cost-effective and value-effective I/I identified during the above Year 11 I/I Investigation) will be developed and submitted, followed by rehabilitation construction. Project work will be undertaken within Braintree Sewer Subareas HC1 / HC2 / HC3 / M1 / S2 / S3 and will include: cleaning, inspection, testing and sealing of joints in approximately 3500 LF of sewers; installing cured-in-place pipe in approximately 7200 LF of sewers; installing short liners in sections of sewer at six (6) locations; installing lateral liners at seven (7) locations; cutting five (5) intruding laterals at the connection to the main line; testing and grouting 15 laterals at the connection to the main line; performing an open cut point repair at one (1) location; manhole cementitious lining in 40 sewer manholes; installing six (6) sewer manhole inflow dishes; replacing two (2) sewer manhole frame and covers; raising four (4) manhole frame and covers 2-feet above grade; cleaning and television inspection of 375 LF of sewers not previously television inspected; and performing top-side visual inspection of 20 sewer manholes.

Total project cost is estimated at $980,000 (Investigation & Reporting = $230,000 / Design and Bid & Award = $80,000 / Construction = $550,000 / Construction Services = $120,000). Eligible MWRA I/I Local Financial Assistance is $980,000 (Program Phase 12 Distribution).

Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received January 19, 2023) and the Agreement For Engineering Services By And Between The Town of Braintree, MA And Weston & Sampson Engineers, Inc. As a result of the above work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B-2
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF BRAINTREE, MASSACHUSETTS
I/I REHABILITATION PROGRAM - YEAR 11 (FY23)
MWRA PROJECT NO. WRA-P14-06-3-1407

PROJECT SCHEDULE

Item	Start Date	Completion Date
Year 11 (FY23) I/I Investigation:		
Investigation	March 2023	May 2023
Review	September 2023	October 2023
Reporting	November 2023	February 2024
Year 11 (FY23) I/I Rehabilitation:		
Design	March 2024	May 2024
Bid and Award	July 2024	August 2024
Construction	October 2024	December 2024
Warranty Retesting	April 2025	May 2025

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF STOUGHTON, MASSACHUSETTS
YEARS 8 / 9 / 10 I/I REHABILITATION - DESIGN / CONSTRUCTION
YEAR 1 I/I INVESTIGATION - STUDY AND REPORTING
MWRA PROJECT NO. WRA-P14-32-3-1410

SCOPE OF SERVICES

The purpose of these projects 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:

Years 8 / 9 / 10 I/I Rehabilitation - Design / Construction / Construction Services: Design and construction of cost-effective / value-effective / recommended sewer rehabilitations and the performance of construction resident project representative services. Sewer rehabilitation work includes approximately: CCTV inspection of 12,600 LF of sewer; cleaning, inspecting, testing & sealing joints in 9000 LF of sewer; installing structural CIPP in 16,000 LF of sewer; installing 35 LF of structural short liners; performing open cut repairs at 10 locations; installing lateral liners at six (6) locations; inspecting 90 sewer manholes; performing sewer manhole cementitious lining at 58 locations; installing 20 sewer manhole inflow dishes; replacing 30 sewer manhole frames & covers; raising 10 sewer manhole frames & covers to grade; and rehabilitating 40 sewer manholes. (Estimated Design Cost and Construction Services Cost: $225,000 / Estimated Construction Cost: $625,000). The second round of the Town's ten-year Annual Sewer Program concludes with this rehabilitation project.

Year 1 I/I Investigation and Reporting: Infiltration investigation includes reviewing CCTV inspection videotapes of 50,000 LF of sewer and topside sewer manhole inspection of as many as 250 sewer manholes. Priority will be given to the following: (1) Sewers not inspected or rehabilitated within the past five years and tributary to the following sewer pump stations: Turnpike Street, Carson Drive, Hawes Way, Page Terrace, York Street, Royal Road, Beaver Brook and Ames Pond; and (2) Sewers not inspected or rehabilitated within the past 5 years and within 200 feet of the 100-Year Flood Zone. (Estimated Infiltration Investigation Services Cost = $125,000).

Inflow investigation includes smoke testing of approximately 93,000 LF of sewer tributary to the following sewer pump stations: Turnpike Street, Carson Drive, Hawes Way, Page Terrace, York Street, Royal Road, Beaver Brook and Ames Pond. Dye testing/flooding of suspect defects will also be performed to determine the connection to the sanitary sewer. (Estimated Inflow Investigation Services Cost = $85,000). Each above investigation will include the preparation of a letter report that details areas in which work was performed, summarizes work completed to date and includes recommendations, a cost-effectiveness analysis and prioritization analysis for rehabilitation of pipeline/manhole defects and I/I sources identified during this investigation.

The above work will be performed pursuant to the terms and conditions detailed within the Engineering Services Agreement By and Between the Town of Stoughton and Weston & Sampson Engineers, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received February 10, 2023. Total project cost is estimated at $1,060,000. Eligible MWRA I/I Local Financial Assistance is $1,060,000 (MWRA I/I Financial Assistance Phase 14 Allocation Limit). As a result of the above rehabilitation work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF STOUGHTON, MASSACHUSETTS
YEARS 8 / 9 / 10 I/I REHABILITATION - DESIGN / CONSTRUCTION
YEAR 1 I/I INVESTIGATION - STUDY AND REPORTING
MWRA PROJECT NO. WRA-P14-32-3-1410

PROJECT SCHEDULE

Item	Start Date	Completion Date
Years 8 / 9 / 10 I/I Rehabilitation		
Design / Design Review	Spring 2023	Summer 2023
Rehabilitation Construction	Summer 2023	Fall 2023
Warranty Retesting	Spring 2024	Spring 2024
Year 1 I/I Investigation		
Manhole / CCTV Inspection	Spring 2023	Spring 2023
Smoke Testing	Summer 2023	Summer 2023
Data Review / Letter Report	Fall 2023	Winter 2024

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF WALPOLE, MASSACHUSETTS
WASTEWATER CIP 1 INVESTIGATION - STUDY AND REPORTING
MWRA PROJECT NO. WRA-P14-34-1-1405

SCOPE OF SERVICES

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

Wastewater CIP 1 Investigation - Study and Reporting

The work proposed is part of a wastewater capital improvement plan. The project includes investigation and reporting. The CIP 1 Investigation will identify I/I within the Town's sewer system through flow isolation, CCTV sewer main inspection and topside sewer manhole inspection. The investigation will be performed in Walpole Sewer Subareas 11 and 14.

Investigation work will include the following: clean, CCTV inspect and record as many as 73,500 LF of sewer main in Subareas 11 and 14; review CCTV inspection videos (as many as 73,500 LF) to locate problem areas and I/I sources within manhole-to-manhole segments of the sewer main; flow isolate as many as 70,500 LF of sewer main in Subareas 11 and 14; perform as many as 400 topside sewer manhole inspections in Subareas 11 and 14; and submit a letter report summarizing the results of this work, identifying those areas which appear to contribute excessive I/I, and provide detailed conclusions and recommendations (including a cost-effectiveness analysis for identified I/I sources and a transportation & treatment cost calculation).

Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received January 19, 2023) and the Agreement For Engineering Services By And Between The Town of Walpole, MA And Weston & Sampson Engineers, Inc. Total project cost is estimated at $316,050. Eligible MWRA I/I Local Financial Assistance is $316,050 (MWRA Phase 12 Distribution).

PROJECT SCHEDULE

Item	Start Date	Completion Date
Investigation	March 2023	May 2023
Review	June 2023	October 2023
Reporting	November 2023	December 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF WEYMOUTH, MASSACHUSETTS
YEAR 11 (2023) I/I REHABILITATION – DESIGN / CONSTRUCTION SERVICES
YEAR 12 I/I INVESTIGATION – STUDY AND REPORTING
MWRA PROJECT NO. WRA-P14-39-2-1409

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:

Year 11 (2023) I/I Rehabilitation - Design / Construction Services (Estimated Cost = $220,000):

Project work will include the design of public sewer rehabilitations and replacements based on the results of the Town-Wide Sewer Investigation and Rehabilitation Program - Year Eleven Letter Report. The design of the Year 11 I/I Rehabilitations shall include approximately: 7400 LF of cleaning, inspecting, testing, and sealing of sewers; 4400 LF of light cleaning and television inspection; 2400 LF of heavy cleaning and television inspection; 7400 LF of cured-in-place pipe and structural cured-in-place pipe; installation of short liners and structural short liners at eight (8) locations; testing and grouting of 34 service laterals; installing lateral liners at five (5) locations; open cut point repair at four (4) locations; manhole cementitious lining at 52 locations; replacing one (1) sewer manhole frame & cover; repairing one (1) sewer manhole bench & invert; and installing 11 manhole inflow dishes. (Design Cost = $85,000 / Construction Services Cost = $135,000).

Town-Wide Sewer System Investigation Program - Year 12 (Estimated Cost = $310,000):

1. Flow isolate as much as 62,350 LF of 6 to 12-inch sewer in Subareas B-2 and D-1-2 to quantify infiltration amounts within manhole-to-manhole segments of sewer. The inspection will be conducted 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 64,720 LF of sewer in Subareas B-2 and D-1-2. 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 2023 when groundwater levels are typically at their highest.
3. Conduct topside physical survey of as many as 410 sewer manholes in Subareas B-2 and D-1-2 for defects and I/I sources. A written log will be furnished for each manhole inspected.
4. Prepare a letter report that details areas in which work was performed, summarizes work completed to date and includes 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.

Total project cost is estimated at $530,000. Eligible MWRA I/I Local Financial Assistance is $278,684. Project work will be performed pursuant to the terms and conditions detailed within the approved MWRA I/I Local Financial Assistance Project Application (received January 27, 2023) and the Agreements For Engineering Services By And Between The Town of Weymouth, MA And Weston & Sampson Engineers, Inc.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

TOWN OF WEYMOUTH, MASSACHUSETTS
YEAR 11 (2023) I/I REHABILITATION – DESIGN / CONSTRUCTION SERVICES
YEAR 12 I/I INVESTIGATION – STUDY AND REPORTING
MWRA PROJECT NO. WRA-P14-39-2-1409

PROJECT SCHEDULE

Item	Start Date	Completion Date
Year 11 (2023) I/I Rehabilitation – Design / Construction Services:		
Design	March 2023	May 2023
Bid and Award	June 2023	June 2023
Rehabilitation Construction	July 2023	December 2023
Town-Wide Sewer System Investigation Program - Year 12:		
Flow Isolation	March 2023	May 2023
TV Inspection	March 2023	May 2023
Manhole Inspection	March 2023	May 2023
Data Review / Letter Report	June 2023	November 2023

MWRA I/I Local Financial Assistance Program Funding Summary

May 2023 Funding Cycle

Community	Funding Allocation
Boston	$ 747,800
Burlington	$ 1,200,000
Melrose	$ 1,449,000
Newton	$ 4,340,000
Quincy	$ 1,000,000
Total	$ 8,736,800

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
MWRA PROJECT NO. WRA-P14-05-3-1412

BWSC JAMAICA PLAIN SEWER SYSTEM EVALUATION SURVEY
BWSC CONTRACT NO. 21-206-001

SCOPE OF SERVICES

The objective of this project is to conduct a Sewer System Evaluation Survey (SSES) to identify and locate undocumented sources of I/I in the wastewater collection system within the Jamaica Plain section of Boston.

Project work will include the review of existing documents provided by BWSC and obtained from other sources; preparation of a detailed SSES plan to identify specific sources of unidentified I/I in the wastewater collection system; implementation of the approved investigation plan and preparation of a comprehensive report stating the specific I/I sources. The final report will describe the investigation undertaken, present the conclusions of the investigation and make recommendations for the appropriate methods for I/I removal (with associated removal costs). The data collected and supporting documents, including maps and tables, will be included in the final report.

SSES Project Tasks (and associated Task cost) include:

1. Project Administration ($55,430);
2. Review of Existing Information ($23,097);
3. SSES Investigation Plan Development ($27,610);
4. SSES Plan Implementation ($554,327);
5. Data Analysis ($48,605); and
6. Final Report ($38,731).

The above work will be performed pursuant to the terms and conditions detailed within the Contract For Professional Services Agreement By and Between the Boston Water And Sewer Commission and Wright-Pierce (Contract No. 21-206-001) dated October 6, 2021 and the approved MWRA I/I Local Financial Assistance Project Application received April 12, 2023. Total project cost is estimated at $747,800. Eligible MWRA I/I Local Financial Assistance is $747,800.

PROJECT SCHEDULE

Item	Start Date	Completion Date
Project Administration	October 2021	December 2023
Review of Existing Data	October 2021	June 2022
Plan Development	July 2022	September 2022
Plan Implementation / Data Analysis	October 2022	June 2023
Final Report	July 2023	December 2023

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-08-3-1415

TOWN OF BURLINGTON
CIP PROJECT 10 AND 11 SEWER SYSTEM REHABILITATIONS:
DESIGN & CONSTRUCTION /
CIP PROJECT 12 & 13 SSES

SCOPE OF SERVICES

The purpose of these projects is to reduce I/I through rehabilitating sewer manholes and pipes in specific community sewer areas. The projects are part of the Town's Sewer Capital Improvement Program (CIP) and will include investigations, construction, and construction services.

The CIP Project 12 and 13 SSES Investigations will include but not be limited to, the following: field investigations, flow isolation and television inspection, as well as project mapping, data analysis, preliminary design, cost effective analysis, and reporting, in order to identify and quantify sources of infiltration and inflow.

The CIP Project 10 and 11 Rehabilitations will include construction (and construction services) of trenchless technology to eliminate infiltration and inflow from the sanitary sewer system. Project work will include, but not be limited to, the following:

- Install 23 LF of 8-inch PVC sewer main;
- Install 23 LF of 6-inch PVC building connections;
- Perform chemical root treatment in 1,914 LF of 8-inch sewers and within 6 manholes;
- Clean and inspect 16,991 LF of 8 to 16-inch sewers;
- Test 1306, 8 to 16-inch joints;
- Seal 653, 8 to 16-inch joints;
- Install CIPP Short Liners in 201 LF of 8 to 16-inch sewer main;
- Install CIPP Liners in 4218 LF of 8-inch sewer main;
- Install CIPP Liners in 1028 LF of 10 to 12-inch sewer main;
- Install CIPP Liners in 3835 LF of 15-inch sewer main;
- Install CIPP Liners in 119 LF of 24-inch sewer main;
- Grout 94 reinstated service connections;
- Install cementitious lining in 843 VF of sewer manholes;
- Install 2 manhole frame and covers;
- Cut 3 protruding service connections; and
- Inspect, test, and grout 25 service connections.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement for Engineering Services By and Between the Town of Burlington and Weston & Sampson Engineers, Inc., and the MWRA I/I Local Financial Assistance Project Application received April 18, 2023. Total project cost is estimated at $2,095,843 (CIP 12 SSES Cost = $305,542; CIP 13 SSES Cost = $320,819; CIP 10 and 11 Rehabilitation and Construction Services = $1,469,482). Eligible MWRA I/I Local Financial Assistance is $1,200,000. Estimated I/I removal as a result of the rehabilitation is 0.04 mgd of peak infiltration.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-08-3-1415

TOWN OF BURLINGTON
CIP PROJECT 10 AND 11 SEWER SYSTEM REHABILITATIONS:
DESIGN & CONSTRUCTION /
CIP PROJECT 12 & 13 SSES

PROJECT SCHEDULE

Description of Task	Start Date	Completion Date
CIP Project 12 SSES Investigation	February 2024	November 2024
CIP Project 13 SSES Investigation	February 2025	November 2025
CIP Project 10 & 11 Bid and Award	March 2023	May 2023
CIP Project 10 & 11 Construction of Rehabilitations	May 2023	November 2023
CIP Project 10 & 11 Re-Test & Warranty Inspection	April 2024	May 2024

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

CITY OF MELROSE, MASSACHUSETTS

2023 CIPP LINING PROJECT:
SEWER REHABILITATION DESIGN AND CONSTRUCTION

MWRA PROJECT NO. WRA-P14-20-3-1414

SCOPE OF SERVICES

The purpose of this project is to identify and rehabilitate community sewer subareas that contribute excessive I/I, evaluate rehabilitation options and rehabilitate the sewer system on a continuous set schedule. Work to be performed under this project includes: the preparation of design plans and specifications, publicly bidding and constructing a CIPP liner project for the sewer rehabilitation of issues and I/I identified during the 2019 SSES (Phase 2) and the 2020 SSES (Phase 3). The project area for the trenchless rehabilitation of existing sanitary sewers will take place in Sewer Subareas 12, 13, 19, and 23 (2019 SSES – Phase 2) and Subareas 2/2A, 5/5A, 9, 20B, 21B and 22 (2020 SSES – Phase 3).

Project work will include, but not be limited to, the following:

- Install CIPP Liners in 8500 LF of 6-inch sewer main;
- Install CIPP Liners in 7500 LF of 8-inch sewer main;
- Install CIPP Liners in 1000 LF of 10-inch sewer main;
- Install CIPP Liners in 750 LF of 12-inch sewer main;
- Install CIPP Liners in 500 LF of 15-inch sewer main;
- Perform chemical root treatment in 6,100 LF of 6 to 12-inch sewers; and
- Perform chemical root treatment in 3,000 LF of >12-inch sewers.

Work will also include mobilization, traffic management, and post-construction flow isolation in approximately 18,250 LF of sewer mains.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement for Engineering Services By and Between the City of Melrose and Weston & Sampson Engineers, Inc., and the MWRA I/I Local Financial Assistance Project Application received April 12, 2023. Eligible MWRA I/I Local Financial Assistance is $1,449,000 (Design Cost = $52,400; Estimated Construction Cost = $1,225,000; Construction Services Cost = $36,600; City Force Account Work = $50,000; Police Details Costs =$85,000). At the completion of this rehabilitation project, the estimate of annual I/I removed will be determined via post-construction flow isolation.

PROJECT SCHEDULE

Description of Work	Start Date	Completion Date
Design	April 2023	June 2023
Project Bid & Award	July 2023	August 2023
Rehabilitation Construction	September 2023	April 2024
Post-Construction Flow Isolation	April 2024	June 2024

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-24-3-1408

CITY OF NEWTON
CIP PROJECT 9 SEWER REHABILITATIONS AND
OAK HILL PARK AREA SEWER REPLACEMENT

SCOPE OF SERVICES

The purpose of this project is to rehabilitate community subareas that contribute excessive I/I, eliminate sanitary sewer contamination to the underdrain system and repair underdrain access points that are contributing infiltration to the sanitary sewer system. The City is requesting money for the construction of CIP Project 9 and the Oak Hill Park Area Sewer Replacement Project. CIP Project 9 is part of the City of Newton's 11 Year Sewer Capital Improvement (CIP) Plan.

The project area for CIP Project 9 includes Newton Subareas A001/ A002 / A003 / A010 / A011 / A013 / A015. The project area for the Oak Hill Park Area Sewer Replacement Project includes Newton Subarea A001. The objective is to design 'dig and replace' rehabilitations that will eliminate infiltration and inflow. Total project work will include, but not be limited to, the following:

1. Install CIPP liners in approximately 35,000 LF of sewers;
2. Cementitious line approximately 200 sewer manholes;
3. Install structural CIPP liners in 11,175 LF of 6 to 12-inch diameter sewer main;
4. Seal approximately 20 underdrain access ports;
5. Install approximately 300 LF of short liners; and
6. Perform open cut point repairs on sewer lines at approximately 45 locations.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement for Engineering Services By and Between the City of Newton and Weston & Sampson Engineers, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received January 25, 2023.

Total project cost is estimated at $11,583,258 (CIP Project 9 Construction = $7,071,758 / CIP Project 9 Construction Services = $1,200,000 / Oak Hill Park Area Design = $311,500 / Oak Hill Park Area Construction = $2,500,000 / Oak Hill Park Area Construction Services = $500,000). Eligible MWRA I/I Local Financial Assistance is $4,340,000 (CIP Project 9 Construction = $3,340,000 / Oak Hill Park Area Design = $311,500 / Oak Hill Park Area Construction = $688,500). As a result of the above work, an estimated 0.37 mgd of peak I/I will be removed from the collection system.

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT B
FINANCIAL ASSISTANCE AGREEMENT

MWRA PROJECT NO. WRA-P14-24-3-1408

CITY OF NEWTON
CIP PROJECT 9 SEWER REHABILITATIONS AND
OAK HILL PARK AREA SEWER REPLACEMENT

PROJECT SCHEDULE

Item	Start Date	Completion Date
Design:		
CIP Project 9 – Design	January 2023	May 2023
CIP Project 9 – Phase 1 Bid /Award	May 2023	June 2023
CIP Project 9 – Phase 2 Bid /Award	February 2024	April 2024
Oak Hill Park Area – Design	April 2023	December 2023
Oak Hill Park Area – Bid / Award	To be determined	
Construction:		
CIP Project 9 – Phase 1 Rehabilitations	July 2023	April 2024
CIP Project 9 – Phase 1 Warranty Re-Test	March 2025	June 2025
CIP Project 9 – Phase 2 Rehabilitations	April 2024	January 2025
CIP Project 9 – Phase 2 Warranty Re-Test	April 2025	July 2025
Oak Hill Park Area	To be determined	

MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
ATTACHMENT A
FINANCIAL ASSISTANCE AGREEMENT

CITY OF QUINCY, MASSACHUSETTS
FY2024 SEWER & DRAIN IMPROVEMENT PROJECT: DESIGN SERVICES
MWRA PROJECT NO. WRA-P14-26-2-1413

SCOPE OF SERVICES

***Project Scope**:* The City of Quincy will use the MWRA I/I Local Financial Assistance Program funds for engineering design services associated with the City's FY2024 Sewer Improvements Project. The proposed project stems from the June 9, 2021 Consent Decree between the US Department of Justice (USDOJ), USEPA and the City of Quincy. The proposed design project will systematically rehabilitate pipelines and manholes within the City for the protection of public health and safety, improvement to the environment and Quincy's surface water quality, and enhancement to sewer system capacity and operation. The design of the FY2024 Sewer Improvements Project will occur during Summer/Fall 2023 and provide bid ready plan sets for construction in Summer 2024. The City has been awarded a $10M low-interest Massachusetts State Revolving Fund (SRF) loan for sewer and drain improvement construction in 2024. This project is the design phase of the $10M in infrastructure construction. This project will end with the public bid of the rehabilitation work in early 2024. At that point, the SRF program will fund the remaining project work.

***Project Objectives*:** The high-level goal of the proposed work is to rehabilitate aging sewer pipe in the City of Quincy in order to reduce the I/I and prevent possible, but currently unidentified, exfiltration that contributes to water quality issues. Over the years, sewer investigation efforts have identified areas with I/I sources estimated to be 50% more than the drinking water consumed daily. The City's MS4 and IDDE investigations have identified problem and high priority catchments, both of which are caused by the City's aging sewer system.

The City completed SSES reports in 2018 and 2021 for about 40% of the City. The City also completed a hydraulic sewer model and Risk Analysis, which produced a City-wide consequence of failure (CoF) map and a likelihood of failure (LoF) analysis. These investigative analyses have led to a rolling prioritization of future investigation and sewer rehabilitation work. This project consists of several activities and improvements that will remedy known sewer conditions that cause I/I and structurally deficient sewer and drain infrastructure, as well as resolve conditions that may be contributing to water quality degradation.

The above work will be performed pursuant to the terms and conditions detailed within the Agreement For Professional Engineering Services (FY2024 Sewer & Drain Improvements Design Phase Services) By and Between the City of Quincy and Woodard & Curran, Inc. and the approved MWRA I/I Local Financial Assistance Project Application received April 13, 2023. Total project cost is estimated at $1,000,000 (FY2024 Sewer & Drain Improvements Design = $1,000,000). Eligible MWRA I/I Local Financial Assistance is $1,000,000.

PROJECT SCHEDULE

Item	Start Date	Completion Date
I/I Rehabilitation Design	June 2023	September 2023

ATTACHMENT 5
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY23
Reporting Period: July 2022 Through June 2023

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 $860.75 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 FY23, MWRA has distributed $532 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 FY23. Community information is summarized below:

1. ARLINGTON: North System

Background Information:
- Miles of Sewer: 117
- Sewered Population: 46,271
- Three Year (CY19 - CY22) Annual Average I/I: 2.06 mgd
- MassDEP Administrative Actions Since 2010: ACOP-NE-10-1N006 (August 2010)

Latest I/I or SSES Reports: Phase #10 Sanitary Sewer Rehabilitation - Post Rehabilitation Flow Evaluation (July 2020)
Phase #11 Sanitary Sewer Rehabilitation - Post Rehabilitation Flow Evaluation (July 2021)
Phase #12 Sanitary Sewer Rehabilitation - Post Rehabilitation Flow Evaluation (July 2022)
Phase #13 Sanitary Sewer Rehabilitation - Post Rehabilitation Flow Evaluation (July 2023)

Private Source Inflow Removal Program: The Town developed a Private Inflow Removal Program that was submitted to DEP in April 2022. Building inspections for private inflow removal are ongoing and expected to be complete in October 2023. Work completed through 6/28/23 includes: 2308 of the planned 3420 buildings (67% for this project phase) have been internally inspected for illicit connections to the sanitary sewer. Forty-one (41) positive inflow sources (sump pumps / basement drains / open sewer cleanouts) at 38 locations have been identified. One hundred forty-five (145) suspect inflow sources (sump pumps / basement drains / open sewer cleanouts) at 141 locations have been identified. Removal implementation of identified sources is expected to begin in November 2023.

The Water Meter Replacement and Building Inspection Program was substantially complete in June 2019. At the time of a water meter replacement, a building inspection was performed. As of March 2021, 8015 building inspections have been completed.

I/I Rehabilitation Projects in Design or Construction: The Phase #13 Sanitary Sewer Rehabilitations (Bid No. 21-34) was substantially complete in May 2022 (MWRA Project No. WRA-P11-01-3-1177). Project work included: root treatment of 878 LF of sewer and one (1) manhole; installation of 6599 LF of cured-in-place pipe (CIPP) lining; grouting 122 service connections; cutting 20 protruding service connections; cementitious lining of 280 VF feet of sewer manholes; grouting and patching 10 sewer manholes; installing one (1) manhole inflow dish; building six (6) manhole benches and inverts; and cleaning and inspecting 3602 LF of sewer main. The project's warranty inspection was completed May 2023. The Phase #13 Post Construction Flow Evaluation Report will be completed Summer 2023 (MWRA Project No. WRA-P14-01-3-1404).

The Phase #14 Sanitary Sewer Rehabilitations (Bid No. 22-34) was bid August 2022 and reached substantial completion June 2023 (MWRA Project No. WRA-P11-01-3-1186). Project work included: 24 LF of open cut point repairs of sanitary sewers; replacement of three (3) service wyes; installation of two (2) precast concrete sewer manholes; root treatment of 3690 LF of sewer and one (1) manhole; installation of 8033 LF of CIPP lining; grouting 123 service connections in CIP pipe; cutting 13 protruding service connections; cementitious lining of 296 VF of sewer manholes; replacing two (2) manhole frames and covers; and 7437 LF of cleaning and inspection of sewer main. The warranty inspections will be completed in Spring 2024 (pending groundwater conditions).

The Phase #15 Sanitary Sewer Rehabilitations (Bid No. 23-50) to be bid August 2023 (MWRA Project No. WRA-P14-01-3-1404). The project is expected to be substantially complete by November 2023 with warranty inspections completed by November 2024.

Reporting Period Activity: The Phase #12 Post Construction Flow Evaluation Report was completed in July 2022. In March 2023, funds ($760,000) were distributed for the Phase #15 Sanitary Sewer Rehabilitation Design & Construction Project and Phase #13 Post-Construction Flow Evaluation (MWRA Project No. WRA-P14-01-3-1404). In March 2022, funds ($784,000) were distributed for the Phase 14 Sewer System Rehabilitation Construction Project and Phase #12 Post Construction Flow Evaluation (MWRA Project No. WRA-P11-01-3-1186). In September 2021, funds ($648,900) were distributed for the Phase #13 Sewer System Rehabilitation Construction Project and Phase #11 Post Construction Flow Evaluation (MWRA Project No. WRA-P11-01-3-1177).

MWRA I/I Local Financial Assistance Program: The community has financed twenty-seven (27) I/I reduction projects through the Authority's funding assistance program. Of the $15,473,000 allotted through the Program's Phases 1 - 14, the community has $3,257,100 remaining in funding assistance.

2. ASHLAND: South System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 14,717
- Three Year (CY19 - CY22) Annual Average I/I: 0.42 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: I/I Analysis Report: July 2020
SSES Initial Phase Report: July 2020
Smoke & Dye Testing Report: August - October 2020
Inflow Removal Recommendations Report: July 2023

Private Source Inflow Removal Program: Dye testing was performed in September 2022. An Inflow Removal Recommendations Report was completed July 2023 (MWRA Project No. WRA-P11-02-3-1168). The report included recommendations to remove private inflow sources identified by smoke and dye testing.

I/I Rehabilitation Projects in Design or Construction: In March 2021, MWRA funds were distributed for an I/I Identification & Rehabilitation Project in Ashland Sub-Basins 1/2/3/4 (MWRA Project No. WRA-P11-02-3-1168). Project work is ongoing.

Town-wide wastewater flow metering and I/I identification project (MWRA Project No. WRA-P9-02-1-957) began in March 2017. Flow metering (20 meters) was performed 3/28/17 - 6/30/17. Metering / infiltration analysis / flow isolation and CCTV inspection work completed. Wastewater data analysis and report preparation completed May 2019. Sewer manhole inspections (with GIS locations) began in 2019 and are complete. Smoke & Dye Testing work performed August - October 2020. Sewer repair work was completed Summer 2019. Thirteen (13) short liner spot repairs were installed within Town sewer mains.

Reporting Period Activity: The Town is currently developing sewer system rehabilitation contract documents. The rehabilitation program will be bid in Fall/Winter 2023 (MWRA Project No. WRA-P11-02-3-1168). The Town has purchased a portable mainline sewer camera crawler (MWRA Project No. WRA-P11-02-3-1168). The mainline sewer camera crawler features a 10-inch touchscreen on the 600 foot motorized reel and a pan-tilt camera head. The crawler only takes two Town operators to run this system and is transportable using a pickup truck or all-terrain vehicle.

Town forces continue to jet problematic and high grease areas. The Town is also in the process of upgrading the Chestnut Street Sewer Pump Station. Upgrades include replacing pumps, electronics, SCADA system and drives. The Town is in the process of updating the status of the sewer capacity for the Bracket Road and Chestnut Street Pump Stations. There are several housing projects in Town that are in various development stages (from conceptual to site plan review). Mitigation will be discussed with these potential developments.

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 $4,348,500 allotted through the Program's Phases 1 - 14, the community has $2,328,440 remaining in funding assistance.

3. BEDFORD: North System

Background Information:
- Miles of Sewer: 77
- Sewered Population: 13,947
- Three Year (CY19 - CY22) Annual Average I/I: 0.96 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Phase #5 Sewer System Investigation (May 2018)
Phase #6 Sewer System Investigation (Ongoing)

Private Source Inflow Removal Program: The Town identified 50 sump pumps during their Phase #5 Sewer System Investigation and plans on designing a project for removing the sump pumps connected to the sewer system. Sump pump connections in nine (9) apartment buildings were disconnected from the Town's sewer and rerouted to overland flow.

I/I Rehabilitation Projects in Design or Construction: Phase #6 SSES design was completed in September 2022 and construction is anticipated to begin Spring 2024 (MWRA Project Nos. WRA-P14-03-3-1176 / 1402).

Reporting Period Activity: Phase #6 Sewer System Investigation work is ongoing. Phase #6 dye flooding and dye testing to be performed Summer 2023. Phase #6 Smoke Testing (field work) was completed in September 2022. Cleaning and CCTV inspections were completed in Summer 2021. Data evaluation and reporting to be completed Fall 2023.

The Middlesex Turnpike Gravity Sewer Upgrades Phase I and Phase II were completed Spring 2023. The work included upsizing 1296 LF of 8 and 10-inch sewers with 12-inch pipe via open cut and pipe bursting methods. The project also included open cut repair of 42 LF of gravity sewer on Middlesex Turnpike.

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 $6,354,600 allotted through the Program's Phases 1 - 14, the community has $3,245,442 remaining in funding assistance.

4. BELMONT: North System

Background Information:
- Miles of Sewer: 76
- Sewered Population: 26,932
- Three Year (CY19 - CY22) Annual Average I/I: 1.37 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Manhole Cover Insert Pilot Study (March 2020)
Sewer System Rehabilitation Inflow/Infiltration Removal (May 2020)
Private Sector Sump Pump Removal & Sewer System Rehabilitation (March 2021)

Private Source Inflow Removal Program: As part of the 2021 Private Sector Sump Pump Removal & Sewer System Rehabilitation Project, 24 of the 28 identified sump pumps connected to the sewer system have been removed and redirected to a separate drain service to the storm drain.

I/I Rehabilitation Projects in Design or Construction: The Private Sector Inflow Removal Project began August 2021 (MWRA Project Nos. WRA-P11-04-3-1116 / 1124). The project included disconnecting from the sewer system 28 confirmed sewer sump pumps and relocating them to the storm drain system or the ground surface. Additionally, 16,500 LF of sewer main will be CIPP lined. This project is now 95% complete. There are four (4) remaining sewer sump pumps to be disconnected from the sewer system and relocated to the storm drain system or the ground surface. The Mainline CIPP Lining Project was completed in FY21 (MWRA Project Nos. WRA-P11-04-3-1116 / 1124). An estimated 30,200 gpd of infiltration was removed.

Reporting Period Activity: The Town has inspected approximately 19,200 LF of sewer and storm drain associated with the Town's 2023 Pavement Management Program (PMP). Point repairs, service and manhole replacement will be conducted on structural defects within the PMP limits in Summer 2023. Additional trenchless repairs will be conducted to complete the recommended repairs. The Grinder Pumping Station rehabilitation work (Common Street) was completed Spring 2023 and is currently operational.

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 $9,325,100 allotted through the Program's Phases 1 - 14, the community will have $4,190,000 remaining in funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 854
- Sewered Population: 673,957
- Three Year (CY19 - CY22) Annual Average I/I: 27.16 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 and Somerville). Portions of Boston North are impacted by projects under MWRA's CSO Control Plan.

Latest I/I or SSES Reports: Jamaica Plain SSES; Allston-Brighton SSES; Mattapan SSES; City-Wide I/I Analysis; Roslindale SSES; Dorchester SSES; 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; and 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 10,520 dye water tests. Approximately 26,381 downspouts have been disconnected. From CY05 - CY23, 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, eighty-seven (87) I/I identification/rehabilitation projects have received funding through the MWRA I/I Local Financial Assistance Program [Projects include fifty (50) sewer separation projects, five (5) downspout disconnection projects, fourteen (14) sewer system rehabilitation projects and eighteen (18) Sewer System Evaluation Surveys / Planning Studies.]

From FY07 - FY23, BWSC completed the following MWRA-financed I/I rehabilitation projects: East Boston Sewer Separation Phase I; Upper Roxbury Area Sewer Separation Phase 2; Dudley Square Sewer Separation; Fairfield Street Sewer Rehabilitation; Rehabilitation of Sewers in the Fenway (Audubon Circle / St. Mary's Street Area); A Street Area Sewer Separation (South Boston Gillette Headquarters); Mass Ave - Dorchester Separation (New Market Square Area); 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.

Ongoing I/I rehabilitation projects (funded through the MWRA I/I Local Financial Assistance Program) include: Upper Roxbury Area Sewer Separation Phase III (MWRA Project No. WRA-P11-05-3-1189), South Boston Sewer Separation Phase I (MWRA Project No. WRA-P11-05-3-1171), East Boston Sewer Separation Phase II (MWRA Project No. WRA-P11-05-3-1121) and East Boston Sewer Separation Phase III (MWRA Project No. WRA-P9-05-3-1180).

BWSC entered into an I/I reduction agreement with the MassDEP 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 eighty-seven (87) I/I identification/reduction projects through the Authority's funding assistance program. Of the $246,921,200 allotted through the Program's Phases 1 - 14, the Commission has $124,576,491 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 140
- Sewered Population: 39,049
- Three Year (CY19 - CY22) Annual Average I/I: 3.50 mgd
- MassDEP Administrative Actions: ACO Docket No. CWA-AO-R01-FY21-16 (July 2021)

Latest I/I or SSES Report:
Main Interceptor Investigation (June 2021)
Annual I/I Removal Program - Year 9 I/I Investigation (September 2021)
2020 Annual Wastewater Flow Monitoring (November 2021)
Smoke Testing 2021 (April 2022)
Interceptor Modeling 2022 (March 2023)
Annual I/I Removal Program - Year 10 I/I Investigation (January 2023)
Smoke Testing 2022 (June 2023)
Annual I/I Removal Program - Year 11 (Ongoing)

Private Source Inflow Removal Program: The Town continues to perform building inspections in conjunction with water meter changeouts. The Town has performed multiple building inspections over the past two years. One (1) private inflow source was removed from the sewer system and redirected.

Sump pump removal program is ongoing. Ten (10) private source sump pump removal contracts have redirected 296 sump pumps to date. The Developer Flow Reduction Program is now 6 to 1 per MassDEP 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 sump pump 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: The Year 11 (FY23) I/I Rehabilitation (Study/Design/Construction) Project is ongoing (MWRA Project No. WRA-P14-06-3-1407). Investigation work will include: clean, CCTV inspect and record as many as 41,700 LF of sewer main in Braintree Sewer Subareas M1 / S2 / S3; review CCTV inspection videos (as many as 41,700 LF) to locate problem areas and I/I sources within manhole-to-manhole segments of the sewer main; flow isolate as many as 34,600 LF of sewer main in Subareas M1 / S2 / S3; perform as many as 450 topside sewer manhole inspections in Subareas HC1 / HC2 / HC3 / M1 / S2 / S3; and submit a letter report summarizing the results of this work, identifying those areas which appear to contribute excessive I/I, and provide detailed conclusions and recommendations (including a cost-effectiveness analysis for identified I/I sources and a transportation & treatment cost calculation).

Construction plans and specifications (to remove cost-effective and value-effective I/I identified during the above Year 11 I/I Investigation) will be developed and submitted, followed by rehabilitation construction. Project work will be undertaken within Braintree Sewer Subareas HC1 / HC2 / HC3 / M1 / S2 / S3 and will include: cleaning, inspection, testing and sealing of joints in approximately 3500 LF of sewers; installing CIPP in approximately 7200 LF of sewers; installing short liners in sections of sewer at six (6) locations; installing lateral liners at seven (7) locations; cutting five (5) intruding laterals at the connection to the main line; testing and grouting 15 laterals at the connection to the main line; performing an open cut point repair at one (1) location; manhole cementitious lining in 40 sewer manholes; installing six (6) sewer manhole inflow dishes; replacing two (2) sewer manhole frame and covers; raising four (4) manhole frame and covers 2-feet above grade; cleaning and television inspection of 375 LF of sewers not previously television inspected; and performing top-side visual inspection of 20 sewer manholes. As a result of the above work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

The Year 10 (FY22) I/I Rehabilitation (Design/Construction) Project is ongoing (MWRA Project No. WRA-P14-06-3-1406). Project work has been undertaken within Braintree Sewer Subareas C1 / C2 / C4 / E1 / E2 and includes: cleaning, inspection, testing and sealing of joints in approximately 3500 LF of sewers; installing CIPP in approximately 7200 LF of sewers; installing short liners in sections of sewer at six (6) locations; installing lateral liners at seven (7) locations; cutting five (5) intruding laterals at the connection to the main line; testing and grouting 15 laterals at the connection to the main line; performing an open cut point repair at one (1) location; manhole cementitious lining in 40 sewer manholes; installing six (6) sewer manhole inflow dishes; replacing two (2) sewer manhole frame and covers; raising four (4) manhole frame and covers 2-feet above grade; cleaning and television inspection of 375 LF of sewers not previously television inspected; and performing top-side visual inspection of 20 sewer manholes. As a result of the above work, an estimated 0.40 mgd of peak I/I will be removed from the collection system upon contract completion.

The Year 9 I/I Investigation (Study/Design) and Rehabilitation (Construction) Projects are substantially complete (MWRA Project Nos. WRA-P11-06-3-1142/1191). Year 9 I/I Investigation (Study) work began February 2021 and was completed in June 2021. Summary Report completed September 2021. Year 9 rehabilitation was bid September 2022. Rehabilitation construction is substantially complete. The Year 9 project removed an estimated 0.05 mgd of peak infiltration from the Town's sewer system.

Year 8 I/I Investigation (Study) work in Subareas E3 / K1 / L2 / L4 / W1 began March 2019 and was completed in June 2019. Summary Report was completed January 2020. Year 8 rehabilitation design complete September 2020. Year 8 rehabilitation was bid October 2020. Rehabilitation construction is complete. The Year 8 project removed an estimated 0.05 mgd of peak infiltration from the Town's sewer system (MWRA Project Nos. WRA-P11-06-3-1104/1165).

Reporting Period Activity: The Annual I/I Removal Program, Year 11 is ongoing. The Annual I/I Removal Program, Year 10 was completed January 2023. Approximately 0.06 mgd of peak infiltration was observed during television inspections and 0.02 mgd of peak infiltration and 6000 gpd of peak inflow was identified during manhole inspections. The Interceptor Modeling 2022 project was completed March 2023. The Smoke Testing 2022 project was completed June 2023. The Smoke Testing 2021 project was completed April 2022 (MWRA Project No. WRA-P11-06-3-1142). The Annual I/I Removal Program - Year 9 was completed September 2021 (MWRA Project No. WRA-P11-06-3-1142). Approximately 0.10 mgd of peak infiltration was observed during CCTV inspections and 0.04 mgd of peak infiltration and 0.01 mgd of peak inflow was identified during manhole inspections. Main Interceptor Investigation completed June 2021 (MWRA Project No. WRA-P11-06-3-1165). The 2020 Annual Wastewater Flow Monitoring began January 2020 and was completed December 2020 (MWRA Project No. WRA-P11-06-3-1129). Summary Report completed November 2021.

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 $16,449,000 allotted through the Program's Phases 1 - 14, the community has $4,408,600 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 110
- Sewered Population: 63,084
- Three Year (CY19 - CY22) Annual Average I/I: 3.00 mgd
- Mass DEP Administrative Actions: None

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

Latest I/I or SSES Report:

Wastewater Master Plan Update (December 2013)
Sewer Condition Survey in Subareas NI-9, NI-10 & NI-11 Technical Memo (September 2014)
2018 Smoke Testing Summary Report (Subareas NI-4, NI-5, NI-7, NI-8 & NI-9)
2020 Smoke Testing Summary Report (Subareas NI-7 & NI-12)

Private Source Inflow Removal Program: The 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 check for illicit sump pumps during inspections.

The Town is working on the policy for removal of private inflow sources in their sewer use regulations that still needs Town meeting approval. The Town's long term plan is to CIPP all the public sewer mains and epoxy line all public sewer manholes. After the Town has completely rehabilitated its sewer system in a particular basin, it will then address suspected private inflow sources.

I/I Rehabilitation Projects in Design or Construction: Contract PW/23-21: Sewer System Rehabilitation (CIPP) has been awarded. Project work includes CIPP lining of 22,500 LF of 6 to 12-inch sewer main. The Town is currently reviewing submitted epoxy material for PW/23: Epoxy Lining of Sewer Manholes. Project work will include epoxy coating 1754 VF of sewer manholes. The Town is preparing Contract PW/23-23: Sewer System Repairs. Project work will include spot repairs; entire sewer main replacements and redirection of direct storm water connections located during smoke testing.

Contract PW/22-17: Epoxy Lining of Sewer Manholes has reached substantial completion. Project work includes epoxy lining 2350 LF of sanitary sewer manholes. Manhole epoxy lining work began after the completion of Contract PW/22-16: CIPP lining work to ensure a tight seal at inlets/outlets. Contract PW/22-16: Sewer System Rehabilitation is 98% complete. Project work includes CIPP lining of 32,660 LF of 8 to 18-inch sanitary sewer pipe.

Contract PW/21-06: Epoxy Lining of Sewer Manholes is complete. Project work included epoxy lining 2066 VF of manholes. Contract PW/21-05: Sewer System Repairs is complete. This contract included six (6) sewer spot repairs. Contract PW/21-04: Sewer System Rehabilitation is complete. Project work included CIPP lining of 38,700 LF of 8 to 24-inch sewer main.

The Town has also closed-out the following contracts: PW/19-10: Epoxy Lining of Sewer Manholes and PW/19-09: Sanitary Sewer Improvements; PW/19-10 project work included installing 2574 VF of epoxy liner in 260 sewer manholes and replacing 26 defective sewer manholes frames and covers; and PW/19-09 project work involved the replacement of 375 LF of collapsed sanitary 8-inch sewer pipe and performing six (6) sanitary sewer spot repairs.

In February 2022, funds ($3,000,000) were distributed for the Design & Construction of Recommended Sewer Rehabilitations in Sewer Subareas NI-7, NI-8 (South) (MWRA Project No. WRA-P11-07-3-1184). In June 2020, funds ($3,000,000) were distributed for the Design & Construction of Recommended Sewer Rehabilitations in Sewer Subareas NI-4, NI-5, NI-7, NI-8 & NI-9 (MWRA Project No. WRA-P11-07-3-1147).

Reporting Period Activity: The Town is reviewing an approved large development at the intersection Pleasant Street and John Street. Initial calculations show this project will trigger a 2 for 1 type I/I reduction. The Town is also reviewing the development's sewer capacity analysis.

In December 2022, funds ($2,229,000) were distributed for the Design & Construction of Recommended Sewer Rehabilitations in Sewer Subareas NI-12 (MWRA Project No. WRA-P14-07-3-1403). Project work includes installing approximately 21,150 LF CIPP lining; performing heavy cleaning of approximately 3225 LF of sewer main; performing cleaning and CCTV inspection of 3225 LF of sewer main; installing epoxy lining on approximately 2200 VF of sewer manholes; installing approximately 150 gallons of injection grout; reconstruction of approximately 15 sewer manhole benches/inverts; and adjusting and/or replacing 10 sewer manhole frame and covers.

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 $24,005,200 allotted through the Program's Phases 1 - 14, the community has $8,110,000 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 117
- Sewered Population: 25,790
- Three Year (CY19 - CY22) Annual Average I/I: 1.45 mgd
- MassDEP Administrative Actions Since 2010: ACO-NE-15-1N001 (October 2015)

Latest I/I or SSES Reports: Project 8 Sewer System Evaluation Survey (January 2019)
Project 9 SSES (September 2019)
Project 10 SSES (February 2021)
Project 11 SSES (December 2021)

Private Source Inflow Removal Program: The Town attempted to inspect 38 Amnesty List properties to identify improper connections to the sanitary sewer system. Twenty (20) of the 38 house-to-house inspections were performed. A work summary memorandum (dated December 2, 2021) details the results of the inspections. The Town's sewer connection fund balance (5 for 1 sewer connection fee) is $1,670,227.

I/I Rehabilitation Projects in Design or Construction: Project 10 and 11 Sewer Rehabilitations work began May 2023. Project 10 and 11 Sewer Rehabilitations will remove an estimated 37,904 gpd of cost effective, value effective and non-excessive recommended peak infiltration. In November 2020, MWRA funds were distributed for the design and construction of sanitary sewer rehabilitations in the Project 10 & 11 Areas and a Project 11 Area SSES Report. These projects are a component of Burlington's CIP and part of a multi-phased sewer rehabilitation program (MWRA Project No. WRA-P11-08-3-1156).

Project 11 SSES was completed December 2021 and identified 21,309 gpd of cost effective, value effective, and non-excessive recommended removable peak infiltration.

Project 10 SSES was completed February 2021 and identified 16,818 gpd of cost effective, value effective, and non-excessive recommended removable peak infiltration.

Project 8 and 9 Rehabilitations were completed Fall 2021. The project removed an estimated 64,188 gpd of cost effective, value effective and non-excessive recommended peak infiltration.

Reporting Period Activity: In June 2023, funds were distributed for the design and construction of sanitary sewer rehabilitations in the Project 10 & 11 Areas and a Project 12 Area SSES Report (MWRA Project No. WRA-P14-08-3-1415).

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. Of the $9,632,800 allotted through the Program's Phases 1 - 14, the community has $1,110,000 remaining in funding assistance.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 147
- Sewered Population: 118,379
- Three Year (CY19 - CY22) Annual Average I/I: 7.01 mgd
- Mass DEP Administrative Actions Since 2010: None

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

Latest I/I or SSES Reports:
I/I Database (March 2020)
Inman Square IDDE & Sewer Separation (November 2021)
Port Phase II Infrastructure Improvements (In Progress)
I/I Development Program Alewife (In Progress)
Partial Sewer Separation Model Calibration Report (March 2022)
Ten-Year Sewer and Drain Infrastructure Plan (April 2022)
Hampshire Street Area Flow Metering (November 2022)
CSO Long-Term Control Plan (In Progress)

Private Source Inflow Removal Program: The City conducted 110 house inspections over the past year. Illicit connections were confirmed at 6 Marie Avenue and 64 Highland Avenue in the DeWolfe catchment area. The City is coordinating with property owners to address required internal plumbing work. The drain and sewer mains serving Healy Street in the Sparks Street drainage area have defects where the sewer appears to be leaking into the drain. The City will perform a test pit excavation to evaluate prior lining repair along the sewer joints. The sewer laterals at 3 Gray Gardens West and 18 & 27 Fainwood Circle were confirmed to be leaking into the drain. The identified sewer laterals will be lined. Sewer and drain lines in Hemlock Street have defects and the sewer lateral at 2 Hemlock Street requires further evaluation, Additional field investigations are ongoing at 36 Dana Street and 18 Corcoran Lane to confirm potential illicit connections. Illicit connection at 255 Main Street is in process of being removed as the building is under construction. While conducting a test pit excavation on Broadway, a sewer lateral was identified at 55 Broadway that was leaking into the drain. The sewer lateral is no longer active and has been abandoned. An additional 30 house inspections were conducted in the Harvard Street area in support of the Port Infrastructure Improvements Project. Illicit connections identified at 135 Norfolk Street (St. Mary's Church) and 218 Harvard Street were redirected to sewer.

The City has completed house-to-house inspections in the Willard Street catchment area. This work was done as part of the design of a new stormwater outfall to the Charles River. As part of the Binney Street Stormwater Project, an IDDE investigation was completed and two (2) illicit connections on York Place were removed. As part of the River Street reconstruction project, the City is doing limited inspections on River Street.

The City continues to work with developers on I/I removal projects triggered by increased sewer flows greater than 15,000 gpd on new development projects. I/I removal projects and project planning are currently in progress for developments at: CambridgeSide 2.0 (Mall Redevelopment, 60-110 First Street); Volpe Center Redevelopment (55 Broadway); 55 Wheeler Street; 101 Smith Place; 40 Smith Place; Walden Square 2; CHA Jackson Place, IQHQ Redevelopment (62-100 Whittemore Avenue) and 330 Third Street (formerly 585 3rd Street).

I/I Rehabilitation Projects in Design or Construction:

- Inman Square Improvements: Sewer separation/porous asphalt/pavers installation ongoing. Estimated completion August 2023.
- CambridgeSide Redevelopment (60-110 First Street): Land Boulevard / First Street Sewer Separation in design. Estimated construction completion in 2024.
- Cambridge Crossing Development: Monsignor O'Brien (MOB) Phase 1 Sewer Separation: Sewer and drain separated with a temporary connection to a combined manhole (connection to be removed in Phase 2b work); Phase 1 work completed Spring 2022.
- Willard Street Sewer Separation and Re-establishment of the Stormwater Outfall: Project bid in July 2022. Construction ongoing with estimated completion in Spring 2024.
- River Street Infrastructure Reconstruction Project: Sewer replacement/rehabilitation and Blackstone Street sewer separation. Project bid in July 2022. Construction ongoing with estimated completion in Fall 2025 [4500 LF of CIPP lining (6 to 18" sewer and drain) completed as of 7/1/23].
- Port Phase 2 Infrastructure Improvements: Project work under design and includes sewer rehabilitation/replacement, inflow removal and green infrastructure. Design to be completed in 2023. Estimated construction start in 2024 with construction completion in 2027.
- MXD Development (Main/Broadway/Binney Streets by Boston Properties): Broadway Drain Line Extension/Enlargement. Construction completed June 2022.
- Harvard Street Sewer Rehabilitation under construction. Estimated completion Fall 2023.
- Chapter 90 Contract 24 (Elm Street common manhole separation and Callender Street common manhole separation): Construction ongoing with estimated completion in 2025.
- Chapter 90 Contract 25 (Maple Street common manhole separation) under design. Estimated construction start 2024.
- Ongoing projects by various developers:
    - North Mass Ave Residential Side Street Infiltration Program is ongoing.
    - 55 Wheeler Street: Ridge/Haskell/Yerxa infiltration removal and Peabody School private inflow removal. Project work in design. Estimated construction completion 2025.
    - 101 Smith Place / Walden Square 2 / 40 Smith Place: Walden Square sewer separation design complete. Construction ongoing with estimated completion March 2024.

Reporting Period Activity: In FY23, the City performed CCTV inspections on approximately 124,400 LF of sewer main and combined sewers. In addition, the City lined 900 LF of the 48-inch brick combined sewer on Sherman Street. Also, the City's FY23 Remedial Repair Contractor made various repairs to the City's sewer and drain system at 214 locations. Theses repairs consisted primarily of spot repairs on mainline pipes, replacing manhole frames and covers and replacement of catch basins.

In November 2017 and March 2019, MWRA I/I Local Financial Assistance was distributed for the construction of the Port Infrastructure Improvement Project: Parking Lot No. 6 Stormwater Storage Tank and Combined Sewer Flow Reduction Project (MWRA Project Nos. WRA-P9-09-3-976 / 1105). Construction was completed December 2020. Over the past year, as part of the PL6 Stormwater Storage Tank Project, the City constructed a portion of the 16-inch sanitary sewer force main between Bishop Allen Drive and Massachusetts Avenue that will service the future Port Sanitary Sewer Tank (Sewer Tank and Pumping Station currently under design). A new sanitary sewer force main will also be constructed on Windsor Street (discharging to Portland Street). Estimated construction completion in 2027.

The Tobin Montessori Vassal Lane Upper School Stormwater Storage Tank Project 2 consists of the construction of a stormwater storage tank (which started this year) with an estimated completion in 2025. The proposed tank is intended to improve storm level of service for the most upstream portion of the former CAM004 catchment (approximately 200 acres), especially at the Standish Street / Vassal Lane intersection and low-lying areas near Concord Avenue.

As part of the River Street Infrastructure Reconstruction Project, a new drain extension will be constructed on River Street between Mass Avenue and Cottage Street. Estimated construction completion in 2025.

The City of Cambridge Cemetery sanitary sewer pump station and force main construction to begin 2023.

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 $44,640,100 allotted through the Program's Phases 1 - 14, the community has $15,810,000 remaining in funding assistance.

10. CANTON: South System

Background Information:
- Miles of Sewer: 87
- Sewered Population: 17,201
- Three Year (CY19 - CY22) Annual Average I/I: 1.49 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: I/I Management Plan (MassDEP) (June 2018)
I/I Study (June 2022)
Flow Isolation and CCTV Inspection Program (December 2022)

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 MassDEP flow rates at a 4 to 1 ratio.

I/I Rehabilitation Projects in Design or Construction: Sewer CIPP Lining Rehabilitation and Sewer Manhole Sealing Project design ongoing. Sewer System Rehabilitation was performed within Sewer Subsections 1-12 / 17 and included sewer manhole sealing/restoration, sewer pipe testing and sealing, CIPP lining and joint testing/sealing. Project work is complete.

Reporting Period Activity: I/I Study project work is complete (MWRA Project No. WRA-P11-10-1-1163). Project work included: (1) development of the flow metering program, including meter and gauge placement; (2) flow meters being placed into the community system in March/April 2021 (flow meters were removed in June 2021); (3) sewer manhole inspections; and (4) flow meter data analysis. I/I Report / Recommendations completed June 2022.

Flow Isolation and CCTV Inspection Program work complete (MWRA Project No. WRA-P11-10-2-1188). Field work was completed in June 2022 and included flow isolation of approximately 112,000 LF of gravity sewer within priority Canton sewer Sub-areas 7 / 16 / 18 / 22 / 24 / 27 and CCTV inspection of approximately 23,000 LF of gravity sewer. Summary Report recommendations completed December 2022. In March 2023, Town completed audit/review of 2020-2021 CCTV video (performed by Town CCTV vehicle) to determine condition assessment and PACP rating of pipe segments viewed. The results of the work will be incorporated into the FY21 Asset Management project work and will be evaluated further for potential I/I rehabilitation work.

Extension of the existing collection system made over the past year: 4250LF of 8-inch sewer at Stillwater Estates.

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 $7,565,900 allotted through the Program's Phases 1 - 14, the community has $4,439,050 remaining in funding assistance.

11. CHELSEA: North System

Background Information:
- Miles of Sewer: 42
- Sewered Population: 40,787
- Three Year (CY19 - CY22) Annual Average I/I: 2.78 mgd
- MassDEP Administrative Actions since 2010: NON #00004520 – May 10, 2018 Failed to submit I/I Analysis due 12/31/17.
- 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 and 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 2009)
Everett, Spruce & Second Street Sewer & Drain Evaluation (October 2012)
City-Wide Sewer Separation Master Plan (April 2020)
Broadway Sewer Separation [Preliminary Design Report] (December 2020)
Stormwater Management Plan (SWMP) 2021 (June 2021)

Private Source Inflow Removal Program: The City began collecting Sewer Bank fees for redevelopment projects in CY13. The City has also undertaken a move toward the implementation of Green vs. Gray infrastructure to reduce the amount of stormwater discharged to its combined sewers. Efforts to date have included requiring all redevelopment projects to utilize Low Impact Development and retain/infiltrate stormwater onsite, along with incorporating green infrastructure into municipal projects (e.g., the Rain Garden at the Mace Housing Complex).

I/I Rehabilitation Projects in Design or Construction: Final design of utility and road improvements for Downtown Broadway Utilities Project (CHE-004 Sewer Separation) is ongoing. This project includes comprehensive sewer and drain reconstruction, including sewer separation. Final design scheduled for Fall 2023. Construction planned for Spring 2024.

Final design of utility and road improvements for Central Avenue, Willow Street and Watts Street is complete (Contract No. 2022-303 / MWRA Project No. WRA-P11-11-3-1175). Project work includes sewer improvements to remove inflow and drain construction that will reduce localized flooding. Central Avenue work included installation of 729 LF of new 30-inch storm drain with new affiliated manholes and laterals for catch basin connectivity (30-inch reinforced concrete pipe installation at 80% complete). MassDOT access permit is pending for continuation of remaining drain work at Central Avenue and Eastern Avenue. Additional installation of 299 LF of new 12-inch PVC storm drain from Willow Street to Highland Street with two new catch basins and new drain manhole. Willow Street work included installation of 182 LF of new 18-inch storm drain, 101 LF of new 10-inch storm drain, 129 LF of new 12-inch storm drain and 26 LF of new 12-inch sanitary main, with connections to existing and new catch basins/manholes. Watts Street work included installation of 311 LF of new 12-inch storm drain and 33 LF of new 10-inch storm drain with affiliated connections to new manholes and catch basins. Construction on this project began June 2022 and is scheduled to be completed late 2023.

Construction of utility improvements for Upper Broadway is substantially complete. This project includes comprehensive sewer reconstruction for future sewer separation. Future sewer separation work will occur with the construction of new drains during MassDOT-funded road reconstruction in CY24.

Construction of utility improvements for Beacham Street and Williams Street is substantially complete (MWRA Project No. WRA-P11-11-3-1153). This project includes comprehensive sewer and drain reconstruction that will reduce infiltration in the sewer and promote better street drainage.

In August 2020, MWRA funds ($1,630,000) were distributed for the Beacham Street and Williams Street Utility Improvements Project (MWRA Project No. WRA-P11-11-3-1153). In February 2020, funds ($2,949,000) were distributed for the Broadway and Cary Avenue Utility Improvements Project (MWRA Project No. WRA-P11-11-3-1141). In August 2021, funds ($1,630,000) were distributed to support the Central Avenue, Willow Street and Watts Street Utility Improvement Project (MWRA Project No. WRA-P11-11-3-1175).

Reporting Period Activity: Cary Avenue Sewer Separation Project will renovate existing municipal infrastructure in the street and functionally connect recent water, sewer and stormwater improvements in Washington Avenue, Forsyth Street, Gardner Street, Tudor Street, Clark Avenue, Broadway and Crescent Avenue. Project is fully designed but construction is on-hold pending funding availability. Central Avenue (Highland - Shawmut) Sewer Separation Improvement Design Service Proposal drafted February 2023.

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. Of the $13,510,100 allotted through the Program's Phases 1 - 14, the community has $1,750,000 remaining in funding assistance.

12. DEDHAM: South System

Background Information:

- Miles of Sewer: 89
- Sewered Population: 24,507
- Three Year (CY19 - CY22) Annual Average I/I: 1.88 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report:
2020 Sewer Manhole Investigations (August 2020)
2021 Sewer Manhole Investigations (August 2021)
2022 Sewer Manhole Investigations (October 2023)
2023 Sewer Manhole Investigations (Ongoing)
2022 Town-Wide Flow Monitoring (November 2022)

Private Source Inflow Removal Program: The Town has finalized a Private Infiltration Removal Policy that will allow the community to use its Sewer Enterprise Fund to locate and eliminate infiltration observed in private property sewer laterals. The Town adopted a Sewer System Enterprise Fund at its May 2009 Town Meeting. A Municipal Buildings Inspection Program was undertaken to identify inflow sources. Inspections identified approximately 78,231 gpd of peak inflow. The Town removed the 78,231 gpd of peak inflow during CY15-23.

The Town, as part of the 2021 Private Infiltration Removal & Investigations Contract (from 04/21/21 to 12/31/21) (MWRA Project No. WRA-P11-12-3-1166), has completed the installation of approximately 190 LF of CIP lateral liners for seven (7) residential properties and open cut point repairs for two (2) residential properties identified as having infiltration from previous wet weather inspections. The project was estimated to have removed approximately 50,000 gpd of infiltration.

Smoke testing was conducted within approximately 140,000 LF of sewer to identify potential inflow sources. Testing results detected 27 inflow sources contributing approximately 78,231 gpd of peak design storm inflow. Of the 27 defects identified, six (6) were located within the Town's ROW and have been rehabilitated by the Town forces.

A Private Building Inspection was conducted within three of the Town's seven precincts. This program was promoted throughout the community as voluntary. The Town provided penalty amnesty to all residents/commercial property owners who participated. There were 3581 locations within the three precincts. Only 1510 property owners (42%) permitted inspections. Of the 1510 inspections performed, fifty-eight (58) direct and one (1) indirect inflow sources were observed (contributing 418,951 gpd of estimated peak inflow). These sources consisted of thirty-seven (37) sump pumps, one (1) floor drain, nine (9) interior open cleanouts, four (4) exterior open cleanouts, five (5) direct driveway drains, one (1) indirect driveway drain and one (1) roof leader. Due to low program participation, the Town is not going to perform private building inspections within the remaining four precincts at this time. House-to-house inspections still remain on hold for the foreseeable future.

Earlier this year the Town identified private catch basins located on a private way that appeared to be directly connected to the Town's sewer system. The Town estimates that approximately 325,000 gpd of peak inflow is entering the sewer system from these direct connections. The Town issued an Order To Correct to the property owners along the private way. The Order requested that they inspect their private stormwater system to determine the existence of direct connections to the Town's sewer system and then develop an action plan to disconnect those sources identified as connected. The property owners recently conducted CCTV inspections of the private stormwater system and identified three (3) catch basins that were directly connected. An action plan was developed that calls for the permanent disconnection of the three (3) catch basin from the sewer system and replacement with leaching basins. Design plans for submission are being developed with work is anticipated to be completed by August 2023.

I/I Rehabilitation Projects in Design or Construction: The Town, as part of the 2022 Private Infiltration Removal & Investigations Contract (from 06/06/22 to 12/31/22), has completed the installation of approximately 320 LF of CIP lateral liners for nine (9) residential properties identified as having infiltration from previous wet weather inspections. The project was estimated to have removed approximately 12,500 gpd of infiltration.

The Town, as part of the first contract extension year for the 2021 Sewer On-Call Services Contract (from 1/1/22 to 12/31/22), has completed the chemical root treatment of approximately 20,000 LF of sewer main and 26 sewer manholes.

The Town, as part of the 2021 Sewer On-Call Services Contract (from 1/1/21 to 12/31/21) (MWRA Project Nos. WRA-P11-12-3-1130/1166), has completed the installation of approximately 4600 LF of CIPP, 10 LF of short liners and 620 VF of manhole exterior grouting and interior cementitious lining. The project was estimated to have removed approximately 62,000 gpd of infiltration.

Also, as part of the 2020 Sewer Rehabilitation On-Call Services Project (MWRA Project No. WRA-P11-12-3-1130/1166), the Town completed the installation of 13,000 LF of CIPP lining, 150 LF of short liners and 1500 VF of manhole exterior grouting and interior cementitious lining. The project was estimated to have removed approximately 142,000 gpd of infiltration.

The Town issued an Order To Correct to Nobles & Greenough School to remove observed infiltration associated with their annual wet weather inspections of the private sewer system that connects to the Town's municipal sewer system. Nobles & Greenough worked with the Town and its current 2020 Sewer On-Call Services Contract to install approximately 1900 LF of CIPP and 63 VF of manhole exterior grouting and interior cementitious lining. The project was estimated to have removed approximately 21,000 gpd of infiltration.

The Town is also nearing completion of its annual sewer system inspection program under its existing 2021 Sewer On-Call Services Contract. The Town consultant conducted top-side manhole inspections within several sewer sub-basins. The Town plans to utilize this data, along with our previous year's backlog work, to perform additional rehabilitation on the most cost-effective sewer lines/ manholes in 2023, utilizing the Town's on-call rehabilitation contract.

Starting in March 2022, the Town began cleaning and inspecting approximately 115,000 LF of sewer main and 58 private laterals that showed signs of infiltration during their mainline inspections and performing top-side manhole inspection of approximately 800 manholes.

Reporting Period Activity: Approximately 145 LF of sewer main extensions were installed throughout the Town by private developers. Upon completion of the extension projects, the Town took ownership of the sewer mains.

The Town upgraded the existing 6-inch force main and pump station servicing the Legacy Place section of the community. The upgrade included the installation of a new 10-inch force main and larger capacity pumps at the existing pump station off of Elm Street / Rustcraft Road. The upgrades were performed to accommodate potential future developments in this area that would have to connect to this system. The pump station, as it existed before the upgrades, was at its maximum capacity and could not accept any additional flow.

MWRA I/I Local Financial Assistance Program: The community has financed eighteen (18) I/I reduction projects through the Authority's funding assistance program. Of the $10,400,000 allotted through the Program's Phases 1 - 14, the community has $2,340,000 remaining in funding assistance.

13. EVERETT: North System

Background Information:

- Miles of Sewer: 72
- Sewered Population: 49,075
- Three Year (CY19 - CY22) Annual Average I/I: 2.03 mgd
- MassDEP Administrative Actions Since 2010: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-026 (August 2009)

Latest I/I or SSES Report: EPA Administrative Order Compliance Report (January 2017)
Lower Broadway I/I Investigation (November 2018)
2018 Sewer I/I Investigation (December 2018)

Private Source Inflow Removal Program: A Sewer and Drain Ordinance was adopted in Fall 2018. To date, the City has collected fees from developments totaling approximately $1.65 million. Fees are used to fund future I/I identification/removal projects.

I/I Rehabilitation Projects in Design or Construction: In June 2022, funds ($2,550,200) were distributed for the Paris Street Sewer Separation Project (MWRA Project No. WRA-P11-13-3-1192). The objective of this project is to disconnect catch basins connected to the sewer system and install new drain infrastructure in the Paris Street area, in order to remove sewer system inflow. The construction design is based the 'Draft Evaluation Memo - Inflow/Infiltration Project Approach' report (dated October 2015).

Reporting Period Activity: The Village I/I Rehabilitation Project (MWRA Project No. WRA-P11-13-3-1162) covers I/I rehabilitation in the Village and Main Street areas in order to reduce I/I sources and repair sewer defects. Construction rehabilitation work includes: CIPP lining, lateral grouting, dig and replace sewer rehabilitation, manhole rehabilitation and point repairs. Approximately 0.14 mgd of peak infiltration and 0.11 mgd of peak inflow is anticipated to be removed.

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 $15,251,500 allotted through the Program's Phases 1 - 14, the community has $3,640,000 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:

- Miles of Sewer: 231
- Sewered Population: 69,727
- Three Year (CY19 - CY22) Annual Average I/I: 2.09 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: Citywide I/I Study / SSES Phase 1 / CWMP (Complete)
SSES Phase 2 (Complete); SSES Phase III (Complete)
SSES Phase IV / V (Complete); Blackberry Lane SSES (Complete);
SSES Phase VI (Complete); SSES Phase VII (Ongoing)

Private Source Inflow Removal Program: The City's capital improvements plan now includes multiple phases of inflow removal projects. The first phase was financed in the FY17 budget cycle. The City 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 flow from the sewer system. During this year's capital project development cycle, the City will determine the proposed rehabilitation areas and improvements required in order to further refine the costs and timing of the actual inflow removal projects.

The City has submitted an updated inflow removal scope of work and schedule to MassDEP for their review and approval. The plan includes working with City government to develop and initiate a program for sump pump and other inflow source (i.e., roof and area drains) removal. This work was included as part of the FY20 capital budget request for the City's Phase 6 SSES project. The Phase 6 SSES FY20 appropriation was approved by the City Council in June 2019.

The Phase 6 SSES (MWRA Project No. WRA-P11-14-1-1149) began in July 2019. Initial study work included performing 58 dye tests of suspect inflow sources and undertaking flow/rainfall/groundwater monitoring from March 16, 2020 to June 8, 2020 within fifteen (15) subcatchments of the Phase 6 SSES tributary area. Phase 6 manhole inspections (700 total) were completed in April 2021. Flow isolation and CCTV inspection work (20,000 LF) was completed in May 2021. Smoke testing (49,700 LF) was completed September 2021. A project summary memorandum has been completed.

From the Phase 6 SSES findings, design contract documents were developed for the Private Inflow Removal Pilot Project. The project is currently awaiting approval for bidding from the City's administration This Pilot Project calls for the removal of sump pumps at six (6) locations. These locations have been visually observed to be connected to the sewer.

Phase 7 SSES work began in March 2023. Flow isolation, manhole inspections and CCTV inspection work was completed in April 2023. Analysis of this work is ongoing. Depending on the results of flow isolation, smoke testing may be performed in August/September 2023. If needed, dye testing will be undertaken in October/November 2023.

I/I Rehabilitation Projects in Design or Construction: The Union Avenue & Pearl Street Sewer System Rehabilitation Project (Contract PW-407 / MWRA Project No. WRA-P11-14-3-1148) is complete. Project work included replacement of 650 LF of 8-inch sewer main; replacement of 250 LF of 10-inch sewer main; installation of 575 LF of 10-inch CIP sewer main liner; installation of 575 LF of 12-inch CIP sewer main liner; replacement of 800 LF of sewer service laterals; and replacement of 11 sewer manholes. The limits of the project area were Union Avenue (between Proctor Street and Beech Street) and Pearl Street (between Lincoln Street and Franklin Street).

The Worcester Road Wastewater Infrastructure Improvements Project: Phase II Design - Westbound (MWRA Project No. WRA-P11-14-3-1113) is ongoing. Phase II of the project is located along the westbound side of Worcester Road (adjacent to the Natick border). The Phase II final design phase involves the installation of approximately 1950 LF of new gravity sewer piping along Concord Street and Worcester Road.

The Worcester Road Wastewater Infrastructure Improvements Project: Phase III Design - North-South Sewer Connector (MWRA Project No. WRA-P11-14-3-1113) is ongoing. Phase III of the project is located along a cross-country alignment off Worcester Road, adjacent to the Natick border, from the Burr Street Extension to Cochituate Road. The Phase III final design phase involves the installation of approximately 4200 LF of new gravity sewer piping along this cross-country alignment.

The Worcester Road Wastewater Infrastructure Improvements Project: Phase I - Eastbound (Contract PW-402 / MWRA Project Nos. WRA-P11-14-3-1112/1113) is complete. Project work included contracted wastewater infrastructure replacement along Worcester Road. Phase I work was located along the eastbound side of Worcester Road (Concord Street to Natick Town Line) and included residential work along Pierce Street and Dinsmore Avenue. Project work included installation of 600 LF of 8-inch PVC and DI gravity sewer piping; installation of 930 LF of 10-inch PVC gravity sewer piping; installation of 710 LF of 12-inch PVC gravity sewer piping; installation of 6-inch PVC gravity sewer piping for sewer service connections; installation of 12 sewer manholes; and cleaning and CCTV inspection of 5820 LF of storm drain.

The Sewer Defects Repairs (Phase 2) Project (Contracts PW-375 & 379 / MWRA Project No. WRA-P11-14-3-1102) is complete. Project work included contracted sewer main/manhole rehabilitation and replacement throughout the City. Phase 1 repairs (implemented in late 2017) corrected defects at and south of Waverly Street. Phase 2 addressed repairs between Worcester Road (Route 9) and Waverly Street to the southerly City limits and in the vicinity of Concord Street to the City limits in East Framingham. Project work included cleaning and CCTV inspection of 55,000 LF of sewer main; root treatment of 3000 LF of sewer main; testing and sealing of 140 sewer main joints; CIPP spot repairs within 150 LF of sewer main; CIP lining of 18,621 LF of sewer main; lining 90 LF of sewer service connections; lining 976 VF of sewer manholes; performing 50 spot sewer manhole repairs; rebuilding 10 sewer manhole inverts; and flow isolating 6175 LF of sewer main.

The Union Avenue Area Sewer Improvements (Contract 2) Evergreen Street Sewer Rehabilitation Project (Contract PW-369 / MWRA Project No. WRA-P11-14-3-1101) is complete. Project work included contracted sewer main/manhole rehabilitation and replacement in the Union Avenue area. Project work included replacement of approximately 1550 LF of 8-inch VC sewer main; replacement of approximately 375 LF of sewer service laterals; CIP lining of approximately 475 LF of 8-inch VC sewer main; and replacement of approximately 11 sewer manholes. The project's work area included: Evergreen Street / Learned Street / Myrtle Street / Thurber Street / Lincoln Street.

Reporting Period Activity: City Operations staff performed 1170 LF of sewer main replacements at five (5) locations. City Operations staff / on-call service providers also installed 14,519 LF of CIPP linings (at 44 locations) and rehabilitated 87 sewer manholes.

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 $23,045,000 allotted through the Program's Phases 1 - 14, the community has $9,374,000 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 33
- Sewered Population: 8,128
- Three Year (CY19 - CY22) Annual Average I/I: 0.75 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: Annual I/I Program (FY18) Year 2 Evaluation (December 2018)
Annual I/I Program (FY19) Year 3 Evaluation (August 2019)
Annual I/I Program (FY23) Year 2&3 Evaluation (2022)

Private Source Inflow Removal Program: The house-to-house sump pump inspection and roof leader disconnection programs were limited due to ongoing COVID-19 restrictions. Through CY17-21, approximately 500 homes were inspected for sump pumps. During FY23, two (2) sump pumps on Shute Avenue were identified as being connected to the sanitary system. These sump pumps have been removed.

I/I Rehabilitation Projects in Design or Construction: CIPP lining of 2239 LF of sewers and installation of one (1) lateral liner was completed January 2023. Approximately 85 VF of manhole lining (Wompatuck Road / Nokomis Road / Downer Avenue / Planters Field Lane / Hersey Street) was completed in CY23. Approximately 16 LF of gravity sewer main (and associated lateral) was replaced on 145 Otis Street. Two (2) sewer laterals were replaced (125 Central Street / 16 Eldridge Court). Sewer force main work was completed at 207 Lincoln Street in June 2023.

Contract FY23-S1 - Year 2&3 Annual Sewer Program project work is ongoing. Contract 2 Prioritized Sewer Recommended Rehabilitations, as described in the Year 2 & 3 Annual I/I Reports, includes: sewer cleaning/inspection with CCTV inspection of sewer mains; chemical root treatment of sewer mains; trenchless sewer repairs including sewer testing and grouting of sewers and taps; installing CIP sewer pipe; installing structural CIP sewer pipe; installing CIP lateral liners; installing short liners; installing structural short liners; performing open cut point repairs; testing & grouting service connections; performing manhole rehabilitations; replacing sewer manhole frames & covers; and furnishing/installing sewer manhole inflow dishes. (MWRA Project No. WRA-P14-15-3-1416).

Reporting Period Activity: Mill Street Pump Station wet well liner replacement was performed. New control panel at Greenbush Pump Station was installed. One new pump installed and two existing pumps rehabilitated at Broad Cove Pump Station. Wet well aerators installed at Lewis Court Pump Station and Mill Street Pump Station. New sewer manhole installed at rear of 123 Nokomis Road.

MWRA I/I Local Financial Assistance Program: The community has financed nine (9) I/I reduction projects through the Authority's funding assistance program. Of the $3,202,500 allotted through the Program's Phases 1 - 14, the community has $790,000 remaining in funding assistance.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 49
- Sewered Population: 10,359
- Three Year (CY19 - CY22) Annual Average I/I: 0.39 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: CWSRF No. 2919 Contract No. 1 (October 2009)

Private Source Inflow Removal Program: House-to-House inspections continue. All new home construction is inspected by DPW personnel and the Town Plumbing Inspector. During this reporting period, nine (9) home inspections were completed during water meter replacements. No private inflow was discovered. New development requires a $12 per gallon mitigation payment on all flow added. The mitigation funds collected are used to finance the Town's I/I identification & rehabilitation program.

I/I Rehabilitation Projects in Design or Construction: The Annual I/I Control Plan (Year 1) (MWRA Project No. WRA-P11-16-3-1193) is ongoing. Project work includes I/I identification planning, investigation and reporting: (1) Designing and developing a work plan that outlines the I/I metering program to collect wastewater flow, rainfall and groundwater data; (2) Installing, calibrating, maintaining and monitoring field instrumentation equipment. The quantity of the instrumentation and duration of their installation shall be based upon the MassDEP I/I Analysis Guidelines. The field program was installed for ten (10) weeks and was implemented Town-wide in approximately eleven (11) sewer subareas. A field investigation data summary was provided by the subcontractor. Project work will also include a Town-wide groundwater analysis to identify high groundwater/low elevation areas that may contribute private inflow and a limited sewer manhole inspection program (approximately 200 manhole inspections); (3) Quantitative analysis of data collected from the flow metering and field investigation program and included quantifying the rate of infiltration and volume of inflow into each of the metered sewer subareas; and (4) Developing a report and recommendations from the results of the overall I/I study. The report will include recommendations for further field investigations to isolate and identify specific I/I sources. Project work to date: Manhole Inspections (200 total): Complete March 2023; Town-wide Groundwater Analysis: Complete June 2023; Town-wide Flow Monitoring (10 weeks): April-June 2023; Analysis and Reporting: Complete by September 2023.

The Annual I/I Control Plan (Year 2) (MWRA Project No. WRA-P11-16-3-1193) is scheduled to be performed February 2024 - December 2024. Spring 2024 project work includes: Manhole Inspections (750 total), CCTV Inspection (22,000 LF), Flow Isolation (22,000 LF), Smoke Testing (22,000 LF) and Dyed Water Testing with CCTV Inspection.

Reporting Period Activity: In FY23, three (3) new single family homes connected from the previous year extension/sub-divisions. No sewer extensions done in the past year. In FY22, approximately 800 LF of 8-inch sewer was added to the community system via a new subdivision off South Street. Approximately 1500 LF of 8-inch sewer was added to the community system via a new subdivision off South Franklin Street.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. Of the $3,149,600 allotted through the Program's Phases 1 - 14, the community has $1,800,000 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 171
- Sewered Population: 33,856
- Three Year (CY19 - CY22) Annual Average I/I: 2.84 mgd
- MassDEP Administrative Actions since 2010: ACO-NE-11-015 (July 2011)
- EPA Clean Water Act Administrative Order: EPA Docket No. 11-015 (July 2011)

Latest I/I or SSES Reports:
Town-Wide Flow Metering (November 2019)
SSES Phase 10: Sewer Basin 10 (January 2020)
SSES Phase 11: Sewer Basin 09 (March 2021)
SSES Phase 12: Sewer Basin 02 (November 2021)
SSES Phase 13: Sewer Basins 04 & 14 (March 2023)
SSES Phase 14: Sewer Basin 03 (Ongoing)

Private Source Inflow Removal Program: The Town is using the February 2012 *Lexington Sewer Use Code Review* to update their current regulations to incorporate a sewer bank or other funding options. A private inflow identification program based on the February 2012 Private Inflow Removal Program Letter Report is currently on hold.

I/I Rehabilitation Projects in Design or Construction: The Phase 9 Sewer System Improvements project will be starting August 2023. This project's goal is to remove I/I sources primarily within Sewer Basin 13 (approximately 80,000 gpd).

The Phase 8 Sewer System Improvements construction began March 2022. Project work, including Warranty Inspection, was complete May 2023. The project's goal was to remove I/I sources primarily within Sewer Basin 11. The Sewer System Evaluation Survey for Sewer Basin 09 (Phase 11) was completed in March 2021. The project identified approximately 35,000 gpd of cost-effective removable peak I/I within 55,000 LF of sewer main.

The Sewer System Evaluation Survey for Sewer Basin 03 (Phase 14) is ongoing. The Sewer System Evaluation Survey for Sewer Basins 04 & 14 (Phase 13) was completed in March 2023. The Sewer System Evaluation Survey for Sewer Basin 02 (Phase 12) was completed in November 2021. The project identified approximately 30,000 gpd of cost-effective removable peak I/I within 51,000 LF of sewer main. The Phase 7 Sewer System Improvements project was substantially complete in October 2021 (MWRA Project No. WRA-P11-17-3-1132). Work included a change order for lateral liners in the Lexington Center area (Sewer Basin 09).

Reporting Period Activity: The Sewer System Evaluation Survey for Sewer Basin 03 (Phase 14) is ongoing. The Sewer System Evaluation Survey for Sewer Basins 04 & 14 (Phase 13) was completed in March 2023. New sewer services [including four (4) septic system abandonments] were installed at 12 locations.

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 $13,715,300 allotted through the Program's Phases 1 - 14, the community has $3,150,000 remaining in funding assistance.

18. MALDEN: North System

Background Information:

- Miles of Sewer: 100
- Sewered Population: 65,969
- Three Year (CY19 - CY22) Annual Average I/I: 3.09 mgd
- MassDEP Administrative Actions: NON #00004556 - May 9, 2018 (Failed to submit I/I Analysis due 12/31/17)
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-002 (January 2009)

Latest I/I or SSES Report: Hydraulic Model and Capacity Assessment Final Report (December 2012)
Phase IV I/I Assessment Program (April 2020)

Private Source Inflow Removal Program: The City is planning to perform a community-wide smoke testing program to identify roof runoff connections and other illicit discharges. The City's DPW Commission voted to approve a revised Water & Sewer Fee Schedule on October 9, 2018. This revised schedule includes a new sewer connection fee of $500 plus an I/I fee of $8.50/gpd for new connections with a design flow over 15,000 gpd.

I/I Rehabilitation Projects in Design or Construction: Contract 2022-S-1 was bid August 2022, as part of the City's 2022 Sewer Lining Program. The City has compiled a list of approximately 28,000 LF of sewer lines that will be initially cleaned and CCTV inspected. As the CCTV tapes are completed, the City will review the tapes and select the sewer mains to be CIPP lined. For bidding purposes, the City anticipates approximately 19,000 LF of sewer main will be CIPP lined. The City has completed a five-year plan of sewer collection system rehabilitation contracts based on study results and recommendations.

Reporting Period Activity: In June 2021, MWRA funds ($1,084,000) were distributed to continue the City-Wide SSES and Sewer Improvements - Design / Construction Projects (MWRA Project No. WRA-P11-18-3-1174).

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 $23,373,900 allotted through the Program's Phases 1 - 14, the community has $16,648,000 remaining in funding assistance.

19. MEDFORD: North System

Background Information:

- Miles of Sewer: 120
- Sewered Population: 59,624
- Three Year (CY19 - CY22) Annual Average I/I: 2.73 mgd
- MassDEP Administrative Actions Since 2010: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-027 (August 2009)

Latest I/I or SSES Report: City-Wide I/I Control Plan Metering Program (April 2018)
IICP Update Phase 1 (February 2021)
Mini-System A & G SSES Phase II (May 2023)

Private Source Inflow Removal Program: Suspected inflow locations were found during Phase 1 inspections. Two (2) additional locations found in FY22/23. Removal plans are to be developed.

I/I Rehabilitation Projects in Design or Construction: The Mini-System P Sewer Rehabilitation project is substantially complete. Mini-System P Sewer Rehabilitation CIPP lining work is approximately 25% complete. Additional IICP Phase II work in select areas within Mini-System D is ongoing. A summary report is due in FY24. A City-wide CIPPL and Testing & Sealing contract is ongoing.

Reporting Period Activity: Mini-System H wastewater metering complete. Data analysis and reporting ongoing. Intermunicipal sanitary sewer flow metering (between Medford/Somerville) performed April 2023 – July 2023.

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 $22,077,600 allotted through the Program's Phases 1 - 14, the community has $14,116,000 remaining in funding assistance.

20. MELROSE: North System

Background Information:

- Miles of Sewer: 75
- Sewered Population: 29,784
- Three Year (CY19 - CY22) Annual Average I/I: 1.93 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report:

2020 Phase 3 SSES Project (CCTV / Flow Isolation / Smoke Testing / SMH Inspections) (Spring 2020)
2019 Phase 2 SSES Summary Report (Spring 2021)
2020 Phase 3 SSES Summary Report (Summer 2021)

Private Source Inflow Removal Program: Smoke testing was performed in the six (6) subareas where investigations were done as part of the 2020 SSES - Phase 3 (MWRA Project No. WRA-P11-20-3-1137). All findings from SSES Phases 1-3 will be investigated in the near term. The City, as part of its water main replacement projects, continued performing basement inspections for illicit connections.

I/I Rehabilitation Projects in Design or Construction: The 2023 CIPP Lining Project - Sewer Rehabilitation Design Project (MWRA Project No: WRA-P14-20-3-1414) began Spring 2023. Project design/bidding will take place Summer 2023.

The 2023 Sewer Replacement Project (Sewer Manhole Lining) was completed June 2023. The project included the grouting of leaks and cementitious lining of forty-four (44) sewer manholes. The average I/I removal for the project was approximately 0.03 mgd.

The 2020 Sewer Rehabilitation Project (CIPP Lining) was completed in May 2021. Post-construction flow isolation was completed in Spring 2022. The I/I removal was approximately 0.07 mgd or an approximate 84% infiltration reduction based on the pre-construction flow isolation estimates. Approximately 6100 LF of 6 to 12-inch sewer main received root treatment. Approximately 21,000 LF of CIPP liners were installed in 6 to 20-inch sewer mains.

The City also commenced with the removal and replacement of sewer manhole frames and covers that were identified with multiple holes in their manhole covers during the SSES Phases 1-3 projects (2022 Sewer Manhole Frame and Covers Replacement Project). To date, eighty (80) manhole frames and covers have been replaced.

Reporting Period Activity: During FY22, the City collected $35,863 in I/I mitigation fees. The fees are stored in a dedicated fund and are only used for work related to I/I reduction. This fund fully covered the cost of the eighty (80) sewer manhole frame and cover replacements, plus other open-cut sewer repairs and additional CCTV investigations. The sewer enterprise fund fully covered the costs of sewer system operations, maintenance, debt service and other expenses. The City maintains reserves equal to at least 10% of the operating budget.

The 99 Washington Street (Radio Factory) Project, formerly referred to as Oak Grove Mill, is a conversion of a two-story Mill masonry building into a 141-unit multi-family rental community. The same sewer service will be used, and the glow volume increase will be 14,582 gpd. This facility is currently open and occupied. The last four (4) units at Blueberry Hill have been granted occupancy permits, adding approximately 1300 gpd of wastewater flow.

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 $11,456,300 allotted through the Program's Phases 1 - 14, the community has $1,350,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 98
- Sewered Population: 27,963
- Three Year (CY19 - CY22) Annual Average I/I: 1.82 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: CIP Program 1 Investigation (January 2020)
CIP Program 2 Investigation (January 2021)
CIP Program 3 Investigation (December 2021)
CY2022 Sewer Investigation (September 2022)
2022 Pump Station Evaluations (March 2023)

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).

Also, a building inspection is performed during the final water meter reading when a house is being sold. If the building inspection identifies an illegally connected sump pump, a fine is issued and the residence cannot be sold until the sump pump has been rerouted and inspected. Additionally, during the water meter replacement program, Town inspectors have been trained to identify sump pumps and note whether they are: (a) connected to the sewer, (b) daylighted to the outside, or (c) unknown. The Town's Engineering Department then performs follow-up inspections as needed.

I/I Rehabilitation Projects in Design or Construction: CY2023 Sewer Design is ongoing (MWRA Project No. WRA-P14-21-3-1417). This design incorporates three years of I/I investigations (CIP 2 Investigation, CIP 3 Investigation and CY2022 Sewer Investigation).

The Drain and Sewer Improvements Project (Milton Contract No. DS21-1) began in November 2021 and reached substantial completion in April 2022 (MWRA Project No. WRA-P11-21-3-1178). It is estimated this project removed 3168 gpd of infiltration through comprehensive sewer pipeline and manhole repairs.

The CIP Project 1 Sewer Rehabilitations work is complete. Warranty retesting completed Spring 2021 (Milton Contract No. S20-1 / MWRA Project No. WRA-P11-21-3-1154). Work was performed in Subareas G-04 / G-06 / G-07 / G-11B / G-11E / PS-02 / PS-03 / S-17A / S-18. It is estimated that CIP Project 1 removed 57,853 gpd of peak infiltration and 2592 gpd of peak design storm inflow from the Town's sewer system.

Reporting Period Activity: The CY2022 Sewer Investigation was completed Spring 2022 (MWRA Project No. WRA-P11-21-3-1178). Data review/reporting complete September 2022. The 2022 Pump Station Evaluations were complete March 2023.

CIP Project 3 Investigation was completed Spring 2021 (MWRA Project No. WRA-P11-21-3-1178). Data review and reporting complete December 2021. Approximately 34,128 gpd of peak infiltration was observed during television inspections and 10,224 gpd of peak infiltration and 7700 gpd of peak inflow was identified during manhole inspections.

CIP Project 2 Investigation was completed Spring 2020 (MWRA Project No. WRA-P11-21-3-1154). Data review and reporting complete January 2021. Work included cleaning, TV inspection, videotaping and recording 48,500 LF of sewer; conducting flow isolation on 43,000 LF of sewer; and performing topside manhole inspections of 300 sewer manholes in Subareas G-08A / G-11C. Approximately 80,208 gpd of peak infiltration was observed during television inspections and 20,160 gpd of peak infiltration and 25,024 gpd of peak inflow was identified during manhole inspections.

CIP Program 1 Investigation was completed Spring 2019 (MWRA Project No. WRA-P11-21-3-1123). Data review and reporting was completed January 2020. Work included cleaning, TV inspection, videotaping and recording 51,400 LF of sewer; conducting flow isolation on 50,100 LF of sewer; and performing topside manhole inspections of 300 sewer manholes in Subareas DI-02 / G-05A / G-05B / G-05C. Approximately 87,840 gpd of peak infiltration was observed during television inspections and 38,592 gpd of peak infiltration was identified during manhole inspections.

Approximately 1150 LF of 2-inch HDPE low pressure sewer was installed on Randolph Avenue as part of a sewer betterment plan to the area. Approximately 70 LF of 8-inch sewer was extended on Highland Street as part of a private property endeavor. The Highland Street extension was accepted by the Town in May 2022.

MWRA I/I Local Financial Assistance Program: The community has financed twenty-three (23) I/I reduction projects through the Authority's funding assistance program. Of the $10,164,500 allotted through the Program's Phases 1 - 14, the community has $1,150,000 remaining in funding assistance.

22. NATICK: South System

Background Information:

- Miles of Sewer: 129
- Sewered Population: 32,803
- Three Year (CY19 - CY22) Annual Average I/I: 1.07 mgd
- MassDEP Administrative Actions Since 2010: None

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

Private Source Inflow Removal Program: The Town-Wide SSES (MWRA Project No. WRA-P5-22-1-523) included a house-to-house inspection component. Home inspections are also conducted in conjunction with the water meter replacement program. The Town has prepared an informational handout on eliminating sump pump connections to the wastewater system, which is distributed to targeted/suspect areas of the community. Home inspections were suspended this year due to COVID-19 restrictions.

I/I Rehabilitation Projects in Design or Construction: Sewer inspection work (MWRA Project No. WRA-P9-22-3-912), which included CCTV and chimney inspection programs, is complete. CCTV inspection of 145,000 LF of sewer main and 766 sewer manhole inspections have been performed in Sewer Basins 6 / 11/ 14 / 16. Recommended findings from this inspection work were incorporated into the Town's 3-Year Sewer Rehabilitation Project (Natick Contract No. S-162 / MWRA Project Nos. WRA-P9-22-3-990/1161). The rehabilitation project was bid in August 2020. Project works includes CIP lining of 26,000 LF of mainline sewer and 475 service laterals, testing and sealing of 5000 LF of mainline sewer and services, rehabilitation of 204 sewer manholes for infiltration removal/prevention and rehabilitation of 123 sewer manholes for inflow removal. Estimated peak infiltration removal is 215,000 gpd based on review of the inspection reports for the structures being rehabilitated. Estimated inflow removal, using MassDEP's design storm characteristics (0.29 in/hr average rainfall intensity for 6-hour period), is 48,000 gpd. The project is scheduled for substantial completion in November 2023.

Reporting Period Activity: The Town has completed the purchase of the CCTV inspection vehicle (MWRA Project No. WRA-P9-22-1-966). Training on the equipment has been completed. The vehicle (with Town personnel) performed a portion of the above Natick Contract No. S-162 CCTV inspection work.

Extensions of the Collection System: McHugh Farms: 33 unit cluster development included 115 bedrooms which would yield 12,650 gpd (based upon Title V). Approximately 2645 LF of 8-inch PVC gravity sewer and 14 manholes were installed as part of this project. The entire main has been installed. There are currently fourteen connections to the main. As of June 30, 2023, 10 additional services were installed on the original sewer extension Also, the developer added a cluster development that attaches to the new sewer on Wayside Road. This new development consists of 536 LF of 8-inch PVC sewer, five manholes and fourteen connections (twelve connections for six duplexes and two connections for future connections by abutters). As of June 30, 2023, the complete sewer main and manholes have been installed and six sewer connections were installed. Windy Lo Subdivision: This sixteen unit subdivision includes 64 bedrooms which would yield 7040 GPD (based upon Title V projections). Approximately 1246 LF of 8-inch PVC gravity sewer, 10 manholes and 16 services were installed. The entire main has been installed. Four service connections have been installed to the main to date. 7 Hovey: Service connection for the Rivers Country Day School. A $141,600 entrance fee was assessed. Fox Hill Drive [1386 LF of 8-inch sewer, one (1) pump station, and 732 LF of 4-inch force main]. The entire gravity and force main has been installed (23 sewer connection stubs have been installed). As of June 30, 2023, seven connections have been permitted and installed. 119-125 East Central Street: 107 bed Senior Living Facility tied into the existing sewer main on East Central Street via sewer service. A $171,218 entrance fee was assessed. Facility construction is complete; building is now occupied.

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 $10,522,600 allotted through the Program's Phases 1 - 14, the community has $3,690,000 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 130
- Sewered Population: 30,757
- Three Year (CY19 - CY22) Annual Average I/I: 1.82 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: CCTV Inspection (2018)
Continuous Flow Monitoring (12 subareas) (Ongoing)

Private Source Inflow Removal Program: A private source identification program, using Town-owned CCTV inspection equipment, is ongoing. The Town continues to enforce 4:1 I/I removal prior to issuing occupancy permits. I/I mitigation funds forthcoming from the Muzi Ford property redevelopment (redevelopment of the site is delayed by the proponent pending project funds). Boston Children's Hospital development under construction with sewer bank funds being deposited prior to Certificate of Occupancy.

I/I Rehabilitation Projects in Design or Construction: The Town is in the design process of relocating Town sewer main sections away from I-95 (Route 128). The proposed rehabilitation/replacement work will be undertaken in three phases. Phase 1a: Lining from Kendrick Street to the last manhole on I-95 (7300 LF); Phase 1b: Replacement from the last manhole on I-95 to Valley Road @ Norwich Road (2900 LF); Phase 1c: Lining from Valley Road @ Norwich Road to the Siphon (3400 LF); Future Phase 2: Replacement of the I-95 Shoulder Sewer (5400 LF); and Future Phase 3: Replacement from Kendrick Street to I-95 (2000 LF). Sewer rehabilitation designs are ongoing. Bid Documents for the sewer lining are being prepared.

The Town has performed an evaluation of the I-95 interceptor to assess influent flows and the condition of the interceptor. Site access improvements to the MWRA Sewer Interceptor at Route 128 were made. As part of this project, a large rock obstruction was removed from the sewer system. This obstruction was preventing CCTV inspection work from being performed. The remaining CCTV inspection work was subsequently completed and the interceptor sewer evaluation report was submitted in December 2021. The remaining portion of the sewer site access project involves rehabilitating a sewer manhole in the breakdown lane of Route 128 with a new frame and cover. Sewer manhole work in now complete.

2019 I/I Removal Construction Contract design completed Summer 2019. Project bid August 2019. Rehabilitation construction (Needham Contract No. 20DPW022C / MWRA Project No. WRA-P11-23-3-1128) was substantially complete in March 2020. Additional defects/infiltration areas were noted during the post-CCTV inspection and warranty inspection of the contract work. Three (3) additional sewer manholes were rehabilitated in August/September 2021. An estimated 0.47 mgd of peak infiltration was removed from the sanitary system upon contract completion.

Reporting Period Activity: Twelve meters (ten permanent and two portable area velocity flow modules) have been installed for continued I/I monitoring. The Lake Drive Sewer Pump Station Replacement Design & Construction Project bid process has been completed. Pump Station reconstruction work started this past Spring and is near completion (after substantial delays in deliveries of equipment and supplies).

Approximately 500 LF of sewer extension on Walker Lane was completed. The Town anticipates four homes to connect to the sewer extension. Three (3) properties have subsequently abandoned their septic systems and connected to the sewer. In addition, an existing 50-foot section of AC pipe was removed and replaced as part of the project.

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 $11,267,600 allotted through the Program's Phases 1 - 14, the community has $7,249,000 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 284
- Sewered Population: 88,190
- Three Year (CY19 - CY22) Annual Average I/I: 6.24 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Reports: CIP - Project 9 Inspection and Assessment (April 2020)
CIP - Project 10 Inspection and Assessment (Ongoing)
CIP - Project 11 Inspection and Assessment (Ongoing)

Private Source Inflow Removal Program: No work undertaken during this reporting period.

I/I Rehabilitation Projects in Design or Construction: CIP Project 11 Inspection and Assessment is ongoing and includes investigating 106,266 LF of sewer and 740 manholes. CIP Project 10 Inspection and Assessment is substantially complete and included investigating 121,166 LF of sewer and 714 manholes. CIP Project 9 Inspection and Assessment is complete and included investigating 132,489 LF of sewer and 852 sewer manholes. The estimated I/I removal is 329,145 gpd of peak infiltration and 38,192 gpd of peak inflow. CIP Project 8 Inspection and Assessment is complete and included investigating 138,354 LF of sewer and 854 sewer manholes. The estimated I/I removal is 658,788 gpd of peak infiltration and 92,967 gpd of peak inflow.

CIP Project 8 Rehabilitations (MWRA Project Nos. WRA-P11-24-3-1126 / 1158) is currently being designed and is scheduled to be bid following completion of the CIP Project 7 Rehabilitations. CIP Project 7 Rehabilitations are substantially complete (MWRA Project No. WRA-P11-24-3-1126). The estimated I/I removal is 165,051 gpd of peak infiltration, 71,784 gpd of peak rain-induced infiltration and 102,112 gpd of peak inflow. CIP Project 6 Rehabilitations are complete. The estimated I/I removal is 299,399 gpd of peak infiltration, 64,224 gpd of peak rain-induced infiltration and 501,408 gpd of peak inflow.

Reporting Period Activity: The CIP Project 9 Sewer Rehabilitations and Oak Hill Park Area Sewer Replacement (MWRA Project No: WRA-P14-24-3-1408) design is ongoing. CIP Project 9 is part of the City's 11 Year Sewer Capital Improvement Plan. The project area for CIP Project 9 includes Newton Subareas A001/ A002 / A003 / A010 / A011 / A013 / A015. The project area for the Oak Hill Park Area Sewer Replacement Project includes Newton Subarea A001. The objective is to design 'dig and replace' rehabilitations that will eliminate infiltration and inflow. Total project work will include: installing CIPP liners in approximately 35,000 LF of sewers; cementitious lining approximately 200 sewer manholes; installing structural CIPP liners in 11,175 LF of 6 to 12-inch diameter sewer main; sealing approximately 20 underdrain access ports; installing approximately 300 LF of short liners; and performing open cut point repairs on sewer lines at approximately 45 locations.

MWRA I/I Local Financial Assistance Program: The community has financed thirty-one (31) I/I reduction projects through the Authority's funding assistance program. The community has used its entire MWRA Phase 1 - 14 funding allocation ($39,277,400).

25. NORWOOD: South System

Background Information:
- Miles of Sewer: 108
- Sewered Population: 31,458
- Three Year (CY19 - CY22) Annual Average I/I: 3.18 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: I/I Assessment and GIS Tracking Program (2019)

Private Source Inflow Removal Program: As part of the Meadowbrook Area Sewer Inspection, ten (10) buildings were identified with various illicit connections and eleven (11) sources have been removed to date. Within the Hawes Brook sewer tributary area, eight (8) property owners have been notified to redirect sump pumps.

I/I Rehabilitation Projects in Design or Construction: The Airport Interceptor Sewer Manhole Replacement Project (Town of Norwood Contract No. NPW-23-01) was bid in August 2022 and is substantially complete. Project work included the full demolition and replacement of 16 sewer manholes situated along a cross-country right-of-way adjacent to the Norwood Memorial Airport. All manholes were raised above the 100 year flood elevation. Several connections to existing manholes from inactive pipes were eliminated. Project work also included additional CIPP lining of sewer main from Meadow Street and Fortune Drive.

Meadowbrook Priority Area 5 Rehabilitation Construction (MWRA Project No. WRA-P9-25-3-974 / Town Bid No. NPW-19-03) bid September 2018. Rehabilitation work is complete. Project work included CIPP lining of 7515 LF of sewer main, installation of 600 LF of 8-inch PVC sewer main, lining 38 sewer manholes and CIPP lining of 123 house service connections.

Area 3 and Area 4 Sewer Rehabilitation Project is complete. Rehabilitation work included CIPP lining 8245 LF of sewer main, CIPP lining of 217 service connections, manhole rehabilitation and installation of 605 LF of 8-inch PVC sewer main.

Reporting Period Activity: Design and permitting of the Airport Interceptor Sewer Manhole Replacement Project (Town of Norwood Contract No. NPW-23-01) is complete. Sewer manhole replacement project was bid August 2022 and is substantially complete. I/I Assessment and GIS Tracking Program (MWRA Project No. WRA-P9-25-1-919) work is complete.

MWRA I/I Local Financial Assistance Program: The community has financed twenty-one (21) I/I reduction projects through the Authority's funding assistance program. Of the $13,239,400 allotted through the Program's Phases 1 - 14, the community has $6,360,000 remaining in funding assistance.

26. QUINCY: South System

Background Information:
- Miles of Sewer: 209
- Sewered Population: 101,636
- Three Year (CY19 - CY22) Annual Average I/I: 4.39 mgd
- MassDEP Administrative Actions Since 2010: None
- EPA Administrative Actions: Consent Decree (June 2021)

Latest I/I or SSES Report: Fall 2018 Sewer Investigation (April 2019)
CMOM Self-Assessment Program (April 2019)
2020 SSES and Update Project (February 2020)

Private Source Inflow Removal Program: The City has partnered with the plumbing inspector on its FOG Program. As part of this program, the plumbing inspector visits CV License Holders for Grease Trap Inspections. While inspecting for grease traps, the inspector also observes the property for illegal inflow connections. Although this program directly addresses FOG discharges, it has been successful in identifying direct private inflow sources for removal.

The City continues its opportunistic residential and business inspections to identify sump pumps and private drain infrastructure connected to the sewer system. The City's Storm Water Discharge Ordinance forbids non-sanitary connections. A new fee structure was made effective July 1, 2013. Part II, Chapter 270, Article II 270-5 of the City's Ordinance outlines penalties for illegal connections and discharges to the sanitary sewer system: https://ecode360.com/29090773. The fee structure remains in effect and has resulted in improvements to the system.

Developers contribute one percent of their proposed total project value to the Quincy Sewer and Drain Rehabilitation Fund (QSDRF). Additionally, as part of the site plan review process, the City engages in mitigation negotiations and requires I/I removal at 4:1 by applicants whose flow exceeds 15,000 gpd. Through July 19, 2023, the QSDRF had a balance of $2,966,779.

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

I/I Rehabilitation Projects in Design or Construction: The FY2024 Sewer & Drain Improvement Design Project (MWRA Project No. WRA-P14-26-2-1413) began Summer 2023. Project work is ongoing.

The FY23 Sewer CIPP Project Contract 1 was awarded in June 2023. Project work includes 28,900 LF of CIPP lining for 6-inch, 8-inch, 10-inch, 12-inch and 15-inch sewer pipe on Trevore Street, Dorchester Street, Mayflower Road, Standish Road, Meadow Street, Aberdeen Road, Essex Street, Sonoma Road, Hummock Road, South Bayfield Road, Henry Street, French Street, Gordon Street, Arnold Road, Carle Road, Warwick Street, Billings Road, Royal Street, Cummings Avenue, Sachem Park, Davis Street, West Elm Avenue, West Squantum Street, Copley Street, Franklin Street, Randlett Street, Oxenbridge Road, Muirhead Street, Staunton Street, Willow Street, Elm Avenue, Kemper Street, Bass Street, Greene Street, Briggs Street, Elmwood Avenue, Highland Avenue, Safford Street, Newport Avenue, Agawam Road, Norton Road, Wampatuck Road and Baystate Road. Work also includes manhole restoration, lining of various existing sewer laterals and open cut spot repairs. Project work is scheduled to be substantially complete by December 2023.

The FY23 Sewer CIPP Project Contract 2 was awarded in June 2023. Project work includes 34,050 LF of CIPP lining for 8-inch, 10-inch, 12-inch and 18-inch sewer pipe on Rockland Street, Hooper Street, Huntress Street, Allerton Street, Rhoda Street, George Road, Lillian Road, Putnam Street, Robertson Street, Adams Street, Puritan Drive, Brae Road, Joan Drive, Fairmount Way, Edgemere Road, Puritan Street, Shawmut Street, Gridley Street Grogan Avenue, Farrell Street, Curtis Street, Euclid Avenue, Foster Street, Morton Street, Buckley Street, Copeland Street, Brook Road, Pawson Street, Oak Street, Walnut Street, Lancaster Street, Quincy Avenue, Charlesmount Avenue, Burns Avenue and Craig Avenue. Work also includes manhole restoration, lining of various existing sewer laterals, and open cut spot repairs. Project is scheduled to be substantially complete by December 2023.

The FY22 Sewer CIPP Project Contract 1 Design Project (MWRA Project No. WRA-P11-26-3-1159) was complete March 2022. The FY22 Sewer CIPP Project Contract 1 construction began June 2022. Work included approximately 24,500 LF of CIPP lining for 6-inch, 8-inch, 10-inch and 12-inch sewer pipe on Standish Road, Mayflower Road, Lansdowne Street, Deerfield Street, Heath Street, Phillips Street, Marlboro Street, Wayland Street, West Squantum Street, John Street, Montclair Avenue, Sagamore Avenue, Vershire Street, Sterling Street, Ruthven Street, Evans Street, Harvard Street, Barham Avenue, Hilma Street, Clement Terrace, Elliot Avenue, Hamilton Avenue, Wilson Avenue and Sherman Street, Pratt Road, Commander Shea Boulevard, Sagamore Street, Prospect Street, Blackwell Street, Edwin Street, Hollis Avenue, Hancock Street, Cummings Avenue, Landers Street, Sachem Street, Wendell Avenue, Sewall Street, Newport Avenue, Holbrook Road, Fayette Street and North Central Avenue. Work also included improvements at 156 manholes and three (3) sewer main spot repairs on Holbrook Road, Wendell Avenue and West Squantum Street. Project work was substantially complete in May 2023. Warranty Inspections are scheduled for completion Fall 2023.

The FY22 Sewer CIPP Project Contract 2 Design Project (MWRA Project No. WRA-P11-26-3-1159) was complete March 2022. The FY22 Sewer CIPP Project Contract 2 construction began in June 2022. Work included approximately 24,500 LF of CIPP lining for 8-inch, 10-inch, 12-inch, 15-inch and 18-inch sewer pipe on Hull Street to Lakeside Avenue Easement, Avalon Avenue, Murdock Avenue, Edinboro Road, Arnold Street, Fifth Avenue, Ring Avenue, Edwards Street, Hyde Street, Forum Road, Phipps Street, Norman Road, Carter Street, Plymouth Street, Cedar Street, Oakland Avenue, Adams Circle, Miles Drive, Joan Drive, Priscilla Lane, Quarry Street, Ernest Avenue, Dunn's Court, Dunn's Hill Road, Filbert Street, Sunnyside Road, Stedman Street, Mullin Avenue, Calvin Road, Calvin Road to Sea Street Easement, Avalon Beach Easement, School Street, Hancock Street, Quincy Avenue, Faxon Park Road, Blanchard Road and Faxon Lane. Work also included improvements at 146 manholes. Project work was substantially complete in May 2023. Warranty Inspections are scheduled for completion Fall 2023.

The FY21 CIPP Sewer Improvements Project (MWRA Project Nos. WRA-P11-26-3-1159 / 1172) began June 2021 was complete June 2022. Project work included: 39,500 LF of CIPP lining for 8-inch, 10-inch, 12-inch, 15-inch, and 20-inch sewer pipe on Parke Avenue, East Squantum Street, Huckins Avenue, Airport Road, Alstead Street, Williams Street, Ocean Street, Pope Street, Ardell Street, Small Street, Albion Road, Ridgeway Street, Randlett Street, Copley Street, Waterston Avenue, Mears Avenue, Manet Avenue, Babcock Street, Stoughton Street, Hull Street to Lakeside Avenue Easement, Winthrop Street, Darrow Street, Marine Street, Rhoda Street, Shed Street, Doane Street, Morgan Road, Sturtevant Road, Dimmock Street, Bent Terrace to Elm Street Easement, Elm Street, McGrath Highway, Shea Street, Baxter Avenue, Mound Street to Cove Way Easement, Willard Street, Thurston Avenue, Wesson Avenue and Ames Street. Work also included rehabilitating 122 sewer manholes.

The FY21 Sewer Open Cut Design Project (MWRA Project No. WRA-P11-26-3-1159) was complete March 2021. FY21 Sewer Open Cut construction was substantially complete in July 2022. I/I reduction work included installation of approximately 2800 LF of new 8 to 10-inch gravity sewer main on Quincy Shore Drive and sewer main spot repairs on Manet Avenue, Dahlgren Street, Barham Avenue, Adams Circle and Landsdowne Street. Project work reached final completion in Spring 2023.

The FY19 Sewer Open Cut Improvements Project (MWRA Project Nos. WRA-P9-26-3-992 / 1140) was complete March 2021. Project work included: installation of 2750 LF of new 8 to 18-inch gravity sewer main on Island Avenue, Peterson Road, Belmont Street, Clement Terrace Easement, Sherman Street, Elmwood Park, Ocean Street and Ardell Street; CIPP lining of 1060 LF of 8 to 18-inch gravity sewer main on Island Avenue and Peterson Road; and rehabilitating 22 sewer manholes.

Reporting Period Activity: The City began work on the Areas 1&2 Supplemental SSES, the FY23 sewer design project/sewer flow analysis/sewer hydraulic model refinements, and the Area 3 SSES in Summer 2022 (MWRA Project No. WRA-P11-26-3-1190). The Supplemental SSES Report was completed in November 2022. This report was developed as a requirement of the City's Consent Decree and summarized previously inspected SSES areas throughout the City (SSES Area 1 & 2) as well as delineated future SSES areas (SSES Areas 3, 4, & 5). This report summarized completed SSES inspections and prioritized recommendations to minimize I/I throughout the system. The delineation of SSES Area 3 will structure the Area 3 SSES to be completed by November 2025.

The City installed fifteen (15) temporary flow meters City-wide to support calibration and verification of their hydraulic model. The flow data will be used to identify areas of the City contributing infiltration and inflow. The model will provide input to the City for sewer areas that may be hydraulically deficient. Project work is ongoing.

In December 2019, project work began on the 2020 SSES and Update Project (MWRA Project No. WRA-P11-26-3-1140). Project work included inspection and evaluation of approximately 221,000 LF of sewer main and 1760 sewer manholes (including inspection completed since the prior SSES in 2018); flow monitoring at key locations throughout the City; and collection of groundwater data at select manholes. This project also included additional analysis of data collected for the two 2018 SSES projects. SSES Field Investigation work performed March 2020 to June 2020. SSES Analysis and Report Documentation performed June 2020 to February 2021.

In August 2018, the City submitted a CWSRF PEF for the Strand Sewer Pump Station Upgrades Project. In July 2020, the Strand Pump Station Improvements Project (CWSRF #4508) contract was awarded. Project work included construction of a new dual wastewater/stormwater pump station and installation of 600 LF of 6-inch wastewater force main. Project work was complete Summer 2022. The intent of this project was to provide a resilient asset with a higher wastewater capacity (by nearly twice) than the current pump station.

Emergency Sewer Repairs/Replacements during this reporting period included repairs on Sea Avenue and Bowes Avenue.

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 $36,950,000 allotted through the Program's Phases 1 - 14, the community has $4,625,000 remaining in funding assistance.

27. RANDOLPH: South System

Background Information:
- Miles of Sewer: 113
- Sewered Population: 34,920
- Three Year (CY19 - CY22) Annual Average I/I: 1.54 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: Wastewater System Metering Program (June 2017)

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 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: The Martindale Pump Station wet well lining work is substantially complete (Randolph Contract 20-S1 / MWRA Project No. WRA-P11-27-3-1139).

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 (Randolph Contract 15-S1/ MWRA Project No. WRA-P8-27-3-820) was designed (March 2015) and bid (April 2015). Rehabilitation construction is complete and included lining of the Vine Street Pump Station wet well, CIPP lining 1600 LF of sewer main, installing seven (7) short liners, grouting of 24 service connections, installing nine (9) manhole liners, digging and replacing two (2) sewer mains, testing and sealing of 5500 LF of sewer main and root removal within 500 LF of sewer main.

A Town-Wide wastewater flow metering program was performed during Spring 2017. Data review/report preparation completed Summer 2018.

Reporting Period Activity: The Town conducted CCTV inspection of approximately 50,000 LF of sewer mains between November 2021 and March 2022. This is part of a larger I/I Design / Rehabilitation Project (MWRA Project No. WRA-P11-27-3-1139). There have been no modifications and/or extensions of the collection over the last year. A small number of family homes were connected to the system in 2022 / 2023.

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 $11,400,800 allotted through the program's Phases 1 - 14, the community has $6,429,742 remaining in funding assistance.

28. READING: North System

Background Information:
- Miles of Sewer: 100
- Sewered Population: 25,334
- Three Year (CY19 - CY22) Annual Average I/I: 1.17 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Infiltration and Inflow (I/I) Investigations Final Report (November 2012)
I/I Investigations Report - Section 2 Supplement (November 2014)

Private Source Inflow Removal Program: The Town is continuing to work with property owners where illicit connections were found during the Building Inspection Program. The Town is working to establish a private inflow removal program which will utilize funds collected under development fees.

I/I Rehabilitation Projects in Design or Construction: The Collection System Lining Project began Summer 2022 and is now complete. Project work consisted of approximately 15,500 LF of CIPP lining, 6000 LF of CCTV inspection and testing & sealing of laterals at 130 locations.

In March 2021, MWRA funds were distributed for the Town-Wide Sewer System Rehabilitation: Study / Design / Construction Project (MWRA Project No. WRA-P11-28-3-1164).

Reporting Period Activity: Installed/replaced approximately 2300 LF of service laterals at 64 residences. In FY22, the Town received $23,295 in sewer I/I connection fees from various developments. In FY23, the Town received $0 in sewer I/I connection fees from various developments.

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 $8,789,100 allotted through the Program's Phases 1 - 14, the community has $2,080,000 remaining in funding assistance.

29. REVERE: North System

Background Information:

- Miles of Sewer: 98
- Sewered Population: 61,944
- Three Year (CY19 - CY22) Annual Average I/I: 2.89 mgd
- MassDEP Administrative Actions since 2010: None
- EPA Clean Water Act Administrative Order: CD 1:10-cv-11460 (November 16, 2010)

Latest I/I or SSES Reports:

SSES - Phase X Field Investigations (CWSRF 4387) (April 2020)
Illicit Connection Detection (Phase 5) (CWSRF 4386) (April 2020)
SSES - Phase XI Field Investigations (CWSRF 6648) (April 2021)
SSES - Phase XII Field Investigations (CWSRF 6800) (April 2022)
SSES - Phase XIII Field Investigations (CWSRF 6805) (August 2023)

Private Source Inflow Removal Program: Contract 9A project work to begin Summer/Fall 2023. Work includes redirection of 55 sump pumps and installation of 1325 LF of drain extensions. Contract 8A project work began Fall 2022. Work includes redirection of 25 sump pumps and installation of 530 LF of drain extensions. The City continues to maintain a 10:1 I/I removal fee based on development size. The City continues to maintain a 10:1 I/I removal fee based on development size.

I/I Rehabilitation Projects in Design or Construction: Rehabilitation work completed during FY23 includes: CIPP lining of 13,380 LF of 8-inch sewer; CIPP lining of 2200 LF of 10-inch sewer; CIPP lining of 300 LF of 12-inch sewer; installing service lateral connection liners at 355 locations; installing full length service lateral connection liners at 20 locations; performing 799 VF cement/epoxy manhole lining; sealing 88 manhole corbels; and performing 18 sewer spot repairs.

Reporting Period Activity: In August 2022, $500,000 in funds were distributed for Phase 13 Designs of Recommended Sewer Rehabilitations Project (MWRA Project No. WRA-P11-29-2-1196). In December 2021, $300,000 in funds were distributed for Phase 12 Designs of Recommended Sewer Rehabilitations Project (MWRA Project No. WRA-P11-29-2-1183). Sewer extensions added: Approximately 210 LF (8-inch PVC) on Walnut Street, 150 LF (8-inch PVC) on Winthrop Place and 150 LF (8-inch PVC) on Campbell Court.

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 $19,090,900 allotted through the Program's Phases 1 - 14, the community has $12,788,000 remaining in funding assistance.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 165
- Sewered Population: 81,045
- Three Year (CY19 - CY22) Annual Average I/I: 3.65 mgd
- MassDEP Administrative Actions: Unilateral Order (September 2010)

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

Latest I/I or SSES Report:

CIP Project 1 - Manhole Inspection, Assessment and Design (March 2021)
CIP Project 2 - Pipeline Inspection, Assessment, and Design (March 2022)
Citywide Drainage and Water Quality Master Plan (November 2022)
Ward 2 - Pipeline Inspection, Assessment, Design and Construction (June 2023)
FY22-23 Pipeline Inspection, Assessment, Design and Construction (Ongoing)
CSO Control Program - Joint Efforts by Cambridge, MWRA & Somerville (Ongoing)

Private Source Inflow Removal Program: The Engineering Division reviewed 106 site construction permits. Each permit enforced the Engineering Site Permit Rules and Regulations. Most involved some amount of redirection of stormwater from the combined sewer system and/or reduced stormwater runoff through groundwater recharge.

I/I Rehabilitation Projects in Design or Construction: The Ward 2 sewer rehabilitation project consisted of underground utility repair and specialty trenchless pipe rehabilitation on 8-inch to 15-inch gravity sewer. Work included performing 21 point repairs on the gravity sewer, installing five new 4-foot diameter sewer manholes, relocation of 230 LF of 8-inch gravity sewer and 20 LF of 10-inch gravity sewer; replacing two sewer manholes; and CIPP lining 20 pipe segments (6250 LF of sewer main). Project work substantially complete in June 2023. The estimated inflow removal was 0.02 mgd.

The current concept for the Poplar Street Pump Station includes a 4 million gallon storage tank (with 42-inch force main) and 50 mgd pumping capacity. The remainder of the project, including the influent box culvert and pump house, is at 100% design and will be issued for bidding late Summer 2023. The Pump Station is expected to be online in 2025.

Spring Hill Sewer Separation project construction started in February 2022. To date, approximately 7200 LF of (combined) sewer main has been CIPP lined and approximately 6800 LF of separated storm sewer line and 1500 LF of separated sanitary sewer line has been installed. An estimated inflow removal is 2.5 mgd will be realized once the Poplar Street Pump Station is completed. In addition, there is an estimated inflow removal of 30,000 gpd from the proposed Green Stormwater Infrastructure that will be realized once project construction is complete.

Somerville Avenue Infrastructure and Streetscape Improvement Project was substantially complete in June 2023. An estimated inflow removal is 0.4 mgd (inflow) will be realized once the construction of the Poplar Street Pump Station project is complete.

East Somerville & Winter Hill Sewer Rehabilitation Project consists of general underground utility repair and specialty trenchless pipe rehabilitation on gravity sewer ranging from 8 to 48-inch in diameter. Project work includes eight (8) excavated point repairs on the gravity sewer; replacement of 10 manhole-to-manhole pipe segments of gravity sewer totaling 1800 LF; CIPP rehabilitation of 51 manhole-to-manhole pipe segments of gravity sewer totaling 13,300 LF; installing 12 new 4-foot diameter sewer manholes; replacement of nine (9) sewer manholes; and the rehabilitation and lining of 70 sewer manholes. The estimated I/I removal estimated to be 0.90 mgd at project completion.

Reporting Period Activity: West Somerville & Ten Hills (FY23-FY24) Pipeline Inspection, Assessment and Design work ongoing. Winter Hill & East Somerville (FY22-23) Pipeline Inspection, Assessment and Design work ongoing.

Approximately 830 LF of the Marginal Interceptor pipeline has been rehabilitated with spray-in-place cementitious liner. The remainder of the 1300 LF pipeline has been crack-sealed and will be lined. I/I removal estimated at approximately 0.80 mgd.

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 $29,265,800 allotted through the Program's Phases 1 - 14, the community has $17,148,900 remaining in funding assistance.

31. STONEHAM: North System

Background Information:
- Miles of Sewer: 75
- Sewered Population: 23,001
- Three Year (CY19 - CY22) Annual Average I/I: 1.97 mgd
- MassDEP Administrative Actions: None
- EPA Clean Water Act Administrative Order: EPA Docket No. 09-028 (August 2009)

Latest I/I or SSES Report: Infiltration/Inflow Analysis Summary Report (December 2017)
Fallon Road Sanitary Sewer Investigations (December 2022)

Private Source Inflow Removal Program: The Town conducted an inflow analysis of the Fallon Road Pump Station tributary area and is evaluating options for removal of identified private inflow sources. The Town is continuing to investigate and eliminate illicit cross-connections between the sanitary sewer and storm water systems as part of its NPDES Phase 3 & 4 MS4 Permit Investigations and Illicit Discharge Detection and Elimination Program (IDDE).

I/I Rehabilitation Projects in Design or Construction: Phase 8 Sanitary Sewer System Rehabilitation (MWRA Project No. WRA-P11-31-3-1182) contract awarded March 2023. Project work scheduled to reach substantial completion Fall 2023.

Phase 7 Sanitary Sewer System Rehabilitation (MWRA Project No. WRA-P11-31-3-1107) contract awarded June 2021. Work included: pre- and post-rehabilitation CCTV inspection, CIPP lining, lateral connection rehabilitation by grout injection, replacement of gravity sewer and lateral connections, manhole bench reconstruction, manhole frame and cover replacement and warranty inspections of rehabilitated sanitary sewers. Project work is complete. Fallon Road / Park Street System Rehabilitation (Phase 1) Project work complete.

Reporting Period Activity: The Town is continuing to evaluate options for establishing a 4:1 I/I removal program in accordance with MassDEP Regulations 314 CMR 12.

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 $8,919,900 allotted through the Program's Phases 1 - 14, the community has $2,060,000 remaining in funding assistance.

32. STOUGHTON: South System

Background Information:
- Miles of Sewer: 94
- Sewered Population: 21,493
- Three Year (CY19 - CY22) Annual Average I/I: 1.49 mgd
- MassDEP Administrative Actions since 2010: None

Latest I/I or SSES Report: Year 8 (Round 2) I/I Evaluation (February 2021)
Year 9 (Round 2) I/I Evaluation (March 2022)
Year 10 (Round 2) I/I Evaluation (April 2023)
Year 1 2023 I/I Investigation & Reporting (Ongoing)

Private Source Inflow Removal Program: The Town has adopted new sewer use regulations which address private inflow removal. CCTV inspection of service connections / house-to-house inspections limited due to COVID-19 restrictions.

Crescent Ridge Private Inflow Identification/Removal Project: Crescent Ridge Dairy requires identification and removal of inflow sources per MWRA OP#11 requirements. To facilitate this, a private inflow identification and removal program was initiated. Private inflow information letters were sent to approximately 2440 residences. The final round of notification letters was sent out in July 2022. Follow-up building inspections completed Fall 2022. Investigation of suspect sources and evaluation of rehabilitations is ongoing. Source removal totals to be reported upon completion of project.

I/I Rehabilitation Projects in Design or Construction: Years 8 / 9 / 10 I/I Rehabilitation - Design Project (MWRA Project No. WRA-P14-32-3-1410) began Spring 2023. Years 8 / 9 / 10 I/I Rehabilitation Construction to be bid Fall/Winter 2023 (MWRA Project No. WRA-P14-32-3-1410).

Years 6 and 7 Construction Design (MWRA Project No. WRA-P11-32-3-1138) complete March 2020. Construction began in June 2020 (Stoughton Contract 20-1 / MWRA Project Nos. WRA-P11-32-3-1138 / 1155). Project work substantially complete December 2020. Warranty retesting work to be complete Fall 2023. Project will remove an estimated 0.09 mgd of peak infiltration and 0.01 mgd of peak inflow.

Reporting Period Activity: Year 1 2023 I/I Investigation & Reporting Project (MWRA Project No. WRA-P14-32-2-1410) is ongoing. Data review/report to be complete Winter 2024.

Year 10 (Round 2) Spring 2022 I/I Investigation completed Spring 2022. Data review/report completed April 2023. Investigation identified 0.03 mgd of peak removable infiltration and 0.01 mgd of peak removable inflow.

Year 9 Spring 2021 I/I Investigation (MWRA Project No. WRA-P11-32-1-1170) completed Summer 2021. Data review/report preparation completed March 2022. Investigation identified 0.02 mgd of peak removable infiltration and 0.01 mgd of peak removable inflow.

Reprioritized Year 8 Spring 2020 I/I Investigation (MWRA Project No. WRA-P11-32-3-1138) completed Spring 2020. Data review/report preparation completed February 2021. Investigation identified 0.03 mgd of peak removable infiltration and 0.02 mgd of peak removable inflow.

The third phase of the privately funded Goddard Highlands Development was completed in Spring 2022. Approximately 5000 LF of gravity sewer, 2400 LF of force main and a municipal pump station have been installed.

The 2020 Annual Town Meeting approved $7.5 million for the construction of the South Stoughton Sewer Extension Project. This project will include the installation of 8700 LF of gravity sewer, a sewer pump station and 4300 LF of pressurized force main. The project will service 28 commercial/industrial properties in the Campanelli Business Park and Park Street area as well as 45 residential properties along Park Street, Turnpike Street and Tenth Street. Project work is ongoing.

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 $8,962,900 allotted through the Program's Phases 1 - 14, the community has $1,060,000 remaining in funding assistance.

33. WAKEFIELD: North System

Background Information:

- Miles of Sewer: 95
- Sewered Population: 27,001
- Three Year (CY19 - CY22) Annual Average I/I: 2.31 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Sewer System Evaluation Survey - Year Four (March 2020)
Sewer System Evaluation Survey - Year Five (February 2021)
Sewer System Evaluation Survey - Year Six (March 2023)

Private Source Inflow Removal Program: The Town is developing a plan to notify residents in the Paon Boulevard area of a potential pilot building inspection program to investigate private inflow sources.

I/I Rehabilitation Projects in Design or Construction: The Year Five Sewer System Evaluation Survey was completed in February 2021 and included CCTV and manhole inspections of approximately 16,000 LF of sewer main. This project identified 1600 gpd of recommended removable peak I/I and structural defects in select areas that are scheduled to be paved within the next few calendar years. Some of these repairs were completed within the Sewer System Infiltration Rehabilitation - Year 4 construction project (MWRA Project No. WRA-P11-33-3-1150). The remaining repairs will be incorporated into the Year 5 Sewer System Infiltration Rehabilitation construction contract tentatively scheduled for bid August 2023.

The Sewer System Infiltration Rehabilitation (Year 3 and Year 4) construction contracts were complete February 2023.

Reporting Period Activity: The Town continues to require a 4 to 1 removal of flow from completed subdivisions/ developments. Also, the Town implemented a $500 Sewer Connection Fee in June 2019. In August 2020, MWRA funds were distributed for the Year 4 - Sewer System Infiltration Rehabilitation (Design & Construction) Project (MWRA Project No. WRA-P11-33-3-1150).

MWRA I/I Local Financial Assistance Program: The community has financed twenty-eight (28) I/I reduction projects through the Authority's funding assistance program. Of the $11,116,900 allotted through the Program's Phases 1 - 14, the community has $2,590,000 remaining in funding assistance.

34. WALPOLE: South System

Background Information:

- Miles of Sewer: 93
- Sewered Population: 19,449
- Three Year (CY19 - CY22) Annual Average I/I: 0.94 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: I/I Investigation Program (Round 2): Year 4 (January 2020)
I/I Investigation Program (Round 2): Year 5 (January 2021)
2020 Sewer Investigation (July 2021)
I/I Investigation Program (Round 2): Year 6 (April 2023)
2022 Flow Metering Program (May 2023)
CIP 1 Investigation (Ongoing)

Private Source Inflow Removal Program: The Town includes house-to-house private inflow inspection program as part of its water meter replacement program. Effective July 1, 2020, developers are no longer required to remove I/I as a condition of a sewer connection. The I/I removal program remains in place; however, it will now be fully funded by the Town. [Previous Developer Flow Reduction Program: For new connections greater than 15,000 gpd, a 4 to 1 reduction as per 314 CMR 12.04 is required. For new connections less than 15,000 gpd, developers are required to remove I/I at a ratio of 2.3 to 1 (developers may pay the Town $13.60 per gallon should they so choose)].

I/I Rehabilitation Projects in Design or Construction: The 2022 Sewer System Improvement project has reached substantial completion. This project incorporated three years of I/I investigation report findings (Year 4; Round 2, Year 5; and 2020 Sewer Investigation) into its rehabilitation construction process. Warranty retesting work scheduled for Fall 2023.

The 2020 Sewer System Improvements Project Design (MWRA Project No. WRA-P11-34-3-1135) was completed March 2020. The 2020 Sewer System Improvements Rehabilitation Construction Project (Walpole Contract 2020-18 / MWRA Project Nos. WRA-P11-34-3-1135 / 1146) was bid March 2020. Rehabilitation work was substantially complete in November 2020. Warranty retesting work was completed Fall 2021. This project incorporated four years of I/I investigation report findings (Year 8; Round 2, Year 1; Round 2, Year 2; and Round 2, Year 3) into its rehabilitation construction process. Approximately 35,064 gpd of infiltration was removed from pipelines and 13,752 gpd infiltration was removed from manholes.

Reporting Period Activity: The CIP 1 I/I Investigation (MWRA Project No. WRA-P14-34-1-1405) was completed in Spring 2023. Data review and reporting is ongoing.

Review and reporting for the Round 2, Year 6 Investigation data was completed April 2023. Approximately 20,880 gpd of peak infiltration was observed during CCTV inspection and 10,224 gpd of peak infiltration and 5432 gpd of peak inflow was identified during manhole inspection.

The 2020 Sewer Investigation Report (MWRA Project No. WRA-P11-34-3-1146) was based on CCTV inspection of 24,000 LF of sewer main and topside survey of 145 sewer manholes completed as part of the 2020 Sewer System Improvements Contract. Approximately 5328 gpd of infiltration was observed during CCTV inspection and 3024 gpd of infiltration was identified during manhole inspection.

The Year 5 I/I Investigation (Round 2) field work was completed Spring 2020. Data review and report preparation completed January 2021 (MWRA Project No. WRA-P11-34-3-1135). Approximately 31,968 gpd of peak infiltration was observed during television inspection and 24,912 gpd of peak infiltration and 39,130 gpd of peak inflow was identified during manhole inspection.

A total of 670 LF of 8-inch sewer main has been accepted into Walpole's system over the past year (along Winter Street and Washington Terrace).

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 $6,940,000 allotted through the Program's Phases 1 - 14, the community has $2,133,950 remaining in funding assistance.

35. WALTHAM: North System

Background Information:
- Miles of Sewer: 137
- Sewered Population: 64,375
- Three Year (CY19 - CY22) Annual Average I/I: 2.74 mgd
- MassDEP Administrative Actions: ACOP-NE-10-1N001 (February 2010)

Latest I/I or SSES Report: CMOM Plan and Sewer System Flow Metering (September 2020)
Sewer System Flow Metering and Analysis (February 2022)

Private Source Inflow Removal Program: From January 2023 to June 2023, thirty-one (31) sewer laterals were repaired / replaced (main to property line) by City crews. The Town estimated that the relaying of old sewer laterals has removed 214 gpd of I/I based upon the length of sewer laterals (a total of 884 LF of pipe was replaced).

From July 2022 to December 2022, forty-two (42) sewer laterals were repaired / replaced (main to property line) by City crews. The Town estimated that the relaying of old sewer laterals has removed 155 gpd of I/I based upon the length of the sewer laterals (a total of 555 LF of pipe was replaced).

I/I Rehabilitation Projects in Design or Construction: Area 13/14B - Bear Hill Valley Sewer Rehabilitation Project work began March 2021 and was substantially complete in February 2023 (MWRA Project No. WRA-P11-35-3-1167). Project work included: replacing 1368 LF of existing sewer main with SDR 35 PVC pipe; replacing 30 sewer existing services with 4-inch SDR 35 PVC (main to property line); replacing 10 existing brick sewer manholes with precast concrete structures; replacing seven (7) existing manhole frames and covers; CIPP lining 2573 LF of existing sewer main; and heavy cleaning of 2978 LF of existing sewer main. Average annual I/I removed was 0.38 mgd. The City also completed lining of 1250 LF of 15-inch sewer and lining of five (5) manholes on Second Avenue.

Reporting Period Activity: Jennings Road Rehabilitation is complete. Work included replacing 2400 LF of existing sewer main including existing sewer manholes and sewer services. The Wimbledon Circle Pump Station redesign is complete. Pump Station rehabilitation construction is ongoing. The Prospect Street Drainage and Sewer Improvements are complete.

MWRA I/I Local Financial Assistance Program: The community has financed ten (10) I/I projects through the Authority's funding assistance program. Of the $25,062,400 allotted through the Program's Phases 1 - 14, the community has $5,874,840 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:
- Miles of Sewer: 75
- Sewered Population: 35,329
- Three Year (CY19 - CY22) Annual Average I/I: 1.20 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: CIP Project 2 Investigation and Evaluation (December 2022)
CIP Projects 3&4 Investigation and Evaluation (December 2022)

Private Source Inflow Removal Program: A catch basin connected to sanitary sewer system disconnected and reconnected to the storm drain system on Sexton Street.

I/I Rehabilitation Projects in Design or Construction: CIP Project 1 Rehabilitations (Contract 19-01S) are complete (MWRA Project Nos. WRA-P11-36-3-1109 / 1133). The project included rehabilitations identified during the CIP Project 1 Inspection and Assessment and included 12,302 LF of sewer and drain inspected as part of Contract 18-01S. The project removed of an estimated 16,128 gpd of infiltration and 38,468 gpd of inflow.

CIP Project 1A Rehabilitations (Contract 20-01S) is complete. The project included rehabilitations identified during the CIP Project 1 Inspection and Assessment. The project removed of an estimated 13,392 gpd of infiltration and 38,468 gpd of inflow.

The CIP Project 1B Rehabilitations are substantially complete (MWRA Project No. WRA-P11-36-3-1173). The project included rehabilitations identified during the CIP Project 1 Inspection and Assessment project and various Illicit Discharge Detection and Elimination (IDDE) investigation projects. The project included removal of an estimated 14,885 gpd of infiltration and 38,470 gpd of inflow. Warranty inspections are scheduled to be completed in 2023.

The CIP Project 2 Investigation and Evaluation was completed in December 2022. The project identified an estimated 12,456 gpd of removable infiltration and 4000 gpd of removable inflow. Rehabilitations are currently in the design phase with construction scheduled to begin in 2023 (MWRA Project No: WRA-P14-36-3-1401).

The CIP Projects 3 and 4 Investigation and Evaluation was completed in December 2022. The project identified an estimated 12,816 gpd of removable infiltration and 8184 gpd of removable inflow. Rehabilitations are currently in the design phase with construction to be completed upon completion of CIP Project 2 (MWRA Project No: WRA-P14-36-3-1401).

Reporting Period Activity: The City is relocating the sewer main located in the easement between Greenough Boulevard and the Charles River into the right of way on Greenough Boulevard. The project is under construction and approximately 280 LF of sewer has been replaced.

MWRA I/I Local Financial Assistance Program: The community has financed twelve (12) I/I investigation projects through the Authority's funding assistance program. Of the $11,475,800 allotted through the Program's Phases 1 - 14, the community has $2,610,000 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:

- Miles of Sewer: 135
- Sewered Population: 28,978
- Three Year (CY19 - CY22) Annual Average I/I: 1.75 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: I/I Analysis and Flow Metering Program (April 2019)
SSES (Ongoing)

Private Source Inflow Removal Program: The Town will pursue illegal sump pump connections identified through this year's water meter change-out program. The Town still has approximately 500 meters to change out and will continue to use this opportunity to investigate any identified illegal connections. Based upon previous private source inflow studies, DPW is contacting the owners of identified illegal sump pumps. To date, 18 sump pumps have been removed from the sanitary system.

I/I Rehabilitation Projects in Design or Construction: In FY21, the Town hired a utility contractor (NWM) to address the areas of concern based on the analysis report prepared by its sewer consultant. The contract was for two years with an option for a third year. To date, 1444 LF of short liners have been installed and made multiple spot repairs performed. Also, 10,000 LF of sewer main has been CCTV inspected and 114 sewer manholes lined. The Town has just signed the third-year option of that contract and additional rehabilitation work will be undertaken Summer/Fall 2023. In addition, the Town also hired a root control specialty contractor who cleaned and treated 9161 LF of sewer main.

Sewer System Inspection and Rehabilitation (Contract No. 16C-460-1564 / MWRA Project No. WRA-P11-37-3-1152) work consisted of CCTV inspection of 62,800 LF of sewer; chemical root treatment of 7500 LF of sewer; testing 8800 joints and sealing/retesting 3100 joints; installing 24 LF of CIP short liners; testing & sealing six (6) service connections and sealing 400 VF of manholes. Project work is complete.

Cliff Road Sewer Main Lining (MWRA Project No. WRA-P11-37-3-1152) work consisted of CCTV inspection, installation of CIPP lining within 5260 LF of 8-inch VC sewer main and reinstatement of all active house service connections on Cliff Road. Additional project rehabilitation work consisted of CCTV inspection, installation of CIPP lining within 424 LF of 8-inch VC sewer main and reinstatement of all active house service connections along a sewer easement between Kingsbury Street and Donizetti Street. Project work is complete.

Reporting Period Activity: Using data from the I/I Analysis, the Town will focus on sealing manholes that have been inspected and found to have significant I/I. In Spring 2022, the Town performed a detailed inspection of 550 sewer manholes. A manhole rehabilitation contract is proposed for CY24. The Town also has a plan undertake smoke testing in the upcoming fiscal year.

A wastewater flow metering program (conducted April 11 - June 20, 2018) utilizing 38 flow meters was completed. The *Report for the I/I Analysis and Flow Metering Program* provided an overview of the results for the 2018 Flow Metering Program including recommendations for the next phase of investigations. The I/I Analysis identified approximately 3.40 mgd of total peak infiltration in the community system. Peak design storm inflow (for the 5-year, 24-hour storm) was calculated to be approximately 13.5 mgd. As a follow-up to the I/I Analysis, the Town is now conducting an SSES. The purpose of this study is to identify subareas of I/I throughout Wellesley's sanitary sewer system (MWRA Project No. WRA-P11-37-3-1152).

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 $10,429,700 allotted through the Program's Phases 1 - 14, the community has $5,690,000 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:

- Miles of Sewer: 89
- Sewered Population: 15,318
- Three Year (CY19 - CY22) Annual Average I/I: 0.71 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: FY21 Infiltration Rehabilitation Program (January 2021)
FY23 Infiltration Rehabilitation Program (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. The Town continues to use contracted services to CCTV inspect sewer mains at various locations for evidence of inflow.

I/I Rehabilitation Projects in Design or Construction: FY23 Sewer System Investigations ongoing. Wastewater flow meters were installed in three locations throughout the Town. Smoke testing, manhole inspections and CCTV inspection will occur in the area upstream of the meter with the highest infiltration and inflow volumes. Smoke testing, manhole inspections and CCTV inspection will performed Summer 2023. Rehabilitation construction rehabilitation is planned for Fall/Winter 2023.

Phase 3 I/I Rehabilitation Program investigation work (CCTV and sewer manhole inspection) began March 2021 and was complete July 2021. Phase 3 I/I Rehabilitation Design work completed November 2021. Phase 3 I/I Rehabilitation (FY22 Sewer System Rehabilitation: Town Bid No. DPW-22-B-009) bid January 2022 (MWRA Project No. WRA-P11-38-3-1179). CIPP lining work was performed in June 2022. Rehabilitation construction completed Summer 2022. Warranty Inspection completed December 2022.

FY20 Sewer System Rehabilitation Program removed an estimated 70,000 gpd of infiltration from the sewer system (based upon estimated infiltration quantities observed during the FY19 Sewer Investigations CCTV inspection). The FY19 Sewer Investigations were conducted in November 2018 and included 17,361 LF of CCTV inspections and 99 top-side manhole inspections.

Reporting Period Activity: Construction of large retail/residential development on University Avenue is ongoing. The project involves installation of new 6 and 8-inch PVC sewer mains throughout the development.

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 $4,932,300 allotted through the Program's Phases 1 - 14, the community has $2,341,000 remaining in funding assistance.

39. WEYMOUTH: South System

Background Information:

- Miles of Sewer: 205
- Sewered Population: 55,061
- Three Year (CY19 - CY22) Annual Average I/I: 4.49 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: Town-Wide Sewer Investigation - Year 9 (March 2021)
Town-Wide Sewer Investigation - Year 10 (November 2021)
Town-Wide Sewer Investigation - Year 11 (January 2023)
Town-Wide Sewer Investigation - Year 12 (Ongoing)

Private Source Inflow Removal Program: The Town continues to pursue the removal of sump pumps and other private inflow sources. The Town has completed the redirection of 330 sump pumps (for an estimated 165,000 gpd of inflow removal).

I/I Rehabilitation Projects in Design or Construction: The Year 9 & 10 I/I Rehabilitation Construction (Weymouth Contract No. PW-22-003-S) began Fall 2022 and was substantially complete June 2023 (MWRA Project No. WRA-P11-39-3-1195). Approximately 0.12 mgd of infiltration and 0.009 mgd of peak design storm inflow was removed through construction. The Year 9 & 10 I/I Rehabilitation Construction Design completed Spring 2022 (MWRA Project No. WRA-P11-39-2-1185).

Year 8 Rehabilitation Construction was completed May 2022 (MWRA Project No. WRA-P11-39-3-1157). Approximately 0.26 mgd of infiltration and 0.006 mgd of peak design storm inflow was removed through construction. Rehabilitation design (based on the Year 8 report recommendations) completed February 2021. The Year 8 I/I Investigation was completed in October 2019. The investigation identified approximately 0.51 mgd of infiltration and 0.06 mgd of peak design storm inflow.

Reporting Period Activity: The Year 11 I/I Rehabilitation Design Project is ongoing (MWRA Project No. WRA-P14-39-2-1409). Project work will include the design of public sewer rehabilitations and replacements based on the results of the Town-Wide Sewer Investigation and Rehabilitation Program - Year 11 Letter Report. The design of the Year 11 I/I Rehabilitations shall include approximately: 7400 LF of cleaning, inspecting, testing, and sealing of sewers; 4400 LF of light cleaning and television inspection; 2400 LF of heavy cleaning and television inspection; 7400 LF of cured-in-place pipe and structural cured-in-place pipe; installation of short liners and structural short liners at eight (8) locations; testing and grouting of 34 service laterals; installing lateral liners at five (5) locations; open cut point repair at four (4) locations; manhole cementitious lining at 52 locations; replacing one (1) sewer manhole frame & cover; repairing one (1) sewer manhole bench & invert; and installing 11 manhole inflow dishes.

The Year 12 I/I Investigation is currently ongoing (MWRA Project No. WRA-P14-39-2-1409). Field investigations have been completed. Data review and reporting are currently ongoing. The Year 11 I/I Investigation was completed January 2023 (MWRA Project No WRA-P11-39-2-1185). The Year 10 I/I Investigation (MWRA Project No WRA-P11-39-3-1157) was completed November 2021. The Year 9 I/I Investigation was completed in March 2021.

The 2021 Town-Wide Wastewater Flow Metering Project is complete. Flow from the Town's 31 subareas was monitored with 36 flow meters from March 22 to June 16, 2021. Summary Report completed January 2022.

No sewer extensions were completed in the last year. Gravity sewers were redirected near the Weymouth Landing Pump Station. This pump station has been abandoned.

MWRA I/I Local Financial Assistance Program: The community has financed twenty-three (23) I/I reduction projects through the Authority's funding assistance program. Of the $21,750,900 allotted through the Program's Phases 1 - 14, the community has $7,801,316 remaining in funding assistance.

40. WILMINGTON: North System

Background Information:
- Miles of Sewer: 31
- Sewered Population: 4,819
- Three Year (CY19 - CY22) Annual Average I/I: 0.71 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Infiltration/Inflow Analysis Report (December 2017)
SSES Sub-Areas 5, 6 and 8 Report (November 2018)

Private Source Inflow Removal Program: The Town is continuing private inflow source inspections on an as-needed basis. The Town continues to evaluate options for establishing a 4:1 I/I removal program in accordance with MassDEP Regulations 314 CMR 12.

I/I Rehabilitation Projects in Design or Construction: Sewer System Rehabilitation Construction for I/I rehabilitation in Sub-Areas 5 and 8 (MWRA Project Nos. WRA-P11-40-3-1118 / 1136) was completed September 2021. Project Warranty Inspections were completed Fall 2022. An estimated 60,000 gpd of I/I was removed from the system as a result of the sewer rehabilitation.

Reporting Period Activity: There is ongoing construction at No. 364 Middlesex Avenue for a new wastewater pump station and a gravity sewer extension/force main along Middlesex Avenue for the Jefferson Road housing development. A capacity assessment and peer review of the design plans and specifications for this project was completed.

There is ongoing construction at No. 201 Lowell Street (Textron's facility) for a new warehouse/distribution facility with demolition of the existing facility underway. Prior to the start of demolition, a capacity assessment, manhole inspections and CCTV inspections of existing and private sewers, along with a peer review, was completed.

There is ongoing construction at Nos. 205-207 Lowell Street for a new mixed-use commercial/residential development. A capacity assessment and peer review for this project was completed.

There is ongoing preliminary design for a new housing development at Nos. 100-104 West Street, which includes a proposed connection to the existing sewer on Lowell Street. A capacity assessment and peer review for this project was completed.

There is a development proposal for No. 208 Main Street for the redevelopment of an existing commercial building. A capacity assessment and peer review for this project is forthcoming.

There is a development proposal for No. 190 Main Street for the expansion of an existing recreational facility (ice rink). A capacity assessment and peer review for this project is forthcoming.

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 $4,822,000 allotted through the Program's Phases 1 - 14, the community has $2,360,000 remaining in funding assistance.

41. WINCHESTER: North System

Background Information:
- Miles of Sewer: 85
- Sewered Population: 22,924
- Three Year (CY19 - CY22) Annual Average I/I: 1.31 mgd
- MassDEP Administrative Actions: None

Latest I/I or SSES Report: Stowell & Marshall Road Sewer System Evaluation (January 2014)
Sewer System Evaluation Survey (SSES) Phase II (November 2016)

Private Source Inflow Removal Program: The Town's Private Inflow Source Removal Program is ongoing. One (1) sump pump was removed from the system in FY22/23.

I/I Rehabilitation Projects in Design or Construction: The Phase II Rehabilitations (Part B) Warranty Re-Test Inspection was completed June 2022. The Phase II Sanitary Sewer Rehabilitations (Part B) removed an estimated 62,319 gpd of infiltration and 17,301 gpd of inflow.

Reporting Period Activity: The East Side CIP Project 1 SSES began in April 2022. Manhole inspections and flow isolation work is complete. CCTV Inspections were completed June 2023. Data evaluation and reporting will be completed Fall 2023.

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 $7,673,000 allotted through the Program's Phases 1 - 14, the community has $1,750,000 remaining in funding assistance.

42. WINTHROP: North System

Background Information:

- Miles of Sewer: 36
- Sewered Population: 19,316
- Three Year (CY19 - CY22) Annual Average I/I: 1.01 mgd
- MassDEP Administrative Actions: NON - May 2018 Failed to Submit I/I Analysis (Due 12/31/17)

Latest I/I or SSES Report: I/I Analysis Report (October 2019)
Flow Monitoring Program (May 2020)
Phase 2 Sewer System Evaluation Survey (June 2021)
Phase 3 Sewer System Evaluation Survey (Ongoing)

Private Source Inflow Removal Program: The DPW, in partnership with the Town's Building and Plumbing Inspectors, continues to actively seek out illegal sump pump connections to the Town's sewer system. Smoke testing was postponed due to scheduling conflicts. Smoke testing work will be included within the remaining CCTV inspection work in the next phase of the Town's Sanitary Sewer System Evaluation Survey. Inspection data will be reviewed and recommendations to remove I/I will be summarized in a report.

I/I Rehabilitation Projects in Design or Construction: The Palmyra Street and Crescent Street Sewer Improvements Project was completed in 2021/2022 (MWRA Project No. WRA-P11-42-3-1145). Project work consisted of sewer main replacement construction on Palmyra Street, Wheelock Street, Pauline Street and Crescent Street. Work included replacing approximately 1265 LF feet of 8 and 15-inch vitrified clay (VC) sewer mains with new 8 through 12-inch polyvinyl chloride (PVC) sewer mains.

The replacement of approximately 350 LF of gravity sewer on Jefferson Street was added to the Centre Business District project (MWRA Project No. WRA-P11-42-3-1144) based on unforeseen site conditions observed during construction of drainage improvements on Jefferson Street. The existing 6-inch VC sewer main in Jefferson Street was found to have collapsed in two locations and inspections noted that the remaining section of pipe was deteriorating. A new 8-inch SDR 35 PVC sewer main (including two new precast concrete manholes) was installed to replace the existing 6-inch VC sewer main.

Reporting Period Activity: Approximately 31,500 LF of 8 to 15-inch sewer main was cleaned and CCTV inspected during Fall 2021. The inspections were reviewed and infiltration observed in each subarea inspected was estimated. An analysis was also completed to determine where rehabilitation to remove I/I entering the sanitary sewer system is cost-effective. The Phase 3 SSES report is currently being drafted and is expected to be completed Fall 2023. In December 2021, MWRA funds were distributed for the Phase 3 SSES Project (MWRA Project No. WRA-P11-42-1-1181).

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. Of the $6,293,400 allotted through the Program's Phases 1 - 14, the community has $1,210,000 remaining in funding assistance.

43. WOBURN: North System

Background Information:

- Miles of Sewer: 164
- Sewered Population: 40,080
- Three Year (CY19 - CY22) Annual Average I/I: 2.79 mgd
- MassDEP Administrative Actions Since 2010: None

Latest I/I or SSES Report: CIP Project 5 - Sewer Investigation and Evaluation (February 2021)
CIP Smoke Testing - Project 2 (September 2021)

Private Source Inflow Removal Program: No private inflow removal activity occurred during this reporting period.

I/I Rehabilitation Projects in Design or Construction: CIP Project 3 Rehabilitations warranty retest inspections were completed Spring 2022 (MWRA Project No. WRA-P11-43-3-1108). The project removed an estimated 56,981 gpd of peak infiltration and 9602 gpd of peak inflow.

Reporting Period Activity: CIP Project 4 Rehabilitations began Spring 2022 (MWRA Project No. WRA-P11-43-3-1134). Project work completed Fall 2022. Warranty retest inspections were completed Spring 2023. The project removed an estimated 27,606 gpd of peak infiltration and 17,473 gpd of peak inflow.

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 $18,505,500 allotted through the Program's Phases 1 - 14, the community has $3,830,000 remaining in funding assistance.

ATTACHMENT 6
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY23
Reporting Period – July 2022 Through June 2023

CY22 COMMUNITY WASTEWATER FLOW DATA

This Attachment contains CY22 wastewater flow data for the 43 MWRA member sewer communities. There are four separate data tables detailed below:

TABLE 1 (Section Page 6-2) presents the CY22 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 (Section Page 6-3) presents the CY22 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 daily 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 daily sanitary flow (non-I/I flow) includes: residential, commercial, industrial and institutional flows.

TABLE 3 (Section Page 6-4) presents the CY22 Final Community Wastewater Flow Component Estimates with additional information based on estimated community inch-diameter-miles of sewer.

TABLE 4 (Section Pages 6-5 through 6-17) presents the CY22 Estimated Community Wastewater Flow Components by month. 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 daily 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 - CY22 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

5/24/2023

Community	Total Population	Sewered Population	CY22 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	46,308	46,271	5.28	6.47	6.22	5.47	4.29	3.54	2.95	2.69	2.93	3.33	3.38	5.15	4.30	1.5%	6.47	1.6%
Ashland	18,832	14,717	1.36	1.62	1.56	1.49	1.24	1.13	1.10	1.13	1.22	1.20	1.21	1.46	1.31	0.5%	1.62	0.4%
Bedford	14,383	13,947	2.67	3.18	3.11	2.83	2.18	1.78	1.53	1.47	1.54	1.71	1.75	2.41	2.17	0.8%	3.18	0.8%
Belmont	27,295	26,932	3.10	4.36	3.81	3.21	2.42	1.91	1.67	1.61	1.80	2.12	2.04	3.16	2.59	0.9%	4.36	1.1%
BWSC	675,647	673,957	71.74	95.04	87.92	82.16	71.70	73.81	67.46	67.07	73.15	80.71	76.63	94.61	78.39	27.2%	95.04	23.8%
Braintree	39,143	39,049	6.24	9.60	7.66	6.40	4.96	4.23	3.64	3.46	4.26	6.02	5.51	8.14	5.82	2.0%	9.60	2.4%
Brookline	63,191	63,084	6.71	8.95	8.08	6.95	5.58	4.78	4.04	4.08	4.79	5.66	5.34	7.31	6.00	2.1%	8.95	2.2%
Burlington	26,377	25,790	3.84	4.57	4.41	4.14	3.39	2.88	2.48	2.35	2.50	2.60	2.72	3.73	3.29	1.1%	4.57	1.1%
Cambridge	118,403	118,379	18.39	24.14	22.57	20.80	17.95	18.11	16.80	17.79	18.10	18.68	17.63	22.21	19.40	6.7%	24.14	6.0%
Canton	24,370	17,201	2.72	4.12	3.57	3.11	2.53	2.10	2.03	2.04	2.51	2.83	2.74	3.77	2.83	1.0%	4.12	1.0%
Chelsea	40,787	40,787	5.78	7.92	6.78	6.09	4.95	5.59	4.85	4.82	5.39	5.76	5.46	7.16	5.87	2.0%	7.92	2.0%
Dedham	25,364	24,507	4.92	5.88	5.23	4.71	3.52	2.68	2.30	2.12	2.39	2.68	2.78	4.48	3.63	1.3%	5.88	1.5%
Everett	49,075	49,075	5.57	6.83	6.20	5.73	4.75	4.66	4.32	4.08	4.19	4.56	4.49	5.80	5.09	1.8%	6.83	1.7%
Framingham	72,362	69,727	8.03	8.85	9.95	9.54	7.68	6.46	5.88	5.70	6.09	6.51	6.40	8.51	7.46	2.6%	9.95	2.5%
Hingham	8,565	8,128	1.30	1.95	1.63	1.30	1.04	0.90	0.78	0.70	0.78	1.14	0.99	1.72	1.18	0.4%	1.95	0.5%
Holbrook	11,405	10,359	1.15	1.50	1.37	1.19	0.98	0.81	0.83	0.82	0.88	1.05	1.01	1.35	1.08	0.4%	1.50	0.4%
Lexington	34,454	33,856	6.50	7.82	7.74	7.39	5.76	4.43	3.51	3.11	3.32	3.50	3.68	5.65	5.18	1.8%	7.82	2.0%
Malden	66,263	65,969	7.42	8.42	8.77	8.47	7.71	6.66	6.05	5.76	5.97	6.41	6.59	8.70	7.24	2.5%	8.77	2.2%
Medford	59,659	59,624	7.52	10.19	9.15	8.24	6.33	5.59	4.92	4.43	4.90	5.34	5.27	8.30	6.66	2.3%	10.19	2.6%
Melrose	29,817	29,784	4.14	5.61	4.80	4.03	3.16	2.36	1.94	1.75	1.82	2.17	2.41	4.05	3.17	1.1%	5.61	1.4%
Milton	28,630	27,963	3.94	6.03	5.34	4.58	3.21	2.48	2.13	1.96	2.25	2.80	2.85	5.15	3.55	1.2%	6.03	1.5%
Natick	37,006	32,803	3.40	4.30	4.19	3.83	3.13	2.74	2.46	2.37	2.46	2.55	2.57	3.30	3.10	1.1%	4.30	1.1%
Needham	32,091	30,757	4.53	5.79	5.60	4.89	3.91	3.36	2.87	2.71	3.21	3.46	3.24	4.76	4.02	1.4%	5.79	1.5%
Newton	88,923	88,190	16.10	21.93	21.08	17.55	13.57	11.01	9.26	8.31	9.45	11.12	10.63	16.23	13.81	4.8%	21.93	5.5%
Norwood	31,611	31,458	6.40	8.62	8.17	7.01	5.30	4.47	3.84	3.51	4.16	4.64	4.67	7.38	5.66	2.0%	8.62	2.2%
Quincy	101,636	101,636	12.61	16.90	15.11	13.48	11.37	10.45	9.48	9.25	9.85	12.24	11.09	15.02	12.21	4.2%	16.90	4.2%
Randolph	34,984	34,920	3.86	5.50	5.01	4.24	3.38	2.95	2.58	2.46	2.85	3.40	3.35	4.85	3.69	1.3%	5.50	1.4%
Reading	25,518	25,334	2.71	3.13	3.01	2.60	2.08	1.70	1.50	1.45	1.49	1.66	1.79	2.81	2.16	0.8%	3.13	0.8%
Revere	62,186	61,944	7.44	9.24	6.68	7.23	6.62	6.01	6.04	5.66	6.03	6.61	6.54	8.68	6.88	2.4%	9.24	2.3%
Somerville	81,045	81,045	9.26	13.70	11.06	10.09	7.69	7.26	5.89	6.08	7.24	8.32	13.53	17.10	9.74	3.4%	17.10	4.3%
Stoneham	23,244	23,001	4.24	5.19	4.84	4.65	3.83	3.27	2.65	2.34	2.62	2.98	3.11	4.31	3.66	1.3%	5.19	1.3%
Stoughton	29,281	21,493	3.26	4.29	4.19	3.67	2.97	2.69	2.33	2.14	2.25	2.68	2.68	3.58	3.05	1.1%	4.29	1.1%
Wakefield	27,090	27,001	3.92	5.07	4.79	4.54	3.48	2.74	2.23	2.10	2.12	2.33	2.40	3.91	3.29	1.1%	5.07	1.3%
Walpole	26,383	19,449	2.33	2.92	2.76	2.64	2.32	2.13	1.88	1.76	1.99	2.11	2.12	2.58	2.29	0.8%	2.92	0.7%
Waltham	65,218	64,375	8.49	11.06	10.16	9.36	7.51	6.38	5.57	5.21	5.80	6.51	6.31	8.82	7.58	2.6%	11.06	2.8%
Watertown	35,329	35,329	4.18	5.18	4.86	4.29	3.54	3.10	2.57	2.55	2.88	3.12	3.00	3.92	3.59	1.2%	5.18	1.3%
Wellesley	29,550	28,978	4.13	5.71	5.62	4.78	3.48	2.78	2.29	2.16	2.73	3.10	2.92	4.36	3.66	1.3%	5.71	1.4%
Westwood	16,266	15,318	1.63	2.07	1.85	1.69	1.40	1.21	0.83	0.86	0.97	1.05	1.27	1.75	1.38	0.5%	2.07	0.5%
Weymouth	57,437	56,061	8.68	12.00	10.67	8.87	7.47	6.78	5.91	5.60	6.55	8.64	7.68	10.98	8.30	2.9%	12.00	3.0%
Wilmington	23,349	4,819	1.64	1.93	1.90	1.74	1.55	1.49	1.24	1.32	1.33	1.39	1.43	1.58	1.54	0.5%	1.93	0.5%
Winchester	22,970	22,924	3.71	4.49	4.36	3.83	2.98	2.52	2.05	1.80	1.87	2.09	2.27	3.55	2.95	1.0%	4.49	1.1%
Winthrop	19,316	19,316	2.18	2.62	2.44	2.16	1.92	1.91	1.88	1.81	1.96	2.04	1.84	2.42	2.10	0.7%	2.62	0.7%
Woburn	40,876	40,080	7.91	9.71	8.89	8.74	7.06	6.00	5.72	5.21	5.79	6.14	6.24	8.16	7.11	2.5%	9.71	2.4%
Total/Average	2,391,639	2,325,337	300.93	394.40	363.11	329.71	271.89	249.84	222.28	215.60	236.38	264.96	261.56	352.87	287.97	100%	399.25	100%
Logan Airport Monthly Rainfall (in)			2.33	4.61	2.93	2.32	1.32	2.33	0.62	1.47	2.60	4.28	2.69	3.75				

TABLE 2 - 2022 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY22-12 MONTHS)

5/24/2023

	A	B	C	D	E	2022 Averages (1) F	G	H	Components of Average Daily Flow (Estimated) (2) 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 Daily Flow	Selected Dry Day	Average Daily	Infiltration As a % of Average	Average Sanitary Flow	Sanitary As a % of Average	Average Daily	Inflow As a % of Average	Peak Month	Percent Peak Month
	Total Population	Sewered Population	to MWRA System	Local Sewers (3)	Permanent System	ADF (MGD)	(6)	ADF (MGD)	Infiltration (MGD)	Daily Flow	(MGD)	Daily Flow	Inflow (4) (MGD)	Daily Flow	ADF (MGD)	ADF (6)
Arlington	46,308	46,271	327	117	7	4.30	1.49%	4.03	1.43	33.3%	2.60	60.5%	0.26	6.0%	6.47	1.62%
Ashland	18,832	14,717	2	78	2	1.31	0.45%	1.24	0.34	26.0%	0.90	68.7%	0.06	4.6%	1.62	0.41%
Bedford	14,383	13,947	1	77	4	2.17	0.75%	2.06	0.76	35.0%	1.30	59.9%	0.11	5.1%	3.18	0.80%
Belmont	27,295	26,932	2	76	2	2.59	0.90%	2.33	0.83	32.0%	1.50	57.9%	0.26	10.0%	4.36	1.09%
BWSC (5)	675,647	673,957	255	854	33	78.39	27.22%	70.25	12.71	16.2%	57.54	73.4%	8.13	10.4%	95.04	23.80%
Braintree	39,143	39,049	21	140	8	5.82	2.02%	5.31	2.11	36.3%	3.20	55.0%	0.51	8.8%	9.60	2.40%
Brookline (5)	63,191	63,084	10	110	14	6.00	2.08%	5.55	1.36	22.7%	4.19	69.8%	0.45	7.5%	8.95	2.24%
Burlington	26,377	25,790	1	117	1	3.29	1.14%	3.12	1.12	34.0%	2.00	60.8%	0.18	5.5%	4.57	1.14%
Cambridge (5)	118,403	118,379	127	147	9	19.40	6.74%	16.77	4.77	24.6%	12.00	61.9%	2.63	13.6%	24.14	6.05%
Canton	24,370	17,201	65	87	6	2.83	0.98%	2.64	1.24	43.8%	1.40	49.5%	0.19	6.7%	4.12	1.03%
Chelsea (5)	40,787	40,787	47	42	8	5.87	2.04%	4.81	1.81	30.8%	3.00	51.1%	1.06	18.1%	7.92	1.98%
Dedham	25,364	24,507	30	89	8	3.63	1.26%	3.42	1.62	44.6%	1.80	49.6%	0.21	5.8%	5.88	1.47%
Everett	49,075	49,075	21	72	6	5.09	1.77%	4.75	1.45	28.5%	3.30	64.8%	0.33	6.5%	6.83	1.71%
Framingham	72,362	69,727	2	231	4	7.46	2.59%	7.11	2.31	31.0%	4.80	64.3%	0.35	4.7%	9.95	2.49%
Hingham	8,565	8,128	1	33	1	1.18	0.41%	1.08	0.58	49.2%	0.50	42.4%	0.10	8.5%	1.95	0.49%
Holbrook	11,405	10,359	2	49	2	1.08	0.38%	1.02	0.42	38.9%	0.60	55.6%	0.05	4.6%	1.50	0.38%
Lexington	34,454	33,856	17	171	6	5.18	1.80%	4.92	2.72	52.5%	2.20	42.5%	0.27	5.2%	7.82	1.96%
Malden	66,263	65,969	242	100	6	7.24	2.51%	6.94	1.94	26.8%	5.00	69.1%	0.30	4.1%	8.77	2.20%
Medford	59,659	59,624	74	120	6	6.66	2.31%	6.06	1.76	26.4%	4.30	64.6%	0.60	9.0%	10.19	2.55%
Melrose	29,817	29,784	188	75	5	3.17	1.10%	2.88	1.01	31.9%	1.87	59.0%	0.29	9.1%	5.61	1.41%
Milton	28,630	27,963	56	98	13	3.55	1.23%	3.22	1.72	48.5%	1.50	42.3%	0.32	9.0%	6.03	1.51%
Natick	37,006	32,803	30	129	4	3.10	1.08%	2.95	1.05	33.9%	1.90	61.3%	0.15	4.8%	4.30	1.08%
Needham	32,091	30,757	21	130	2	4.02	1.40%	3.78	1.78	44.3%	2.00	49.8%	0.24	6.0%	5.79	1.45%
Newton	88,923	88,190	52	284	7	13.81	4.80%	12.87	5.07	36.7%	7.80	56.5%	0.93	6.7%	21.93	5.49%
Norwood	31,611	31,458	31	108	6	5.66	1.97%	5.26	2.76	48.8%	2.50	44.2%	0.41	7.2%	8.62	2.16%
Quincy	101,636	101,636	56	209	6	12.21	4.24%	11.41	3.21	26.3%	8.20	67.2%	0.80	6.6%	16.90	4.23%
Randolph	34,984	34,920	2	113	2	3.69	1.28%	3.47	1.37	37.1%	2.10	56.9%	0.22	6.0%	5.50	1.38%
Reading	25,518	25,334	2	100	2	2.16	0.75%	2.05	0.75	34.7%	1.30	60.2%	0.11	5.1%	3.13	0.78%
Revere	62,186	61,944	3	98	2	6.88	2.39%	6.41	2.41	35.0%	4.00	58.1%	0.47	6.8%	9.24	2.31%
Somerville (5)	81,045	81,045	43	165	8	9.74	3.38%	7.94	2.34	24.0%	5.60	57.5%	1.80	18.5%	17.10	4.28%
Stoneham	23,244	23,001	27	75	7	3.66	1.27%	3.41	1.91	52.2%	1.50	41.0%	0.24	6.6%	5.19	1.30%
Stoughton	29,281	21,493	1	94	2	3.05	1.06%	2.88	1.38	45.2%	1.50	49.2%	0.17	5.6%	4.29	1.07%
Wakefield	27,090	27,001	11	95	2	3.29	1.14%	3.11	1.61	48.9%	1.50	45.6%	0.18	5.5%	5.07	1.27%
Walpole	26,383	19,449	1	93	2	2.29	0.80%	2.22	0.92	40.2%	1.30	56.8%	0.07	3.1%	2.92	0.73%
Waltham	65,218	64,375	5	137	4	7.58	2.63%	7.17	1.62	21.4%	5.55	73.2%	0.41	5.4%	11.06	2.77%
Watertown	35,329	35,329	14	75	3	3.59	1.25%	3.41	1.21	33.7%	2.20	61.3%	0.18	5.0%	5.18	1.30%
Wellesley	29,550	28,978	2	135	3	3.66	1.27%	3.42	1.72	47.0%	1.70	46.4%	0.24	6.6%	5.71	1.43%
Westwood	16,266	15,318	3	89	3	1.38	0.48%	1.30	0.42	30.4%	0.88	63.8%	0.07	5.1%	2.07	0.52%
Weymouth	57,437	56,061	19	205	4	8.30	2.88%	7.76	3.96	47.7%	3.80	45.8%	0.53	6.4%	12.00	3.01%
Wilmington	23,349	4,819	2	31	1	1.54	0.53%	1.49	0.69	44.8%	0.80	51.9%	0.05	3.2%	1.93	0.48%
Winchester	22,970	22,924	102	85	7	2.95	1.02%	2.78	1.58	53.6%	1.20	40.7%	0.17	5.8%	4.49	1.12%
Winthrop	19,316	19,316	22	36	4	2.10	0.73%	1.92	0.72	34.3%	1.20	57.1%	0.17	8.1%	2.62	0.66%
Woburn	40,876	40,080	18	164	13	7.11	2.47%	6.82	3.12	43.9%	3.70	52.0%	0.29	4.1%	9.71	2.43%
Totals/Averages	2,391,639	2,325,337	1,958	5,533		287.97	100.00%	263.34	85.61	29.7%	177.73	61.7%	24.56	8.5%	399.25	100.00%

FOOTNOTES:

(1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2022.

(2) Wastewater flow components are estimated through engineering analysis by MWRA staff.

(3) Miles of Local Sewers are from MWRA's regional collection system database or as reported by the Community and do not include service laterals.

(4) Average Daily Inflow is calculated as a total inflow over the period of January through December 2022 divided by 365 days. Actual inflow during a specific storm event must be calculated separately.

(5) Community with combined sewers. Inflow figures include combined flow during storm events tributary to MWRA's WWTP.

(6) Percent average Daily Flow and Percent Peak Month ADF are the two flow-based components of MWRA's Wholesale Sewer Rate Methodology.

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

TABLE 3 - 2022 Final Community Wastewater Flow Component Estimates

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	46,271	117	947	4.30	1.43	0.26	2.60	4,541	1,785	1,510	275	2,222	56
Ashland	14,717	78	682	1.31	0.34	0.06	0.90	1,921	587	499	88	769	61
Bedford	13,947	77	738	2.17	0.76	0.11	1.30	2,940	1,179	1,030	149	1,429	93
Belmont	26,932	76	671	2.59	0.83	0.26	1.50	3,860	1,624	1,237	387	3,421	56
BWSC	673,957	854	14,876	78.39	12.71	8.13	57.54	5,270	1,401	854	547	9,520	85
Braintree	39,049	140	1,302	5.82	2.11	0.51	3.20	4,470	2,012	1,621	392	3,643	82
Brookline	63,084	110	1,321	6.00	1.36	0.45	4.19	4,542	1,370	1,030	341	4,091	66
Burlington	25,790	117	1,200	3.29	1.12	0.18	2.00	2,742	1,083	933	150	1,538	78
Cambridge	118,379	147	2,183	19.40	4.77	2.63	12.00	8,887	3,390	2,185	1,205	17,891	101
Canton	17,201	87	864	2.83	1.24	0.19	1.40	3,275	1,655	1,435	220	2,184	81
Chelsea	40,787	42	609	5.87	1.81	1.06	3.00	9,639	4,713	2,972	1,741	25,238	74
Dedham	24,507	89	861	3.63	1.62	0.21	1.80	4,216	2,125	1,882	244	2,360	73
Everett	49,075	72	622	5.09	1.45	0.33	3.30	8,183	2,862	2,331	531	4,583	67
Framingham	69,727	231	2,352	7.46	2.31	0.35	4.80	3,172	1,131	982	149	1,515	69
Hingham	8,128	33	332	1.18	0.58	0.10	0.50	3,554	2,048	1,747	301	3,030	62
Holbrook	10,359	49	408	1.08	0.42	0.05	0.60	2,647	1,152	1,029	123	1,020	58
Lexington	33,856	171	1,777	5.18	2.72	0.27	2.20	2,915	1,683	1,531	152	1,579	65
Malden	65,969	100	926	7.24	1.94	0.30	5.00	7,819	2,419	2,095	324	3,000	76
Medford	59,624	120	1,039	6.66	1.76	0.60	4.30	6,410	2,271	1,694	577	5,000	72
Melrose	29,784	75	611	3.17	1.01	0.29	1.87	5,188	2,128	1,653	475	3,867	63
Milton	27,963	98	837	3.55	1.72	0.32	1.50	4,241	2,437	2,055	382	3,265	54
Natick	32,803	129	1,277	3.10	1.05	0.15	1.90	2,428	940	822	117	1,163	58
Needham	30,757	130	1,157	4.02	1.78	0.24	2.00	3,475	1,746	1,538	207	1,846	65
Newton	88,190	284	3,081	13.81	5.07	0.93	7.80	4,482	1,947	1,646	302	3,275	88
Norwood	31,458	108	1,091	5.66	2.76	0.41	2.50	5,188	2,906	2,530	376	3,796	79
Quincy	101,636	209	2,014	12.21	3.21	0.80	8.20	6,063	1,991	1,594	397	3,828	81
Randolph	34,920	113	1,153	3.69	1.37	0.22	2.10	3,200	1,379	1,188	191	1,947	60
Reading	25,334	100	897	2.16	0.75	0.11	1.30	2,408	959	836	123	1,100	51
Revere	61,944	98	950	6.88	2.41	0.47	4.00	7,242	3,032	2,537	495	4,796	65
Somerville	81,045	165	1,862	9.74	2.34	1.80	5.60	5,231	2,223	1,257	967	10,909	69
Stoneham	23,001	75	574	3.66	1.91	0.24	1.50	6,376	3,746	3,328	418	3,200	65
Stoughton	21,493	94	955	3.05	1.38	0.17	1.50	3,194	1,623	1,445	178	1,809	70
Wakefield	27,001	95	1,050	3.29	1.61	0.18	1.50	3,133	1,705	1,533	171	1,895	56
Walpole	19,449	93	904	2.29	0.92	0.07	1.30	2,533	1,095	1,018	77	753	67
Waltham	64,375	137	1,694	7.58	1.62	0.41	5.55	4,475	1,198	956	242	2,993	86
Watertown	35,329	75	621	3.59	1.21	0.18	2.20	5,781	2,238	1,948	290	2,400	62
Wellesley	28,978	135	1,391	3.66	1.72	0.24	1.70	2,631	1,409	1,237	173	1,778	59
Westwood	15,318	89	784	1.38	0.42	0.07	0.88	1,760	625	536	89	787	57
Weymouth	56,061	205	1,911	8.30	3.96	0.53	3.80	4,343	2,350	2,072	277	2,585	68
Wilmington	4,819	31	367	1.54	0.69	0.05	0.80	4,196	2,016	1,880	136	1,613	166
Winchester	22,924	85	699	2.95	1.58	0.17	1.20	4,220	2,504	2,260	243	2,000	52
Winthrop	19,316	36	317	2.10	0.72	0.17	1.20	6,625	2,808	2,271	536	4,722	62
Woburn	40,080	164	1,575	7.11	3.12	0.29	3.70	4,514	2,165	1,981	184	1,768	92
Total	2,325,337	5,533	61,482	287.98	85.61	24.56	177.73						
Average	54,078	129	1,430	6.70	1.99	0.57	4.13	4,510	1,946	1,598	347	3,770	71

Table 4 - Estimated Community Wastewater Flow Components for 2022 — 5/24/2023 — PAGE 1

Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Ashland	Average Daily Flow	1.36	1.62	1.56	1.49	1.24	1.13	1.10	1.13	1.22	1.20	1.21	1.46	1.31
	Dry Day Average Daily Flow	1.29	1.44	1.46	1.42	1.23	1.10	1.04	1.06	1.17	1.18	1.19	1.36	1.24
	Estimated Infiltration	0.39	0.54	0.56	0.52	0.33	0.20	0.14	0.16	0.27	0.28	0.29	0.46	0.34
	Estimated Sanitary Flow	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
	Estimated Inflow	0.07	0.18	0.10	0.07	0.01	0.03	0.06	0.07	0.05	0.02	0.02	0.10	0.06
Boston (South Only)	Raw Average Daily Flow	9.45	19.80	21.57	18.38	15.85	16.21	13.51	13.40	15.42	18.93	17.84	28.74	17.41
	Raw Dry Day Average Daily Flow	8.45	12.73	19.24	16.28	15.46	15.42	13.00	12.35	13.84	16.85	17.25	24.98	15.51
	Raw Estimated Infiltration	0.25	4.53	11.04	8.08	7.26	7.22	4.80	4.15	5.64	8.65	9.05	16.78	7.31
	MWRA Estimated Infiltration	0.09	1.70	4.14	3.03	2.72	2.71	1.80	1.56	2.12	3.25	3.40	6.30	2.74
	Final Average Daily Flow	9.36	18.10	17.43	15.35	13.13	13.50	11.71	11.84	13.30	15.68	14.44	22.44	14.67
	Final Dry Day Average Daily Flow	8.36	11.03	15.10	13.25	12.74	12.71	11.20	10.79	11.72	13.60	13.85	18.68	12.77
	Final Estimated Infiltration	0.16	2.83	6.90	5.05	4.54	4.51	3.00	2.59	3.52	5.40	5.65	10.48	4.57
	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	1.00	7.07	2.33	2.10	0.39	0.79	0.51	1.05	1.58	2.08	0.59	3.76	1.90
Braintree	Raw Average Daily Flow	6.69	10.30	8.31	6.86	5.23	4.39	3.71	3.47	4.38	6.40	5.89	8.86	6.18
	Raw Dry Day Average Daily Flow	6.28	7.99	7.65	6.30	5.06	4.28	3.68	3.24	4.02	5.81	5.80	8.11	5.67
	Raw Estimated Infiltration	3.08	4.79	4.45	3.10	1.86	1.08	0.48	0.04	0.82	2.61	2.60	4.91	2.47
	MWRA Estimated Infiltration	0.45	0.70	0.65	0.46	0.27	0.16	0.07	0.01	0.12	0.38	0.38	0.72	0.36
	Final Average Daily Flow	6.24	9.60	7.66	6.40	4.96	4.23	3.64	3.46	4.26	6.02	5.51	8.14	5.82
	Final Dry Day Average Daily Flow	5.83	7.29	7.00	5.84	4.79	4.12	3.61	3.23	3.90	5.43	5.42	7.39	5.31
	Final Estimated Infiltration	2.63	4.09	3.80	2.64	1.59	0.92	0.41	0.03	0.70	2.23	2.22	4.19	2.11
	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	0.41	2.31	0.66	0.56	0.17	0.11	0.03	0.23	0.36	0.59	0.09	0.75	0.51
Brookline (South Only)	Raw Average Daily Flow	3.82	5.35	4.96	4.18	3.17	2.76	2.31	2.26	2.60	3.09	2.83	4.38	3.46
	Raw Dry Day Average Daily Flow	3.59	4.45	4.27	3.82	3.04	2.61	2.27	2.16	2.41	2.80	2.75	3.68	3.15
	Raw Estimated Infiltration	1.44	2.30	2.12	1.67	0.89	0.46	0.12	0.01	0.26	0.65	0.60	1.53	1.00
	MWRA Estimated Infiltration	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	Final Average Daily Flow	3.81	5.33	4.95	4.17	3.16	2.76	2.31	2.26	2.60	3.09	2.83	4.37	3.46
	Final Dry Day Average Daily Flow	3.58	4.43	4.26	3.81	3.03	2.61	2.27	2.16	2.41	2.80	2.75	3.67	3.14
	Final Estimated Infiltration	1.43	2.28	2.11	1.66	0.88	0.46	0.12	0.01	0.26	0.65	0.60	1.52	0.99
	Estimated Sanitary Flow	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
	Estimated Inflow	0.23	0.90	0.69	0.36	0.13	0.15	0.04	0.10	0.19	0.29	0.08	0.70	0.32
Canton	Raw Average Daily Flow	2.84	4.32	3.77	3.26	2.64	2.17	2.09	2.08	2.61	2.96	2.87	3.98	2.96
	Raw Dry Day Average Daily Flow	2.70	3.54	3.54	3.09	2.56	2.16	2.04	1.89	2.45	2.80	2.80	3.72	2.77
	Raw Estimated Infiltration	1.30	2.14	2.14	1.69	1.16	0.76	0.64	0.49	1.05	1.40	1.40	2.32	1.37
	MWRA Estimated Infiltration	0.12	0.20	0.20	0.15	0.11	0.07	0.06	0.04	0.10	0.13	0.13	0.21	0.13
	Final Average Daily Flow	2.72	4.12	3.57	3.11	2.53	2.10	2.03	2.04	2.51	2.83	2.74	3.77	2.83
	Final Dry Day Average Daily Flow	2.58	3.34	3.34	2.94	2.45	2.09	1.98	1.85	2.35	2.67	2.67	3.51	2.64
	Final Estimated Infiltration	1.18	1.94	1.94	1.54	1.05	0.69	0.58	0.45	0.95	1.27	1.27	2.11	1.24
	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	0.14	0.78	0.23	0.17	0.08	0.01	0.05	0.19	0.16	0.16	0.07	0.26	0.19
Dedham	Average Daily Flow	4.92	5.88	5.23	4.71	3.52	2.68	2.30	2.12	2.39	2.68	2.78	4.48	3.63
	Dry Day Average Daily Flow	4.65	5.12	4.86	4.45	3.39	2.59	2.29	2.00	2.30	2.63	2.75	4.09	3.42
	Estimated Infiltration	2.85	3.32	3.06	2.65	1.59	0.79	0.49	0.20	0.50	0.83	0.95	2.29	1.62
	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	0.27	0.76	0.37	0.26	0.13	0.09	0.01	0.12	0.09	0.05	0.03	0.39	0.21

Table 4 - Estimated Community Wastewater Flow Components for 2022														5/24/2023 PAGE 2
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Framingham	Average Daily Flow	8.03	8.85	9.95	9.54	7.68	6.46	5.88	5.70	6.09	6.51	6.40	8.51	7.46
	Dry Day Average Daily Flow	7.39	7.82	9.35	9.12	7.42	6.36	5.74	5.52	5.81	6.44	6.38	7.98	7.11
	Estimated Infiltration	2.59	3.02	4.55	4.32	2.62	1.56	0.94	0.72	1.01	1.64	1.58	3.18	2.31
	Estimated Sanitary Flow	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
	Estimated Inflow	0.64	1.03	0.60	0.42	0.26	0.10	0.14	0.18	0.28	0.07	0.02	0.53	0.35
Hingham	Average Daily Flow	1.30	1.95	1.63	1.30	1.04	0.90	0.78	0.70	0.78	1.14	0.99	1.72	1.18
	Dry Day Average Daily Flow	1.19	1.53	1.41	1.24	1.02	0.87	0.75	0.64	0.76	1.00	0.99	1.55	1.08
	Estimated Infiltration	0.69	1.03	0.91	0.74	0.52	0.37	0.25	0.14	0.26	0.50	0.49	1.05	0.58
	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	0.11	0.42	0.22	0.06	0.02	0.03	0.03	0.06	0.02	0.14	0.00	0.17	0.10
Holbrook	Average Daily Flow	1.15	1.50	1.37	1.19	0.98	0.81	0.83	0.82	0.88	1.05	1.01	1.35	1.08
	Dry Day Average Daily Flow	1.09	1.25	1.28	1.12	0.97	0.80	0.82	0.81	0.87	1.01	1.01	1.26	1.02
	Estimated Infiltration	0.49	0.65	0.68	0.52	0.37	0.20	0.22	0.21	0.27	0.41	0.41	0.66	0.42
	Estimated Sanitary Flow	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	Estimated Inflow	0.06	0.25	0.09	0.07	0.01	0.01	0.01	0.01	0.01	0.04	0.00	0.09	0.05
Milton (South Only)	Average Daily Flow	3.67	5.63	5.00	4.30	2.97	2.26	1.93	1.77	2.05	2.58	2.64	4.86	3.29
	Dry Day Average Daily Flow	3.35	4.40	4.46	3.83	2.85	2.23	1.90	1.63	2.01	2.36	2.60	4.31	2.99
	Estimated Infiltration	2.00	3.05	3.11	2.48	1.50	0.88	0.55	0.28	0.66	1.01	1.25	2.96	1.64
	Estimated Sanitary Flow	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
	Estimated Inflow	0.32	1.23	0.54	0.47	0.12	0.03	0.03	0.14	0.04	0.22	0.04	0.55	0.31
Natick	Average Daily Flow	3.40	4.30	4.19	3.83	3.13	2.74	2.46	2.37	2.46	2.55	2.57	3.30	3.10
	Dry Day Average Daily Flow	3.23	3.71	3.83	3.65	3.05	2.69	2.44	2.29	2.39	2.52	2.55	3.06	2.95
	Estimated Infiltration	1.33	1.81	1.93	1.75	1.15	0.79	0.54	0.39	0.49	0.62	0.65	1.16	1.05
	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	0.17	0.59	0.36	0.18	0.08	0.05	0.02	0.08	0.07	0.03	0.02	0.24	0.15
Needham	Average Daily Flow	4.53	5.79	5.60	4.89	3.91	3.36	2.87	2.71	3.21	3.46	3.24	4.76	4.02
	Dry Day Average Daily Flow	4.27	4.99	5.11	4.66	3.87	3.25	2.81	2.52	3.04	3.35	3.16	4.37	3.78
	Estimated Infiltration	2.27	2.99	3.11	2.66	1.87	1.25	0.81	0.52	1.04	1.35	1.16	2.37	1.78
	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	0.26	0.80	0.49	0.23	0.04	0.11	0.06	0.19	0.17	0.11	0.08	0.39	0.24
Newton (South Only)	Raw Average Daily Flow	9.16	13.39	12.61	10.30	7.57	6.21	5.10	4.42	5.08	6.24	5.89	9.70	7.94
	Raw Dry Day Average Daily Flow	8.63	10.94	11.12	9.76	7.41	5.98	4.96	4.15	4.81	5.92	5.86	8.48	7.31
	Raw Estimated Infiltration	4.53	6.84	7.02	5.66	3.31	1.88	0.86	0.05	0.71	1.82	1.76	4.38	3.21
	MWRA Estimated Infiltration	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	Final Average Daily Flow	9.15	13.37	12.59	10.29	7.56	6.21	5.10	4.42	5.08	6.24	5.89	9.69	7.93
	Final Dry Day Average Daily Flow	8.62	10.92	11.10	9.75	7.40	5.98	4.96	4.15	4.81	5.92	5.86	8.47	7.31
	Final Estimated Infiltration	4.52	6.82	7.00	5.65	3.30	1.88	0.86	0.05	0.71	1.82	1.76	4.37	3.21
	Estimated Sanitary Flow	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
	Estimated Inflow	0.53	2.45	1.49	0.54	0.16	0.23	0.14	0.27	0.27	0.32	0.03	1.22	0.63

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		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	6.80	9.16	8.74	7.47	5.61	4.67	3.99	3.61	4.31	4.85	4.92	7.87	5.98
	Raw Dry Day Average Daily Flow	6.36	7.74	8.02	6.97	5.49	4.41	3.92	3.46	3.97	4.56	4.90	7.23	5.57
	Raw Estimated Infiltration	3.86	5.24	5.52	4.47	2.99	1.91	1.42	0.96	1.47	2.06	2.40	4.73	3.07
	MWRA Estimated Infiltration	0.40	0.54	0.57	0.46	0.31	0.20	0.15	0.10	0.15	0.21	0.25	0.49	0.32
	Final Average Daily Flow	6.40	8.62	8.17	7.01	5.30	4.47	3.84	3.51	4.16	4.64	4.67	7.38	5.66
	Final Dry Day Average Daily Flow	5.96	7.20	7.45	6.51	5.18	4.21	3.77	3.36	3.82	4.35	4.65	6.74	5.26
	Final Estimated Infiltration	3.46	4.70	4.95	4.01	2.68	1.71	1.27	0.86	1.32	1.85	2.15	4.24	2.76
	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	0.44	1.42	0.72	0.50	0.12	0.26	0.07	0.15	0.34	0.29	0.02	0.64	0.41
Quincy	Average Daily Flow	12.61	16.90	15.11	13.48	11.37	10.45	9.48	9.25	9.85	12.24	11.09	15.02	12.21
	Dry Day Average Daily Flow	11.81	14.17	14.18	12.47	10.97	10.16	9.26	8.81	9.46	11.20	10.91	13.73	11.41
	Estimated Infiltration	3.61	5.97	5.98	4.27	2.77	1.96	1.06	0.61	1.26	3.00	2.71	5.53	3.21
	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	0.80	2.73	0.93	1.01	0.40	0.29	0.22	0.44	0.39	1.04	0.18	1.29	0.80
Randolph	Average Daily Flow	3.86	5.50	5.01	4.24	3.38	2.95	2.58	2.46	2.85	3.40	3.35	4.85	3.69
	Dry Day Average Daily Flow	3.65	4.57	4.67	3.94	3.33	2.87	2.48	2.38	2.71	3.29	3.26	4.56	3.47
	Estimated Infiltration	1.55	2.47	2.57	1.84	1.23	0.77	0.38	0.28	0.61	1.19	1.16	2.46	1.37
	Estimated Sanitary Flow	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
	Estimated Inflow	0.21	0.93	0.34	0.30	0.05	0.08	0.10	0.08	0.14	0.11	0.09	0.29	0.22
Stoughton	Average Daily Flow	3.26	4.29	4.19	3.67	2.97	2.69	2.33	2.14	2.25	2.68	2.68	3.58	3.05
	Dry Day Average Daily Flow	3.09	3.63	3.94	3.39	2.92	2.56	2.29	2.08	2.16	2.53	2.62	3.38	2.88
	Estimated Infiltration	1.59	2.13	2.44	1.89	1.42	1.06	0.79	0.58	0.66	1.03	1.12	1.88	1.38
	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	0.17	0.66	0.25	0.28	0.05	0.13	0.04	0.06	0.09	0.15	0.06	0.20	0.17
Walpole	Average Daily Flow	2.33	2.92	2.76	2.64	2.32	2.13	1.88	1.76	1.99	2.11	2.12	2.58	2.29
	Dry Day Average Daily Flow	2.27	2.59	2.71	2.49	2.28	2.10	1.87	1.72	1.95	2.04	2.10	2.53	2.22
	Estimated Infiltration	0.97	1.29	1.41	1.19	0.98	0.80	0.57	0.42	0.65	0.74	0.80	1.23	0.92
	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	0.33	0.05	0.15	0.04	0.03	0.01	0.04	0.04	0.07	0.02	0.05	0.07
Wellesley	Average Daily Flow	4.13	5.71	5.62	4.78	3.48	2.78	2.29	2.16	2.73	3.10	2.92	4.36	3.66
	Dry Day Average Daily Flow	3.86	4.81	5.06	4.60	3.39	2.68	2.25	1.99	2.62	3.07	2.90	3.91	3.42
	Estimated Infiltration	2.16	3.11	3.36	2.90	1.69	0.98	0.55	0.29	0.92	1.37	1.20	2.21	1.72
	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	0.27	0.90	0.56	0.18	0.09	0.10	0.04	0.17	0.11	0.03	0.02	0.45	0.24
Westwood	Average Daily Flow	1.63	2.07	1.85	1.69	1.40	1.21	0.83	0.86	0.97	1.05	1.27	1.75	1.38
	Dry Day Average Daily Flow	1.57	1.77	1.72	1.60	1.38	1.17	0.82	0.84	0.90	1.02	1.24	1.66	1.30
	Estimated Infiltration	0.67	0.87	0.82	0.70	0.48	0.27	0.02	0.04	0.00	0.12	0.34	0.76	0.42
	Estimated Sanitary Flow	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.90	0.90	0.90	0.90	0.88
	Estimated Inflow	0.06	0.30	0.13	0.09	0.02	0.04	0.01	0.02	0.07	0.03	0.03	0.09	0.07

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		PAGE 4	Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Weymouth	Average Daily Flow	8.68	12.00	10.67	8.87	7.47	6.78	5.91	5.60	6.55	8.64	7.68	10.98	8.30
	Dry Day Average Daily Flow	8.23	10.08	10.10	8.18	7.36	6.60	5.75	5.23	6.22	7.77	7.67	10.12	7.76
	Estimated Infiltration	4.43	6.28	6.30	4.38	3.56	2.80	1.95	1.43	2.42	3.97	3.87	6.32	3.96
	Estimated Sanitary Flow	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
	Estimated Inflow	0.45	1.92	0.57	0.69	0.11	0.18	0.16	0.37	0.33	0.87	0.01	0.86	0.53
Subtotal (Southern System)	Raw Average Daily Flow	103.62	147.23	139.70	121.07	96.93	85.74	74.16	70.79	80.67	96.86	92.19	137.09	103.58
	Raw Dry Day Average Daily Flow	96.95	119.27	127.98	112.38	94.45	82.89	72.38	66.77	75.87	90.15	90.69	124.07	96.03
	Raw Estimated Infiltration	42.05	64.37	73.08	57.48	39.55	27.99	17.58	11.97	20.97	35.25	35.79	69.17	41.14
	MWRA Estimated Infiltration	1.08	3.18	5.59	4.12	3.43	3.14	2.08	1.71	2.49	3.97	4.16	7.74	3.56
	Final Average Daily Flow	102.54	144.05	134.11	116.95	93.50	82.60	72.08	69.08	78.18	92.89	88.03	129.35	100.02
	Final Dry Day Average Daily Flow	95.87	116.09	122.39	108.26	91.02	79.75	70.30	65.06	73.38	86.18	86.53	116.33	92.47
	Final Estimated Infiltration	40.97	61.19	67.49	53.36	36.12	24.85	15.50	10.26	18.48	31.28	31.63	61.43	37.58
	Estimated Sanitary Flow	54.90	54.90	54.90	54.90	54.90	54.90	54.80	54.80	54.90	54.90	54.90	54.90	54.88
	Estimated Inflow	6.67	27.96	11.72	8.69	2.48	2.85	1.78	4.02	4.80	6.71	1.50	13.02	7.55
South System Pump Station as Reported by NPDES	Average Daily Flow	106.00	150.70	135.40	116.40	89.90	77.40	66.60	62.60	72.20	87.10	82.70	125.70	97.41

Table 4 - Estimated Community Wastewater Flow Components for 2022														5/24/2023 PAGE 5
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average (MGD)
Arlington	Raw Average Daily Flow	5.38	6.60	6.35	5.59	4.36	3.58	2.96	2.69	2.94	3.36	3.41	5.24	4.36
	Raw Dry Day Average Daily Flow	4.98	5.71	5.82	5.42	4.23	3.45	2.86	2.65	2.78	3.34	3.34	4.70	4.10
	Raw Estimated Infiltration	2.38	3.11	3.22	2.82	1.63	0.85	0.26	0.05	0.18	0.74	0.74	2.10	1.50
	MWRA Estimated Infiltration	0.10	0.13	0.13	0.12	0.07	0.04	0.01	0.00	0.01	0.03	0.03	0.09	0.06
	Final Average Daily Flow	5.28	6.47	6.22	5.47	4.29	3.54	2.95	2.69	2.93	3.33	3.38	5.15	4.30
	Final Dry Day Average Daily Flow	4.88	5.58	5.69	5.30	4.16	3.41	2.85	2.65	2.77	3.31	3.31	4.61	4.03
	Final Estimated Infiltration	2.28	2.98	3.09	2.70	1.56	0.81	0.25	0.05	0.17	0.71	0.71	2.01	1.43
	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	0.40	0.89	0.53	0.17	0.13	0.13	0.10	0.04	0.16	0.02	0.07	0.54	0.26
Bedford	Average Daily Flow	2.67	3.18	3.11	2.83	2.18	1.78	1.53	1.47	1.54	1.71	1.75	2.41	2.17
	Dry Day Average Daily Flow	2.49	2.84	2.87	2.69	2.13	1.72	1.51	1.37	1.50	1.70	1.73	2.23	2.06
	Estimated Infiltration	1.19	1.54	1.57	1.39	0.83	0.42	0.21	0.07	0.20	0.40	0.43	0.93	0.76
	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	0.18	0.34	0.24	0.14	0.05	0.06	0.02	0.10	0.04	0.01	0.02	0.18	0.11
Belmont	Average Daily Flow	3.10	4.36	3.81	3.21	2.42	1.91	1.67	1.61	1.80	2.12	2.04	3.16	2.59
	Dry Day Average Daily Flow	2.76	3.52	3.30	2.96	2.34	1.77	1.65	1.50	1.67	2.01	1.96	2.59	2.33
	Estimated Infiltration	1.26	2.02	1.80	1.46	0.84	0.27	0.15	0.00	0.17	0.51	0.46	1.09	0.83
	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	0.34	0.84	0.51	0.25	0.08	0.14	0.02	0.11	0.13	0.11	0.08	0.57	0.26
Boston (North Only)														
Boston Charlestown	Raw Average Daily Flow	2.85	2.71	2.64	2.68	2.85	3.34	3.30	3.09	2.80	3.24	3.16	3.57	3.02
	Raw Dry Day Average Daily Flow	2.52	2.55	2.55	2.40	2.77	3.20	3.14	2.93	2.78	3.04	2.88	2.68	2.79
	Raw Estimated Infiltration	0.82	0.85	0.85	0.70	1.07	1.50	1.44	1.23	1.08	1.34	1.18	0.98	1.09
	MWRA Estimated Infiltration	0.10	0.11	0.11	0.09	0.14	0.19	0.18	0.16	0.14	0.17	0.15	0.12	0.14
	Final Average Daily Flow	2.75	2.60	2.53	2.59	2.71	3.15	3.12	2.93	2.66	3.07	3.01	3.45	2.88
	Final Dry Day Average Daily Flow	2.42	2.44	2.44	2.31	2.63	3.01	2.96	2.77	2.64	2.87	2.73	2.56	2.65
	Final Estimated Infiltration	0.72	0.74	0.74	0.61	0.93	1.31	1.26	1.07	0.94	1.17	1.03	0.86	0.95
	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	0.33	0.16	0.09	0.28	0.08	0.14	0.16	0.16	0.02	0.20	0.28	0.89	0.23
Boston Columbus Park	Raw Average Daily Flow	29.08	36.83	32.25	29.32	24.47	25.25	23.22	24.75	26.50	28.99	26.86	33.03	28.33
	Raw Dry Day Average Daily Flow	26.49	30.89	28.12	24.24	22.34	22.80	23.17	21.36	22.63	23.49	23.68	25.34	24.51
	Raw Estimated Infiltration	6.19	10.59	7.82	3.94	2.04	2.50	2.87	1.06	2.33	3.19	3.38	5.04	4.21
	MWRA Estimated Infiltration	0.16	0.28	0.21	0.10	0.05	0.07	0.08	0.03	0.06	0.08	0.09	0.13	0.11
	Final Average Daily Flow	28.92	36.55	32.04	29.22	24.42	25.18	23.14	24.72	26.44	28.91	26.77	32.90	28.21
	Final Dry Day Average Daily Flow	26.33	30.61	27.91	24.14	22.29	22.73	23.09	21.33	22.57	23.41	23.59	25.21	24.40
	Final Estimated Infiltration	6.03	10.31	7.61	3.84	1.99	2.43	2.79	1.03	2.27	3.11	3.29	4.91	4.10
	Estimated Sanitary Flow	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30	20.30
	Estimated Inflow	2.59	5.94	4.13	5.08	2.13	2.45	0.05	3.39	3.87	5.50	3.18	7.69	3.82
Boston East Boston	Raw Average Daily Flow	5.53	6.83	6.13	5.55	5.46	6.06	6.07	6.14	6.39	6.26	6.08	7.35	6.15
	Raw Dry Day Average Daily Flow	5.32	5.66	5.39	5.03	5.20	5.67	5.83	5.84	5.72	4.66	4.95	5.75	5.42
	Raw Estimated Infiltration	1.82	2.16	1.89	1.53	1.70	2.17	2.33	2.34	2.22	1.16	1.45	2.25	1.92
	MWRA Estimated Infiltration	0.26	0.31	0.27	0.22	0.24	0.31	0.34	0.34	0.32	0.17	0.21	0.32	0.28
	Final Average Daily Flow	5.27	6.52	5.86	5.33	5.22	5.75	5.73	5.80	6.07	6.09	5.87	7.03	5.87
	Final Dry Day Average Daily Flow	5.06	5.35	5.12	4.81	4.96	5.36	5.49	5.50	5.40	4.49	4.74	5.43	5.14
	Final Estimated Infiltration	1.56	1.85	1.62	1.31	1.46	1.86	1.99	2.00	1.90	0.99	1.24	1.93	1.64
	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	0.21	1.17	0.74	0.52	0.26	0.39	0.24	0.30	0.67	1.60	1.13	1.60	0.73

Table 4 - Estimated Community Wastewater Flow Components for 2022													5/24/2023	PAGE 6	Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Boston Ward Street	Raw Average Daily Flow	25.63	31.82	30.75	30.15	26.45	26.37	23.85	21.82	24.69	27.09	26.88	29.31		27.03
	Raw Dry Day Average Daily Flow	25.48	27.71	28.53	27.28	25.70	25.14	23.54	21.75	23.08	25.11	26.36	27.49		25.58
	Raw Estimated Infiltration	1.18	3.41	4.23	2.98	1.40	0.84	0.54	0.25	0.08	0.81	2.06	3.19		1.74
	MWRA Estimated Infiltration	0.19	0.55	0.69	0.48	0.23	0.14	0.09	0.04	0.01	0.13	0.34	0.52		0.28
	Final Average Daily Flow	25.44	31.27	30.06	29.67	26.22	26.23	23.76	21.78	24.68	26.96	26.54	28.79		26.75
	Final Dry Day Average Daily Flow	25.29	27.16	27.84	26.80	25.47	25.00	23.45	21.71	23.07	24.98	26.02	26.97		25.30
	Final Estimated Infiltration	0.99	2.86	3.54	2.50	1.17	0.70	0.45	0.21	0.07	0.68	1.72	2.67		1.45
	Estimated Sanitary Flow	24.30	24.30	24.30	24.30	24.30	24.30	23.00	21.50	23.00	24.30	24.30	24.30		23.84
	Estimated Inflow	0.15	4.11	2.22	2.87	0.75	1.23	0.31	0.07	1.61	1.98	0.52	1.82		1.45
Boston (North Total)	Raw Average Daily Flow	63.09	78.19	71.77	67.70	59.23	61.02	56.44	55.80	60.38	65.58	62.98	73.26		64.53
	Raw Dry Day Average Daily Flow	59.81	66.81	64.59	58.95	56.01	56.81	55.68	51.88	54.21	56.30	57.87	61.26		58.29
	Raw Estimated Infiltration	10.01	17.01	14.79	9.15	6.21	7.01	7.18	4.88	5.71	6.50	8.07	11.46		8.95
	MWRA Estimated Infiltration	0.71	1.25	1.28	0.89	0.66	0.71	0.69	0.57	0.53	0.55	0.79	1.09		0.81
	Final Average Daily Flow	62.38	76.94	70.49	66.81	58.57	60.31	55.75	55.23	59.85	65.03	62.19	72.17		63.72
	Final Dry Day Average Daily Flow	59.10	65.56	63.31	58.06	55.35	56.10	54.99	51.31	53.68	55.75	57.08	60.17		57.49
	Final Estimated Infiltration	9.30	15.76	13.51	8.26	5.55	6.30	6.49	4.31	5.18	5.95	7.28	10.37		8.14
	Estimated Sanitary Flow	49.80	49.80	49.80	49.80	49.80	49.80	48.50	47.00	48.50	49.80	49.80	49.80		49.34
	Estimated Inflow	3.28	11.38	7.18	8.75	3.22	4.21	0.76	3.92	6.17	9.28	5.11	12.00		6.23
Brookline (North Only)	Average Daily Flow	2.90	3.62	3.13	2.78	2.42	2.02	1.73	1.82	2.19	2.57	2.51	2.94		2.55
	Dry Day Average Daily Flow	2.83	3.21	2.98	2.65	2.40	1.92	1.72	1.72	2.15	2.46	2.44	2.50		2.41
	Estimated Infiltration	0.68	1.06	0.83	0.50	0.25	0.22	0.02	0.02	0.00	0.31	0.29	0.35		0.37
	Estimated Sanitary Flow	2.15	2.15	2.15	2.15	2.15	1.70	1.70	1.70	2.15	2.15	2.15	2.15		2.04
	Estimated Inflow	0.07	0.41	0.15	0.13	0.02	0.10	0.01	0.10	0.04	0.11	0.07	0.44		0.14
Burlington	Average Daily Flow	3.84	4.57	4.41	4.14	3.39	2.88	2.48	2.35	2.50	2.60	2.72	3.73		3.29
	Dry Day Average Daily Flow	3.62	4.00	3.77	4.02	3.31	2.81	2.47	2.29	2.44	2.60	2.67	3.47		3.12
	Estimated Infiltration	1.62	2.00	1.77	2.02	1.31	0.81	0.47	0.29	0.44	0.60	0.67	1.47		1.12
	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	0.22	0.57	0.64	0.12	0.08	0.07	0.01	0.06	0.06	0.00	0.05	0.26		0.18
Cambridge	Raw Average Daily Flow	19.20	25.36	23.82	21.89	18.80	18.88	17.50	18.48	18.73	19.37	18.30	23.01		20.25
	Raw Dry Day Average Daily Flow	17.39	20.11	20.30	19.27	17.65	17.13	16.64	16.61	16.18	16.55	16.46	17.31		17.62
	Raw Estimated Infiltration	5.39	8.11	8.30	7.27	5.65	5.13	4.64	4.61	4.18	4.55	4.46	5.31		5.62
	MWRA Estimated Infiltration	0.81	1.22	1.25	1.09	0.85	0.77	0.70	0.69	0.63	0.69	0.67	0.80		0.85
	Final Average Daily Flow	18.39	24.14	22.57	20.80	17.95	18.11	16.80	17.79	18.10	18.68	17.63	22.21		19.40
	Final Dry Day Average Daily Flow	16.58	18.89	19.05	18.18	16.80	16.36	15.94	15.92	15.55	15.86	15.79	16.51		16.77
	Final Estimated Infiltration	4.58	6.89	7.05	6.18	4.80	4.36	3.94	3.92	3.55	3.86	3.79	4.51		4.77
	Estimated Sanitary Flow	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00		12.00
	Estimated Inflow	1.81	5.25	3.52	2.62	1.15	1.75	0.86	1.87	2.55	2.82	1.84	5.70		2.63
Chelsea	Raw Average Daily Flow	6.04	8.30	7.13	6.38	5.18	5.85	5.08	5.01	5.59	5.96	5.65	7.46		6.12
	Raw Dry Day Average Daily Flow	5.11	6.10	5.86	5.35	4.86	5.07	4.84	4.51	4.58	4.64	4.55	5.39		5.07
	Raw Estimated Infiltration	2.11	3.10	2.86	2.35	1.86	2.07	1.84	1.51	1.58	1.64	1.55	2.39		2.07
	MWRA Estimated Infiltration	0.26	0.38	0.35	0.29	0.23	0.26	0.23	0.19	0.20	0.20	0.19	0.30		0.26
	Final Average Daily Flow	5.78	7.92	6.78	6.09	4.95	5.59	4.85	4.82	5.39	5.76	5.46	7.16		5.87
	Final Dry Day Average Daily Flow	4.85	5.72	5.51	5.06	4.63	4.81	4.61	4.32	4.38	4.44	4.36	5.09		4.81
	Final Estimated Infiltration	1.85	2.72	2.51	2.06	1.63	1.81	1.61	1.32	1.38	1.44	1.36	2.09		1.81
	Estimated Sanitary Flow	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00		3.00
	Estimated Inflow	0.93	2.20	1.27	1.03	0.32	0.78	0.24	0.50	1.01	1.32	1.10	2.07		1.06

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		PAGE 7	
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average (MGD)
Everett	Raw Average Daily Flow	5.58	6.84	6.21	5.74	4.76	4.67	4.33	4.08	4.19	4.56	4.50	5.81	5.10
	Raw Dry Day Average Daily Flow	5.09	5.93	5.80	5.43	4.73	4.46	4.30	4.05	3.66	4.21	4.34	5.22	4.76
	Raw Estimated Infiltration	1.79	2.63	2.50	2.13	1.43	1.16	1.00	0.75	0.36	0.91	1.04	1.92	1.46
	MWRA Estimated Infiltration	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
	Final Average Daily Flow	5.57	6.83	6.20	5.73	4.75	4.66	4.32	4.08	4.19	4.56	4.49	5.80	5.09
	Final Dry Day Average Daily Flow	5.08	5.92	5.79	5.42	4.72	4.45	4.29	4.05	3.66	4.21	4.33	5.21	4.75
	Final Estimated Infiltration	1.78	2.62	2.49	2.12	1.42	1.15	0.99	0.75	0.36	0.91	1.03	1.91	1.45
	Estimated Sanitary Flow	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
	Estimated Inflow	0.49	0.91	0.41	0.31	0.03	0.21	0.03	0.03	0.53	0.35	0.16	0.59	0.33
Lexington	Raw Average Daily Flow	6.90	8.30	8.27	7.90	6.11	4.65	3.63	3.18	3.42	3.64	3.83	5.97	5.47
	Raw Dry Day Average Daily Flow	6.44	7.30	7.87	7.64	5.93	4.54	3.52	2.99	3.24	3.64	3.77	5.63	5.20
	Raw Estimated Infiltration	4.24	5.10	5.67	5.44	3.73	2.34	1.32	0.79	1.04	1.44	1.57	3.43	3.00
	MWRA Estimated Infiltration	0.40	0.48	0.53	0.51	0.35	0.22	0.12	0.07	0.10	0.14	0.15	0.32	0.28
	Final Average Daily Flow	6.50	7.82	7.74	7.39	5.76	4.43	3.51	3.11	3.32	3.50	3.68	5.65	5.18
	Final Dry Day Average Daily Flow	6.04	6.82	7.34	7.13	5.58	4.32	3.40	2.92	3.14	3.50	3.62	5.31	4.92
	Final Estimated Infiltration	3.84	4.62	5.14	4.93	3.38	2.12	1.20	0.72	0.94	1.30	1.42	3.11	2.72
	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	0.46	1.00	0.40	0.26	0.18	0.11	0.11	0.19	0.18	0.00	0.06	0.34	0.27
Malden	Raw Average Daily Flow	7.65	8.74	9.15	8.85	8.00	6.82	6.16	5.84	6.07	6.57	6.75	9.05	7.46
	Raw Dry Day Average Daily Flow	7.20	8.04	8.66	8.68	7.76	6.53	6.04	5.72	5.95	6.54	6.52	8.35	7.16
	Raw Estimated Infiltration	2.20	3.04	3.66	3.68	2.76	1.53	1.04	0.72	0.95	1.54	1.52	3.35	2.16
	MWRA Estimated Infiltration	0.23	0.32	0.38	0.38	0.29	0.16	0.11	0.08	0.10	0.16	0.16	0.35	0.23
	Final Average Daily Flow	7.42	8.42	8.77	8.47	7.71	6.66	6.05	5.76	5.97	6.41	6.59	8.70	7.24
	Final Dry Day Average Daily Flow	6.97	7.72	8.28	8.30	7.47	6.37	5.93	5.64	5.85	6.38	6.36	8.00	6.94
	Final Estimated Infiltration	1.97	2.72	3.28	3.30	2.47	1.37	0.93	0.64	0.85	1.38	1.36	3.00	1.94
	Estimated Sanitary Flow	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	Estimated Inflow	0.45	0.70	0.49	0.17	0.24	0.29	0.12	0.12	0.12	0.03	0.23	0.70	0.30
Medford	Raw Average Daily Flow	7.87	10.75	9.69	8.72	6.59	5.73	4.98	4.44	4.94	5.43	5.38	8.70	6.91
	Raw Dry Day Average Daily Flow	7.12	8.76	8.63	8.11	6.36	5.43	4.81	4.39	4.59	5.05	5.22	7.50	6.32
	Raw Estimated Infiltration	2.82	4.46	4.33	3.81	2.06	1.13	0.51	0.09	0.29	0.75	0.92	3.20	2.02
	MWRA Estimated Infiltration	0.35	0.56	0.54	0.48	0.26	0.14	0.06	0.01	0.04	0.09	0.11	0.40	0.25
	Final Average Daily Flow	7.52	10.19	9.15	8.24	6.33	5.59	4.92	4.43	4.90	5.34	5.27	8.30	6.66
	Final Dry Day Average Daily Flow	6.77	8.20	8.09	7.63	6.10	5.29	4.75	4.38	4.55	4.96	5.11	7.10	6.06
	Final Estimated Infiltration	2.47	3.90	3.79	3.33	1.80	0.99	0.45	0.08	0.25	0.66	0.81	2.80	1.76
	Estimated Sanitary Flow	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
	Estimated Inflow	0.75	1.99	1.06	0.61	0.23	0.30	0.17	0.05	0.35	0.38	0.16	1.20	0.60
Melrose	Raw Average Daily Flow	4.60	6.23	5.38	4.51	3.43	2.44	1.94	1.75	1.82	2.21	2.53	4.47	3.43
	Raw Dry Day Average Daily Flow	4.18	4.99	4.80	4.27	3.26	2.28	1.90	1.71	1.80	2.09	2.51	3.99	3.14
	Raw Estimated Infiltration	2.28	3.09	2.90	2.37	1.36	0.38	0.00	0.01	0.00	0.19	0.61	2.09	1.26
	MWRA Estimated Infiltration	0.46	0.62	0.58	0.48	0.27	0.08	0.00	0.00	0.00	0.04	0.12	0.42	0.25
	Final Average Daily Flow	4.14	5.61	4.80	4.03	3.16	2.36	1.94	1.75	1.82	2.17	2.41	4.05	3.17
	Final Dry Day Average Daily Flow	3.72	4.37	4.22	3.79	2.99	2.20	1.90	1.71	1.80	2.05	2.39	3.57	2.88
	Final Estimated Infiltration	1.82	2.47	2.32	1.89	1.09	0.30	0.00	0.01	0.00	0.15	0.49	1.67	1.01
	Estimated Sanitary Flow	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.70	1.80	1.90	1.90	1.90	1.87
	Estimated Inflow	0.42	1.24	0.58	0.24	0.17	0.16	0.04	0.04	0.02	0.12	0.02	0.48	0.29

Table 4 - Estimated Community Wastewater Flow Components for 2022												5/24/2023		PAGE 8	Annual Average (MGD)
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Milton (North Only)	Average Daily Flow	0.27	0.40	0.34	0.28	0.24	0.22	0.20	0.19	0.20	0.22	0.21	0.29		0.25
	Dry Day Average Daily Flow	0.26	0.34	0.32	0.26	0.23	0.21	0.19	0.16	0.19	0.21	0.20	0.27		0.24
	Estimated Infiltration	0.11	0.19	0.17	0.11	0.08	0.06	0.04	0.01	0.04	0.06	0.05	0.12		0.09
	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	0.06	0.02	0.02	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.02		0.02
Newton (North Only)	Average Daily Flow	6.95	8.56	8.49	7.26	6.01	4.80	4.16	3.89	4.37	4.88	4.74	6.54		5.87
	Dry Day Average Daily Flow	6.55	7.48	7.84	7.04	5.75	4.65	4.08	3.73	4.18	4.80	4.73	6.11		5.57
	Estimated Infiltration	2.85	3.78	4.14	3.34	2.05	0.95	0.38	0.03	0.48	1.10	1.03	2.41		1.87
	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	0.40	1.08	0.65	0.22	0.26	0.15	0.08	0.16	0.19	0.08	0.01	0.43		0.30
Reading	Raw Average Daily Flow	2.72	3.14	3.02	2.61	2.09	1.70	1.50	1.45	1.49	1.66	1.79	2.82		2.16
	Raw Dry Day Average Daily Flow	2.45	2.78	2.77	2.53	2.05	1.70	1.49	1.44	1.44	1.64	1.78	2.60		2.05
	Raw Estimated Infiltration	1.15	1.48	1.47	1.23	0.75	0.40	0.19	0.14	0.14	0.34	0.48	1.30		0.75
	MWRA Estimated Infiltration	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01		0.00
	Final Average Daily Flow	2.71	3.13	3.01	2.60	2.08	1.70	1.50	1.45	1.49	1.66	1.79	2.81		2.16
	Final Dry Day Average Daily Flow	2.44	2.77	2.76	2.52	2.04	1.70	1.49	1.44	1.44	1.64	1.78	2.59		2.05
	Final Estimated Infiltration	1.14	1.47	1.46	1.22	0.74	0.40	0.19	0.14	0.14	0.34	0.48	1.29		0.75
	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	0.27	0.36	0.25	0.08	0.04	0.00	0.01	0.01	0.05	0.02	0.01	0.22		0.11
Revere	Raw Average Daily Flow	7.47	9.28	6.70	7.27	6.65	6.03	6.06	5.68	6.05	6.64	6.57	8.72		6.91
	Raw Dry Day Average Daily Flow	6.71	7.76	6.05	7.17	6.34	5.76	6.01	5.54	5.79	6.32	6.34	7.57		6.44
	Raw Estimated Infiltration	2.71	3.76	2.05	3.17	2.34	1.76	2.01	1.54	1.79	2.32	2.34	3.57		2.44
	MWRA Estimated Infiltration	0.03	0.04	0.02	0.04	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.04		0.03
	Final Average Daily Flow	7.44	9.24	6.68	7.23	6.62	6.01	6.04	5.66	6.03	6.61	6.54	8.68		6.88
	Final Dry Day Average Daily Flow	6.68	7.72	6.03	7.13	6.31	5.74	5.99	5.52	5.77	6.29	6.31	7.53		6.41
	Final Estimated Infiltration	2.68	3.72	2.03	3.13	2.31	1.74	1.99	1.52	1.77	2.29	2.31	3.53		2.41
	Estimated Sanitary Flow	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00		4.00
	Estimated Inflow	0.76	1.52	0.65	0.10	0.31	0.27	0.05	0.14	0.26	0.32	0.23	1.15		0.47
Somerville	Raw Average Daily Flow	9.31	13.80	11.13	10.15	7.73	7.27	5.89	6.08	7.24	8.34	13.69	17.26		9.79
	Raw Dry Day Average Daily Flow	7.86	9.96	8.69	8.26	7.17	6.03	5.63	5.66	5.61	6.64	12.24	12.40		8.00
	Raw Estimated Infiltration	2.26	4.36	3.09	2.66	1.57	0.43	0.03	0.06	0.01	1.04	6.64	6.80		2.40
	MWRA Estimated Infiltration	0.05	0.10	0.07	0.06	0.04	0.01	0.00	0.00	0.00	0.02	0.16	0.16		0.06
	Final Average Daily Flow	9.26	13.70	11.06	10.09	7.69	7.26	5.89	6.08	7.24	8.32	13.53	17.10		9.74
	Final Dry Day Average Daily Flow	7.81	9.86	8.62	8.20	7.13	6.02	5.63	5.66	5.61	6.62	12.08	12.24		7.94
	Final Estimated Infiltration	2.21	4.26	3.02	2.60	1.53	0.42	0.03	0.06	0.01	1.02	6.48	6.64		2.34
	Estimated Sanitary Flow	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60		5.60
	Estimated Inflow	1.45	3.84	2.44	1.89	0.56	1.24	0.26	0.42	1.63	1.70	1.45	4.86		1.80
Stoneham	Raw Average Daily Flow	4.71	5.76	5.42	5.23	4.26	3.56	2.84	2.50	2.81	3.24	3.41	4.79		4.03
	Raw Dry Day Average Daily Flow	4.36	4.99	5.06	5.07	4.13	3.28	2.68	2.45	2.66	3.11	3.33	4.43		3.79
	Raw Estimated Infiltration	2.86	3.49	3.56	3.57	2.63	1.78	1.18	0.95	1.16	1.61	1.83	2.93		2.29
	MWRA Estimated Infiltration	0.47	0.57	0.58	0.58	0.43	0.29	0.19	0.16	0.19	0.26	0.30	0.48		0.37
	Final Average Daily Flow	4.24	5.19	4.84	4.65	3.83	3.27	2.65	2.34	2.62	2.98	3.11	4.31		3.66
	Final Dry Day Average Daily Flow	3.89	4.42	4.48	4.49	3.70	2.99	2.49	2.29	2.47	2.85	3.03	3.95		3.41
	Final Estimated Infiltration	2.39	2.92	2.98	2.99	2.20	1.49	0.99	0.79	0.97	1.35	1.53	2.45		1.91
	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	0.35	0.77	0.36	0.16	0.13	0.28	0.16	0.05	0.15	0.13	0.08	0.36		0.24

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		PAGE 9	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Wakefield	Raw Average Daily Flow	3.93	5.09	4.81	4.56	3.49	2.75	2.23	2.10	2.12	2.34	2.41	3.92	3.30
	Raw Dry Day Average Daily Flow	3.68	4.35	4.51	4.50	3.37	2.66	2.18	2.06	2.07	2.28	2.33	3.59	3.12
	Raw Estimated Infiltration	2.18	2.85	3.01	3.00	1.87	1.16	0.68	0.56	0.57	0.78	0.83	2.09	1.62
	MWRA Estimated Infiltration	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Final Average Daily Flow	3.92	5.07	4.79	4.54	3.48	2.74	2.23	2.10	2.12	2.33	2.40	3.91	3.29
	Final Dry Day Average Daily Flow	3.67	4.33	4.49	4.48	3.36	2.65	2.18	2.06	2.07	2.27	2.32	3.58	3.11
	Final Estimated Infiltration	2.17	2.83	2.99	2.98	1.86	1.15	0.68	0.56	0.57	0.77	0.82	2.08	1.61
	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	0.25	0.74	0.30	0.06	0.12	0.09	0.05	0.04	0.05	0.06	0.08	0.33	0.18
Waltham	Raw Average Daily Flow	8.58	11.21	10.31	9.49	7.57	6.40	5.57	5.21	5.81	6.54	6.34	8.91	7.64
	Raw Dry Day Average Daily Flow	8.08	9.59	9.58	9.13	7.31	6.15	5.53	5.16	5.74	6.37	6.34	7.98	7.23
	Raw Estimated Infiltration	2.48	3.99	3.98	3.53	1.71	0.55	0.03	0.06	0.14	0.77	0.74	2.38	1.68
	MWRA Estimated Infiltration	0.09	0.15	0.15	0.13	0.06	0.02	0.00	0.00	0.01	0.03	0.03	0.09	0.06
	Final Average Daily Flow	8.49	11.06	10.16	9.36	7.51	6.38	5.57	5.21	5.80	6.51	6.31	8.82	7.58
	Final Dry Day Average Daily Flow	7.99	9.44	9.43	9.00	7.25	6.13	5.53	5.16	5.73	6.34	6.31	7.89	7.17
	Final Estimated Infiltration	2.39	3.84	3.83	3.40	1.65	0.53	0.03	0.06	0.13	0.74	0.71	2.29	1.62
	Estimated Sanitary Flow	5.60	5.60	5.60	5.60	5.60	5.60	5.50	5.10	5.60	5.60	5.60	5.60	5.55
	Estimated Inflow	0.50	1.62	0.73	0.36	0.26	0.25	0.04	0.05	0.07	0.17	0.00	0.93	0.41
Watertown	Average Daily Flow	4.18	5.18	4.86	4.29	3.54	3.10	2.57	2.55	2.88	3.12	3.00	3.92	3.59
	Dry Day Average Daily Flow	3.95	4.47	4.55	4.11	3.48	3.02	2.53	2.47	2.77	3.04	2.99	3.57	3.41
	Estimated Infiltration	1.75	2.27	2.35	1.91	1.28	0.82	0.33	0.27	0.57	0.84	0.79	1.37	1.21
	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	0.23	0.71	0.31	0.18	0.06	0.08	0.04	0.08	0.11	0.08	0.01	0.35	0.18
Wilmington	Raw Average Daily Flow	1.65	1.94	1.91	1.75	1.56	1.50	1.24	1.32	1.33	1.39	1.44	1.59	1.55
	Raw Dry Day Average Daily Flow	1.63	1.80	1.84	1.69	1.56	1.49	1.16	1.25	1.25	1.35	1.43	1.54	1.50
	Raw Estimated Infiltration	0.83	1.00	1.04	0.89	0.76	0.69	0.36	0.45	0.45	0.55	0.63	0.74	0.70
	MWRA Estimated Infiltration	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	Final Average Daily Flow	1.64	1.93	1.90	1.74	1.55	1.49	1.24	1.32	1.33	1.39	1.43	1.58	1.54
	Final Dry Day Average Daily Flow	1.62	1.79	1.83	1.68	1.55	1.48	1.16	1.25	1.25	1.35	1.42	1.53	1.49
	Final Estimated Infiltration	0.82	0.99	1.03	0.88	0.75	0.68	0.36	0.45	0.45	0.55	0.62	0.73	0.69
	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	0.02	0.14	0.07	0.06	0.00	0.01	0.08	0.07	0.08	0.04	0.01	0.05	0.05
Winchester	Average Daily Flow	3.71	4.49	4.36	3.83	2.98	2.52	2.05	1.80	1.87	2.09	2.27	3.55	2.95
	Dry Day Average Daily Flow	3.44	3.93	4.04	3.72	2.95	2.41	2.01	1.70	1.78	2.05	2.26	3.19	2.78
	Estimated Infiltration	2.24	2.73	2.84	2.52	1.75	1.21	0.81	0.50	0.58	0.85	1.06	1.99	1.58
	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	0.27	0.56	0.32	0.11	0.03	0.11	0.04	0.10	0.09	0.04	0.01	0.36	0.17
Winthrop	Average Daily Flow	2.18	2.62	2.44	2.16	1.92	1.91	1.88	1.81	1.96	2.04	1.84	2.42	2.10
	Dry Day Average Daily Flow	1.98	2.24	2.18	2.00	1.81	1.80	1.86	1.75	1.90	1.81	1.71	2.08	1.92
	Estimated Infiltration	0.78	1.04	0.98	0.80	0.61	0.60	0.66	0.55	0.70	0.61	0.51	0.88	0.72
	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	0.20	0.38	0.26	0.16	0.11	0.11	0.02	0.06	0.06	0.23	0.13	0.34	0.17

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		PAGE 10	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Woburn	Raw Average Daily Flow	8.25	10.14	9.35	9.17	7.36	6.20	5.90	5.32	5.94	6.35	6.47	8.52	7.40
	Raw Dry Day Average Daily Flow	7.85	8.84	9.21	8.85	7.29	6.12	5.83	4.99	5.54	6.27	6.45	8.11	7.10
	Raw Estimated Infiltration	4.15	5.14	5.51	5.15	3.59	2.42	2.13	1.29	1.84	2.57	2.75	4.41	3.40
	MWRA Estimated Infiltration	0.34	0.43	0.46	0.43	0.30	0.20	0.18	0.11	0.15	0.21	0.23	0.36	0.28
	Final Average Daily Flow	7.91	9.71	8.89	8.74	7.06	6.00	5.72	5.21	5.79	6.14	6.24	8.16	7.11
	Final Dry Day Average Daily Flow	7.51	8.41	8.75	8.42	6.99	5.92	5.65	4.88	5.39	6.06	6.22	7.75	6.82
	Final Estimated Infiltration	3.81	4.71	5.05	4.72	3.29	2.22	1.95	1.18	1.69	2.36	2.52	4.05	3.12
	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	0.40	1.30	0.14	0.32	0.07	0.08	0.07	0.33	0.40	0.08	0.02	0.41	0.29
Subtotal (Northern System)	Raw Average Daily Flow	202.73	256.65	235.37	218.29	182.27	170.19	152.52	148.42	160.18	174.53	176.53	228.46	191.77
	Raw Dry Day Average Daily Flow	187.82	215.85	211.89	199.77	174.41	159.20	149.12	139.75	145.67	157.02	165.51	193.58	174.71
	Raw Estimated Infiltration	64.32	92.35	88.39	76.27	50.91	36.15	27.47	20.20	23.57	33.52	42.01	70.08	51.86
	MWRA Estimated Infiltration	4.34	6.30	6.37	5.53	3.88	2.95	2.32	1.90	1.98	2.46	3.00	4.94	3.82
	Final Average Daily Flow	198.39	250.35	229.00	212.76	178.39	167.24	150.20	146.52	158.20	172.07	173.53	223.52	187.95
	Final Dry Day Average Daily Flow	183.48	209.55	205.52	194.24	170.53	156.25	146.80	137.85	143.69	154.56	162.51	188.64	170.90
	Final Estimated Infiltration	59.98	86.05	82.02	70.74	47.03	33.20	25.15	18.30	21.59	31.06	39.01	65.14	48.04
	Estimated Sanitary Flow	123.50	123.50	123.50	123.50	123.50	123.05	121.65	119.55	122.10	123.50	123.50	123.50	122.86
	Estimated Inflow	14.91	40.80	23.48	18.52	7.86	10.99	3.40	8.67	14.51	17.51	11.02	34.88	17.06
Total (North and South)	Raw Average Daily Flow	306.35	403.88	375.07	339.36	279.20	255.93	226.68	219.21	240.85	271.39	268.72	365.55	295.35
	Raw Dry Day Average Daily Flow	284.77	335.12	339.87	312.15	268.86	242.09	221.50	206.52	221.54	247.17	256.20	317.65	270.74
	Raw Estimated Infiltration	106.37	156.72	161.47	133.75	90.46	64.14	45.05	32.17	44.54	68.77	77.80	139.25	93.00
	MWRA Estimated Infiltration	5.42	9.48	11.96	9.65	7.31	6.09	4.40	3.61	4.47	6.43	7.16	12.68	7.38
	Final Average Daily Flow	300.93	394.40	363.11	329.71	271.89	249.84	222.28	215.60	236.38	264.96	261.56	352.87	287.97
	Final Dry Day Average Daily Flow	279.35	325.64	327.91	302.50	261.55	236.00	217.10	202.91	217.07	240.74	249.04	304.97	263.36
	Final Estimated Infiltration	100.95	147.24	149.51	124.10	83.15	58.05	40.65	28.56	40.07	62.34	70.64	126.57	85.62
	Estimated Sanitary Flow	178.40	178.40	178.40	178.40	178.40	177.95	176.45	174.35	177.00	178.40	178.40	178.40	177.74
	Estimated Inflow	21.58	68.76	35.20	27.21	10.34	13.84	5.18	12.69	19.31	24.22	12.52	47.90	24.61
North System as Reported by NPDES	Average Daily Flow	195.40	250.90	231.00	209.90	175.10	166.20	153.00	150.00	160.60	174.90	167.20	219.50	187.42
Total System as Reported by NPDES	Average Daily Flow	301.40	401.60	366.40	326.30	265.00	243.60	219.60	212.60	232.80	262.00	249.90	345.20	284.82

Table 4 - Estimated Community Wastewater Flow Components for 2022														5/24/2023 PAGE 11 Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Chelsea Creek	Average Daily Flow	98.26	124.21	116.12	106.66	86.71	76.97	67.39	64.16	68.04	74.54	80.91	111.23	89.39
	Dry Day Average Daily Flow	89.54	103.97	104.73	100.26	83.86	71.89	65.04	59.72	62.67	69.63	76.92	94.55	81.76
	Estimated Infiltration	41.94	56.37	57.13	52.66	36.26	24.29	17.44	12.32	15.17	22.03	29.32	46.95	34.19
	Estimated Sanitary Flow	47.60	47.60	47.60	47.60	47.60	47.60	47.60	47.40	47.50	47.60	47.60	47.60	47.57
	Estimated Inflow	8.72	20.24	11.39	6.40	2.85	5.08	2.35	4.44	5.37	4.91	3.99	16.68	7.63
Columbus Park	Average Daily Flow	29.35	37.24	32.59	29.61	24.71	25.47	23.41	24.93	26.69	29.21	27.08	33.32	28.58
	Dry Day Average Daily Flow	26.74	31.24	28.44	24.51	22.57	23.03	23.37	21.52	22.82	23.70	25.50	25.60	24.88
	Estimated Infiltration	6.29	10.79	7.99	4.06	2.12	2.58	2.92	1.07	2.37	3.25	5.05	5.15	4.43
	Estimated Sanitary Flow	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45	20.45
	Estimated Inflow	2.61	6.00	4.15	5.10	2.14	2.44	0.04	3.41	3.87	5.51	1.58	7.72	3.70
Ward Street	Average Daily Flow	57.53	72.68	68.34	64.43	54.69	51.41	45.75	43.86	49.06	53.50	51.83	62.20	56.16
	Dry Day Average Daily Flow	54.01	62.37	62.75	59.35	52.92	48.77	45.69	43.02	47.32	49.64	50.39	55.57	52.58
	Estimated Infiltration	9.66	18.02	18.40	15.00	8.57	4.87	3.19	2.42	4.27	5.29	6.04	11.22	8.85
	Estimated Sanitary Flow	44.35	44.35	44.35	44.35	44.35	43.90	42.50	40.60	43.05	44.35	44.35	44.35	43.73
	Estimated Inflow	3.52	10.31	5.59	5.08	1.77	2.64	0.06	0.84	1.74	3.86	1.44	6.63	3.58
Winthrop Terminal	Average Daily Flow	18.01	22.66	18.60	17.93	16.51	17.54	16.26	15.78	16.76	17.59	16.92	21.82	18.00
	Dry Day Average Daily Flow	16.50	18.64	16.42	16.79	15.69	16.74	15.88	15.05	15.53	14.94	15.04	17.99	16.25
	Estimated Infiltration	6.10	8.24	6.02	6.39	5.29	6.34	5.48	4.65	5.13	4.54	4.64	7.59	5.85
	Estimated Sanitary Flow	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40
	Estimated Inflow	1.51	4.02	2.18	1.14	0.82	0.80	0.38	0.73	1.23	2.65	1.88	3.83	1.75
Subtotal - Northern Headworks	Average Daily Flow	203.15	256.79	235.65	218.63	182.62	171.39	152.81	148.73	160.55	174.84	176.74	228.57	192.13
	Dry Day Average Daily Flow	186.79	216.22	212.34	200.91	175.04	160.43	149.98	139.31	148.34	157.91	167.85	193.71	175.47
	Estimated Infiltration	63.99	93.42	89.54	78.11	52.24	38.08	29.03	20.46	26.94	35.11	45.05	70.91	53.32
	Estimated Sanitary Flow	122.80	122.80	122.80	122.80	122.80	122.35	120.95	118.85	121.40	122.80	122.80	122.80	122.16
	Estimated Inflow	16.36	40.57	23.31	17.72	7.58	10.96	2.83	9.42	12.21	16.93	8.89	34.86	16.66
Headworks as Reported by NPDES	SUM of NPDES HW ADF's (below)	195.40	250.90	231.00	209.90	175.10	166.20	153.00	150.00	160.60	174.90	167.20	219.50	187.42
Chelsea Creek	Average Daily Flow	93.10	121.20	111.90	100.30	81.70	73.30	69.60	66.60	70.20	76.60	73.10	103.40	86.55
Columbus Park	Average Daily Flow	29.20	37.10	32.60	29.10	24.60	25.30	23.30	24.80	26.50	29.10	27.10	33.20	28.44
Ward Street	Average Daily Flow	57.70	72.30	68.20	63.80	54.50	52.20	46.90	45.20	49.80	53.50	52.00	61.90	56.39
Winthrop Terminal	Average Daily Flow	15.40	20.30	18.30	16.70	14.30	15.40	13.20	13.40	14.10	15.70	15.00	21.00	16.04
Total System Flow (Southern Collection System Plus Northern Headworks)	Raw Average Daily Flow	306.77	404.02	375.35	339.70	279.55	257.13	226.97	219.52	241.22	271.70	268.93	365.66	295.71
	Raw Dry Day Average Daily Flow	283.74	335.49	340.32	313.29	269.49	243.32	222.36	206.08	224.21	248.06	258.54	317.78	271.50
	Raw Estimated Infiltration	106.04	157.79	162.62	135.59	91.79	66.07	46.61	32.43	47.91	70.36	80.84	140.08	94.46
	MWRA Estimated Infiltration	1.08	3.18	5.59	4.12	3.43	3.14	2.08	1.71	2.49	3.97	4.16	7.74	3.56
	Final Average Daily Flow	305.69	400.84	369.76	335.58	276.12	253.99	224.89	217.81	238.73	267.73	264.77	357.92	292.15
	Final Dry Day Average Daily Flow	282.66	332.31	334.73	309.17	266.06	240.18	220.28	204.37	221.72	244.09	254.38	310.04	267.94
	Final Estimated Infiltration	104.96	154.61	157.03	131.47	88.36	62.93	44.53	30.72	45.42	66.39	76.68	132.34	90.90
	Estimated Sanitary Flow	177.70	177.70	177.70	177.70	177.70	177.25	175.75	173.65	176.30	177.70	177.70	177.70	177.04
	Estimated Inflow	23.03	68.53	35.03	26.41	10.06	13.81	4.61	13.44	17.01	23.64	10.39	47.88	24.21

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		PAGE 12	Annual Average
Community	Flow Characteristic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(MGD)
Boston (Total)	Raw Average Daily Flow	72.54	97.99	93.34	86.08	75.08	77.23	69.95	69.20	75.80	84.51	80.82	102.00	81.94
	Raw Dry Day Average Daily Flow	68.26	79.54	83.83	75.23	71.47	72.23	68.68	64.23	68.05	73.15	75.12	86.24	73.80
	Raw Estimated Infiltration	10.26	21.54	25.83	17.23	13.47	14.23	11.98	9.03	11.35	15.15	17.12	28.24	16.26
	MWRA Estimated Infiltration	0.80	2.95	5.42	3.92	3.38	3.42	2.49	2.13	2.65	3.80	4.19	7.39	3.55
	Final Average Daily Flow	71.74	95.04	87.92	82.16	71.70	73.81	67.46	67.07	73.15	80.71	76.63	94.61	78.39
	Final Dry Day Average Daily Flow	67.46	76.59	78.41	71.31	68.09	68.81	66.19	62.10	65.40	69.35	70.93	78.85	70.25
	Final Estimated Infiltration	9.46	18.59	20.41	13.31	10.09	10.81	9.49	6.90	8.70	11.35	12.93	20.85	12.71
	Estimated Sanitary Flow	58.00	58.00	58.00	58.00	58.00	58.00	56.70	55.20	56.70	58.00	58.00	58.00	57.54
	Estimated Inflow	4.28	18.45	9.51	10.85	3.61	5.00	1.27	4.97	7.75	11.36	5.70	15.76	8.13
Brookline (Total)	Raw Average Daily Flow	6.72	8.97	8.09	6.96	5.59	4.78	4.04	4.08	4.79	5.66	5.34	7.32	6.01
	Raw Dry Day Average Daily Flow	6.42	7.66	7.25	6.47	5.44	4.53	3.99	3.88	4.56	5.26	5.19	6.18	5.56
	Raw Estimated Infiltration	2.12	3.36	2.95	2.17	1.14	0.68	0.14	0.03	0.26	0.96	0.89	1.88	1.37
	MWRA Estimated Infiltration	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	Final Average Daily Flow	6.71	8.95	8.08	6.95	5.58	4.78	4.04	4.08	4.79	5.66	5.34	7.31	6.00
	Final Dry Day Average Daily Flow	6.41	7.64	7.24	6.46	5.43	4.53	3.99	3.88	4.56	5.26	5.19	6.17	5.55
	Final Estimated Infiltration	2.11	3.34	2.94	2.16	1.13	0.68	0.14	0.03	0.26	0.96	0.89	1.87	1.36
	Estimated Sanitary Flow	4.30	4.30	4.30	4.30	4.30	3.85	3.85	3.85	4.30	4.30	4.30	4.30	4.19
	Estimated Inflow	0.30	1.31	0.84	0.49	0.15	0.25	0.05	0.20	0.23	0.40	0.15	1.14	0.45
Milton (Total)	Average Daily Flow	3.94	6.03	5.34	4.58	3.21	2.48	2.13	1.96	2.25	2.80	2.85	5.15	3.55
	Dry Day Average Daily Flow	3.61	4.74	4.78	4.09	3.08	2.44	2.09	1.79	2.20	2.57	2.80	4.58	3.22
	Estimated Infiltration	2.11	3.24	3.28	2.59	1.58	0.94	0.59	0.29	0.70	1.07	1.30	3.08	1.72
	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	0.33	1.29	0.56	0.49	0.13	0.04	0.04	0.17	0.05	0.23	0.05	0.57	0.32
Newton (Total)	Raw Average Daily Flow	16.11	21.95	21.10	17.56	13.58	11.01	9.26	8.31	9.45	11.12	10.63	16.24	13.81
	Raw Dry Day Average Daily Flow	15.18	18.42	18.96	16.80	13.16	10.63	9.04	7.88	8.99	10.72	10.59	14.59	12.88
	Raw Estimated Infiltration	7.38	10.62	11.16	9.00	5.36	2.83	1.24	0.08	1.19	2.92	2.79	6.79	5.08
	MWRA Estimated Infiltration	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	Final Average Daily Flow	16.10	21.93	21.08	17.55	13.57	11.01	9.26	8.31	9.45	11.12	10.63	16.23	13.81
	Final Dry Day Average Daily Flow	15.17	18.40	18.94	16.79	13.15	10.63	9.04	7.88	8.99	10.72	10.59	14.58	12.87
	Final Estimated Infiltration	7.37	10.60	11.14	8.99	5.35	2.83	1.24	0.08	1.19	2.92	2.79	6.78	5.07
	Estimated Sanitary Flow	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80
	Estimated Inflow	0.93	3.53	2.14	0.76	0.42	0.38	0.22	0.43	0.46	0.40	0.04	1.65	0.93

Table 4 - Estimated Community Wastewater Flow Components for 2022											5/24/2023		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	97.64	125.65	113.85	106.12	90.94	93.02	84.91	85.37	91.94	99.25	100.62	120.99	100.69
Northern System CSO	Raw Dry Day Average Daily Flow	90.17	102.98	99.44	91.83	85.69	85.04	82.79	78.66	80.58	84.13	91.12	96.36	88.97
Communities Only:	Raw Estimated Infiltration	19.77	32.58	29.04	21.43	15.29	14.64	13.69	11.06	11.48	13.73	20.72	25.96	19.03
[Sum of Boston (North),	MWRA Estimated Infiltration	1.83	2.95	2.95	2.33	1.78	1.75	1.62	1.45	1.36	1.46	1.81	2.35	1.96
Cambridge, Chelsea,	Final Average Daily Flow	95.81	122.70	110.90	103.79	89.16	91.27	83.29	83.92	90.58	97.79	98.81	118.64	98.72
and Somerville]	Final Dry Day Average Daily Flow	88.34	100.03	96.49	89.50	83.91	83.29	81.17	77.21	79.22	82.67	89.31	94.01	87.01
	Final Estimated Infiltration	17.94	29.63	26.09	19.10	13.51	12.89	12.07	9.61	10.12	12.27	18.91	23.61	17.06
	Estimated Sanitary Flow	70.40	70.40	70.40	70.40	70.40	70.40	69.10	67.60	69.10	70.40	70.40	70.40	69.94
	Estimated Inflow	7.47	22.67	14.41	14.29	5.25	7.98	2.12	6.71	11.36	15.12	9.50	24.63	11.71
Subtotal	Raw Average Daily Flow	105.09	131.00	121.52	112.17	91.33	77.17	67.61	63.05	68.24	75.28	75.91	107.47	91.08
Northern System Without	Raw Dry Day Average Daily Flow	97.65	112.87	112.45	107.94	88.72	74.16	66.33	61.09	65.09	72.89	74.39	97.22	85.74
North CSO Communities:	Raw Estimated Infiltration	44.55	59.77	59.35	54.84	35.62	21.51	13.78	9.14	12.09	19.79	21.29	44.12	32.83
	MWRA Estimated Infiltration	2.51	3.35	3.42	3.20	2.10	1.20	0.70	0.45	0.62	1.00	1.19	2.59	1.85
	Final Average Daily Flow	102.58	127.65	118.10	108.97	89.23	75.97	66.91	62.60	67.62	74.28	74.72	104.88	89.23
	Final Dry Day Average Daily Flow	95.14	109.52	109.03	104.74	86.62	72.96	65.63	60.64	64.47	71.89	73.20	94.63	83.89
	Final Estimated Infiltration	42.04	56.42	55.93	51.64	33.52	20.31	13.08	8.69	11.47	18.79	20.10	41.53	30.98
	Estimated Sanitary Flow	53.10	53.10	53.10	53.10	53.10	52.65	52.55	51.95	53.00	53.10	53.10	53.10	52.91
	Estimated Inflow	7.44	18.13	9.07	4.23	2.61	3.01	1.28	1.96	3.15	2.39	1.52	10.25	5.34
Subtotal	Raw Average Daily Flow	208.71	278.23	261.22	233.24	188.26	162.91	141.77	133.84	148.91	172.14	168.10	244.56	194.66
North/South Systems Without	Raw Dry Day Average Daily Flow	194.60	232.14	240.43	220.32	183.17	157.05	138.71	127.86	140.96	163.04	165.08	221.29	181.77
North CSO Communites:	Raw Estimated Infiltration	86.60	124.14	132.43	112.32	75.17	49.50	31.36	21.11	33.06	55.04	57.08	113.29	73.97
	MWRA Estimated Infiltration	3.59	6.53	9.01	7.32	5.53	4.34	2.78	2.16	3.11	4.97	5.35	10.33	5.41
	Final Average Daily Flow	205.12	271.70	252.21	225.92	182.73	158.57	138.99	131.68	145.80	167.17	162.75	234.23	189.25
	Final Dry Day Average Daily Flow	191.01	225.61	231.42	213.00	177.64	152.71	135.93	125.70	137.85	158.07	159.73	210.96	176.35
	Final Estimated Infiltration	83.01	117.61	123.42	105.00	69.64	45.16	28.58	18.95	29.95	50.07	51.73	102.96	68.56
	Estimated Sanitary Flow	108.00	108.00	108.00	108.00	108.00	107.55	107.35	106.75	107.90	108.00	108.00	108.00	107.79
	Estimated Inflow	14.11	46.09	20.79	12.92	5.09	5.86	3.06	5.98	7.95	9.10	3.02	23.27	12.89