

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

August 26, 2005

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

**RE: Massachusetts Water Resources Authority NPDES Permit Number MA0103284 -
MWRA Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2005**

Dear Ms. Murphy and Mr. Haas:

In compliance with the requirements of MWRA's NPDES Permit MA0103284 - Part I, Item 18.bb (ii) "Infiltration/Inflow" (page 28 of 32), the Authority submits this cover letter and the six Attachments listed below that together comprise the MWRA Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2005.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan
Attachment 2 – MWRA Regional I/I Reduction Plan - FY05 Progress Update and Detailed Implementation Schedule for FY06 Activities
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY05
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 – CY04 Community Wastewater Flow Data

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

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

cc: DEP-Regulatory Branch, Boston
DEP – NERO, Boston
Madelyn Morris, DEP, NERO
Richard Chretien, DEP, NERO
Grace Bigornia-Vitale, MWRA, NPDES Coordinator
Carl H. Leone, MWRA, Community Support Program

ATTACHMENT 1
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

OVERVIEW OF MWRA REGIONAL I/I REDUCTION PLAN

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

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

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

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

ATTACHMENT 2
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

**MWRA REGIONAL I/I REDUCTION PLAN -
FY05 PROGRESS UPDATE AND DETAILED
IMPLEMENTATION SCHEDULE FOR FY06 ACTIVITIES**

This document provides a progress update for FY05 accomplishments and a description of the activities to be accomplished during FY06 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 can be cross-referenced to the implementation schedule (bar graph) attached to the MWRA Regional I/I Reduction Plan. 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 three fully outfitted internal TV inspection vehicles equipped with 6000 feet of multi-conductor cable. MWRA also utilizes an OZ-camera that has a 200X zoom capability. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

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

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

During FY05, MWRA properly operated and maintained the MWRA-owned interceptor system. Annual performance targets and ongoing accomplishments are tracked as part of the Authority's electronic MAXIMO maintenance database and are reported monthly to MWRA senior management. Specific activities undertaken by MWRA for FY05 are detailed in Attachment 3. Additional information on MWRA's FY05 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets.

During FY06, MWRA will continue to properly operate and maintain the MWRA-owned interceptor system including review of operational targets for the specific activities noted in Strategies A, B, and C, above.

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)

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

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

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)

During FY05, MWRA continued its ongoing project to inspect all inverted siphons using the sonar camera. Follow-up siphon cleaning and reinspection is expected to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. This project will continue in FY06.

During FY05, the Town of Braintree (in coordination with MWRA) reconfigured its local collection system to discharge pumped flow downstream of MWRA's Pearl Street siphon. This location has had previous SSOs in extreme rainfall events. This work should reduce future SSOs at this location, reference MWRA 8(m) Permit Number 04-09-281M.

During FY04 and FY05, MWRA performed a major upgrade to its electronic sewer database and GIS mapping system. All MWRA manholes and structures have been GPS located and more accurately mapped. During FY05, MWRA completed coordination with local communities to more accurately map connection points of local sewers to the MWRA interceptor system, GPS located all wastewater meter sites in community-owned sewers, and completed upgrades to the electronic sewer database and GIS mapping system. New mapping information will be rolled-out in FY06. When this information is available for use, work can move forward on evaluation of SSO locations.

During FY04, MWRA completed a major upgrade to its hydraulic model that consisted of converting from SWMM 4.3 to InfoWorks CS. During FY05, MWRA's hydraulic modeling work was dedicated to CSO program initiatives. During FY06, most modeling work will again be targeted to the CSO program, however, MWRA will begin to utilize the updated electronic sewer database, GIS mapping system, and hydraulic modeling to review existing MWRA SSO sites in MWRA's south collection system including the SSO sites listed in MWRA's Collection System Operation and Maintenance Manual. This work will be coordinated with ongoing relief sewer projects on the Braintree/Weymouth Interceptor and Upper Neponset Valley Sewer that are being implemented to reduce SSOs in those areas.

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)

During FY04, most MWRA efforts under this strategy were on hold awaiting DEP's implementation of the SSO electronic database (see Strategy A). As an interim measure, MWRA completed the data entry into a spreadsheet format of historic SSO data received from DEP for 1996 through 2001. As noted above, during FY05, MWRA

completed upgrades to the electronic sewer database and GIS mapping system. New mapping information will be rolled-out in FY06. Additional work under this strategy will be on hold awaiting DEP's implementation of the SSO electronic database (see Strategy A).

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)

During FY05, no progress was made on this strategy pending the completion of upgrades to MWRA's electronic sewer database, GIS mapping system, and hydraulic model (see Strategy B).

During FY06, MWRA will begin review of existing SSO sites in MWRA's south collection system. The specific SSO sites will include those listed in the MWRA's Collection System Operation and Maintenance Manual.

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

During FY05, MWRA continued ongoing planning/design/construction on a variety of relief sewer and sewer rehabilitation projects that will reduce existing SSOs. Progress on these projects is detailed in Attachment 3.

In conjunction with the implementation of Strategy D, above, MWRA will begin evaluating the existing SSO sites in MWRA's south collection system during FY06. Specific SSO sites will include those listed in the MWRA's Collection System Operation and Maintenance Manual. Hydraulic analyses performed for each existing capital project will be used in the summary report on the potential to eliminate each overflow. Work on this Strategy will likely begin in FY07 after Strategy D work is performed in FY06.

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)

During FY05, MWRA completed a major upgrade to its sewer data-base, GIS mapping, and hydraulic model systems (see Strategy B). In conjunction with the implementation of Strategies D and E, MWRA will begin evaluating the existing SSO sites in MWRA's south collection system during FY06/FY07. Specific SSO sites will include those listed in the MWRA's Collection System Operation and Maintenance Manual. Work on this Strategy will likely begin in FY07 (combined with work on Strategy E) after Strategy D work is performed in FY06.

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 under this strategy is intended to follow-up on discussions with local plumbing inspectors who attend the annual DEP/MWRA joint workshops. Plumbing inspectors from some communities have become directly involved with local private inflow source removal programs funded by MWRA. MWRA's Toxic Reduction and Control Program (TRAC) staff coordinate with local plumbing inspectors regarding industrial permits.

During FY05, no progress was made under this strategy awaiting coordination with DEP on roll-out of the electronic SSO reporting form that was initially discussed at the April 2004 DEP/MWRA workshop (see Strategy A).

During FY06, MWRA will send an informational letter/memo to all service area community plumbing inspectors and Health Departments (Boards of Health). The timing of distribution of the letter/memo will be independent of DEP's work.

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).

For the FY05 report, MWRA could not estimate CY04 community infiltration and inflow rates because implementation of MWRA's \$5 million Wastewater Metering Replacement project was ongoing. Under this project, wastewater metering system hardware and software was replaced with a more modern system that included installation of new meters and a cellular communication system for data transmittal. MWRA's wastewater metering system remained out-of-service through April 2005. During this period, no MWRA wastewater flow data or I/I estimates were available.

During FY06, MWRA will again estimate community infiltration and inflow rates and make this information available to MWRA member communities. Community I/I estimates from CY05 wastewater meter data will be included in the FY06 I/I Reduction Annual Report.

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)

As outlined above, MWRA's Wastewater Meter Replacement project was ongoing during FY05. No action under this Strategy was conducted during FY05. This Strategy will be reexamined during FY06, following completion of the Wastewater Meter Replacement project.

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

During FY05, no specific actions were required under this Strategy. All member sewer communities are actively participating in MWRA's I/I Local Financial Assistance Program (see Attachment 4). Community I/I reduction programs are generally being conducted by local engineering consultants under contract to the communities. These projects utilize standards established in DEP's January 1993 I/I Guidelines.

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

During FY05, MWRA completed a major upgrade to its electronic sewer database and GIS mapping system. Also during FY05, MWRA completed coordination with local communities to more accurately map connection points of local sewers to the MWRA interceptor system and GPS located all wastewater meter sites located in community-owned sewers. New mapping information will be rolled-out in FY06. When this information is available for use, work can move forward on distribution of GIS mapping information under this Strategy.

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

In June 2004, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$180.75 million and extended the program through 2013. During FY05, MWRA continue to provide grants and loans to member sewer communities to fund local I/I reduction and sewer system rehabilitation projects. A total of \$15.5 million was distributed during FY05. Since inception of the program in May 1993, over \$121 million has been distributed to fund 284 local projects. A detailed

status update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4.

During FY06, MWRA will continue to distribute funds and assist communities in the management of projects under the I/I Local Financial Assistance Program. MWRA's financial assistance funds that have not yet been distributed to communities are authorized for distribution through FY13.

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

During FY05, MWRA continued to provide emergency assistance to member communities, as requested. These efforts included internal TV inspection of 8 miles of local sewers, as well as, cleaning of over 19 miles of local sewers. During local assistance to the Town of Wakefield during May 2005, MWRA's TV inspection crew identified a severe inflow source at a broken manhole in a wetland area. Wakefield crews responded rapidly to complete repairs and eliminate the problem.

During FY06, MWRA will continue to provide emergency assistance to member communities.

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

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

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

During FY05, MWRA distributed technical information to member community Public Works Directors and local wastewater system operators, including:

- 1. July 2004 I/I Local Financial Assistance Program Funding Update, notification of additional Phase 5 funding, and notification of program guideline revisions to add sunset provisions for I/I reduction grants.**
- 2. May 2005, I/I Local Financial Assistance Program reminder to communities that had not utilized their entire Phase 2 funding that the Phase 2 sunset date for the grant portion of financial assistance is June 30, 2006.**
- 3. July 2005, I/I Local Financial Assistance Program reminder to communities that had not utilized their entire Phase 2 funding that the Phase 2 sunset date for the grant portion of financial assistance is June 30, 2006.**
- 4. July 2005, I/I Local Financial Assistance Program Funding Update to all member sewer communities.**
- 5. July 2005, copy of the article “It Can Be Done - some legal issues to consider when managing infiltration and inflow from laterals”, published in the July 2005 edition of Water Environment and Technology (Operators Forum) magazine.**

During FY06, MWRA will continue to distribute information on I/I and SSO issues.

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

During FY05, MWRA continued to summarize previous information/technology distributions regarding I/I reduction and SSOs.

During FY06, MWRA will distribute the summary data to member communities, EPA, MADEP, and regional stakeholders.

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)

In April 2004, the third joint DEP/MWRA workshop – “Operation, Maintenance and Rehabilitation” was held. In FY05, no additional joint workshops were held.

MWRA participated in the Water Environment Federation, Collection System Conference held July 17-20, 2005 in Boston, “Sustaining Aging Infrastructure.” At the Sunday workshop, Charles Lombardi, MWRA Director of Wastewater Transport presented a talk on “Restoring Capacity in MWRA’s System.”

During FY06, MWRA will continue to work cooperatively with DEP on this strategy.

Strategy D: MWRA will develop a summary of available public education material such as local/regional billing inserts, Water Environment Federation (WEF) brochures, “How-To” pamphlets, etc. The summary will provide information on where to obtain the material. A listing of available public education materials will be posted on the MWRA Internet site. MWRA will also make copies of public education material available to communities and local associations. MWRA will pilot this strategy by distributing to member communities sample copies of the “Fat-Free Sewers” brochure developed cooperatively by the Water Environment Federation (WEF) and EPA. MWRA will recommend use of the brochures for public education. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.2 Strategy B-1, and 8.2 Strategy B-4)

MWRA distributed the Fat-Free Sewers brochure to wastewater system operators in July 2003. During FY05, MWRA continued compiling available materials.

During FY06, MWRA will continue work on this strategy. In conjunction with the summary of previous information/technology distributions (see Strategy B), MWRA will distribute the summary data to member communities, EPA, MADEP, and regional stakeholders.

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

During FY05, no specific actions were required under this Strategy. Communities actively involved with private inflow removal programs have generally been developing public education information related to their specific project and/or utilizing information already available via local engineering consultants.

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)

During FY05, MWRA continued to revised and upgraded its web site www.mwra.com. Communities can obtain a great deal of information from the MWRA web site and links to other organizations are provided. Use of the web has increased significantly since development of strategies under the MWRA Regional I/I Reduction Plan (November 2002). Local communities, state agencies, regional associations, etc. all maintain their own web pages with numerous information links. Based on growth and broad use of the web, additional work under this strategy is no longer needed and it is considered complete.

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)

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. Work under this strategy is complete.

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

During FY05, no assistance from MWRA was requested by MADEP.

During FY06, any action under this strategy will be initiated jointly with MADEP.

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

During FY05, no MWRA assistance was requested under this Strategy. MWRA maintains copies of sewer system informational videos developed by the Town of Weymouth for use on its local cable station. These videotapes can be provided to other communities as an example.

During FY06, MWRA will respond to community requests.

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

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

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

MWRA provide 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 will continue to maintain a supply of I/I Task Force Reports and will provide 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. This Strategy is considered complete.

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)

During FY03, all member communities were requested to provide a copy of their existing local Sewer Use Regulations to MWRA. In July 2003, all member communities were provided a copy of a generic standard for design and construction of building sewers. Some communities requested electronic copies of the standard and expressed interest in incorporating the standard into their existing local regulations.

During FY04, MWRA began review of local Sewer Use Regulations and began development of a table format for comparison of local regulations. Future work under this strategy is on hold. The outcome of this strategy is dependent on potential future issuance of EPA's SSO Rules, including CMOM Regulations, that may impact local sewer use regulations.

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

A Member Community Collection System Operation and Maintenance Manual Guidance Document and Overflow Response Plan was developed and submitted to EPA and MADEP for review in June 2001. This guidance document was made available to member communities. During FY04, MADEP distributed a new guideline document – “Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems” dated August 2003. This manual was developed by New England Interstate Water Pollution Control Commission (NEIWPCC) under a grant from EPA. It was written by a committee consisting of NEIWPCC member state environmental agencies, EPA, and wastewater consultants. The manual is available at www.neiwpcc.org. MWRA provided its collection system O&M manual and the community collection system guidance document to the NEIWPCC committee for review.

With the publication of the NEIWPCC manual, further efforts on the Member Community Collection System Operation and Maintenance Manual Guidance Document are not required. Work under this strategy is complete.

ATTACHMENT 3
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY05

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 34 miles of Authority-owned interceptors and approximately 8 miles of community-owned sewers, internally sonar inspected 36 inverted siphon barrels, and physically inspected about 627 sewer manholes and other structures (diversion chambers, siphon headhouses, etc.) during FY05. During the internal inspection process, problems such as physical defects, infiltration, sediment, grease deposits, etc. are noted and stored in MWRA's electronic maintenance (MAXIMO) database. Maintenance work is then scheduled based on the identified problems. During FY05, maintenance work included hydraulic/mechanical cleaning of 32 miles of MWRA-owned sewer, hydraulic/mechanical cleaning of 19 miles of community-owned sewer, cleaning of 68 siphon barrels, rehabilitation of 7 sewer manholes, and replacement of 68 manhole frames and covers. Potential structural problems and infiltration sources identified during the inspection process are referred to engineering staff for follow-up review and analysis of cost-effective repairs.

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

1. During FY05, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. A second phase of work on Section 93A was completed with a \$0.5 million sewer force main rehabilitation. A \$2 million rehabilitation of sewer Section 80/83 has been begun and will be constructed through FY07. A \$4.7 million Mystic Valley Sewer (Section 160) evaluation/rehabilitation project is scheduled for FY06/08. Each of these projects will reduce I/I entering the MWRA interceptor system.
2. MWRA's \$220 million Braintree/Weymouth Relief Facilities Project is nearing completion. The new facilities will provide additional sewer capacity in the Braintree/Weymouth system to reduce SSOs.
3. MWRA's \$40 million Upper Neponset Valley Sewer Project began construction in FY05. This project will provide hydraulic relief to about four miles of Sewer Sections 526, 527, 528, 529, and 530 located in Newton and West Roxbury. These sewers, constructed in 1896 to 1902, receive flow from West Roxbury, Newton, Brookline and Dedham. As an outcome of this project, I/I and periodic sewer system overflows will be reduced.

4. MWRA's \$8.2 million Cummingsville Replacement Sewer Project began construction in FY05. This project is intended to provide hydraulic relief through replacement of about one mile of Sewer Section 47 (constructed in the 1890's) and rehabilitation of about one mile of Sewer Section 86 (constructed in 1952) in Winchester. As an outcome of this project, I/I and periodic sewer system overflows will be reduced.
5. MWRA's \$68 million East Boston Branch Sewer Relief Project will replace or rehabilitate approximately 25,000 feet of existing sewer in East Boston to provide hydraulic relief and reduce CSO discharges. Construction is scheduled for FY06/08.
6. MWRA's \$750 million Combine Sewer Overflows (CSO) Program includes a number of projects that will provide for the separation of sanitary sewer and stormwater flows. These projects will reduce stormwater inflow to the collection system. Details of MWRA's CSO Control Plan are reported under the requirements of NPDES Permit – Part I, Item 19. Long-term CSO Control Plan.

ATTACHMENT 4
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

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

Financial Assistance Update

All 43-member sewer communities are participating in MWRA's \$180.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY05, over \$121 million has been distributed to fund local I/I reduction and sewer system rehabilitation projects. The program budget of \$180.75 million includes the addition of \$40 million in new phase 5 funds approved by the MWRA Board of Directors for distribution beginning in FY05. The table on page 2 provides a summary of funding allocations, distributions, and funds remaining for each member community. Distribution of the remaining \$60 million in funds has been approved through FY13.

Program Background

MWRA's I/I Local Financial Assistance Program was initiated to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Following recommendations from the Advisory Board, the Board of Directors approved a total program budget of \$180.75 million. The funds have been allocated among the 43 MWRA sewer communities based on respective shares of overall MWRA wholesale sewer charges. Financial assistance for Phases 1 and 2 (total of \$63.75 million) was distributed for approved projects as a 25 percent grant and a 75 percent interest-free loan. The grant/loan split was revised for distribution of the Phase 3, 4, and 5 funds (total of \$117 million) to a 45 percent grant and a 55 percent interest-free loan. The loan portion is repaid to MWRA over a five-year period beginning one year after the date the funds are distributed.

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

Program Goals

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

**MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
FUNDING SUMMARY**

25-Aug-05

Community	Total Allocations (Phases 1/2/3/4/5)	Total Distributions (Phases 1/2/3/4/5)	Percent Distributed	Funds Remaining
Arlington	\$3,449,000	\$1,657,900	48%	\$1,791,100
Ashland	\$734,500	\$550,500	75%	\$184,000
Bedford	\$1,383,600	\$775,300	56%	\$608,300
Belmont	\$2,108,100	\$1,292,400	61%	\$815,700
Boston	\$51,618,200	\$28,783,846	56%	\$22,834,354
Braintree	\$3,109,000	\$2,483,127	80%	\$625,873
Brookline	\$5,112,200	\$3,980,200	78%	\$1,132,000
Burlington	\$1,949,800	\$1,949,800	100%	\$0
Cambridge	\$9,323,100	\$6,301,655	68%	\$3,021,445
Canton	\$1,645,900	\$1,281,900	78%	\$364,000
Chelsea	\$2,469,100	\$1,609,264	65%	\$859,836
Dedham	\$2,381,000	\$1,833,000	77%	\$548,000
Everett	\$3,141,500	\$2,425,500	77%	\$716,000
Framingham	\$5,003,000	\$3,808,395	76%	\$1,194,605
Hingham	\$589,500	\$589,500	100%	\$0
Holbrook	\$640,600	\$496,600	78%	\$144,000
Lexington	\$2,827,300	\$1,533,600	54%	\$1,293,700
Malden	\$4,593,900	\$3,226,997	70%	\$1,366,903
Medford	\$4,794,600	\$4,794,600	100%	\$0
Melrose	\$2,301,300	\$1,769,300	77%	\$532,000
Milton	\$2,279,500	\$2,279,500	100%	\$0
Natick	\$2,270,600	\$1,772,000	78%	\$498,600
Needham	\$2,630,600	\$1,478,300	56%	\$1,152,300
Newton	\$8,265,400	\$4,545,700	55%	\$3,719,700
Norwood	\$2,715,400	\$2,054,600	76%	\$660,800
Quincy	\$7,665,000	\$5,985,000	78%	\$1,680,000
Randolph	\$2,354,800	\$1,330,900	57%	\$1,023,900
Reading	\$1,736,100	\$1,736,100	100%	\$0
Revere	\$3,750,900	\$2,407,789	64%	\$1,343,111
Somerville	\$6,155,800	\$2,675,290	43%	\$3,480,510
Stoneham	\$2,043,900	\$2,043,900	100%	\$0
Stoughton	\$1,852,900	\$1,436,900	78%	\$416,000
Wakefield	\$2,356,900	\$2,086,600	89%	\$270,300
Walpole	\$1,447,000	\$1,139,000	79%	\$308,000
Waltham	\$5,392,400	\$4,212,400	78%	\$1,180,000
Watertown	\$2,581,800	\$322,565	12%	\$2,259,235
Wellesley	\$2,255,700	\$854,624	38%	\$1,401,076
Westwood	\$973,300	\$733,300	75%	\$240,000
Weymouth	\$4,529,900	\$4,529,900	100%	\$0
Wilmington	\$968,000	\$968,000	100%	\$0
Winchester	\$1,704,000	\$952,300	56%	\$751,700
Winthrop	\$1,342,400	\$287,100	21%	\$1,055,300
Woburn	\$4,302,500	\$4,302,500	100%	\$0
Totals	\$180,750,000	\$121,277,652	67%	\$59,472,348

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-one percent of funds distributed to date have financed local construction projects. The table below details funds distributed by project phase for both completed and ongoing projects.

<u>PROJECT PHASE</u>	<u>COMPLETE PROJECTS (\$ millions)</u>	<u>ONGOING PROJECTS (\$ millions)</u>	<u>TOTAL (\$ millions)</u>
Planning/Study:	\$ 12.4	\$ 10.5	\$ 22.9 (19%)
Design:	3.3	2.7	6.0 (5%)
Construction:	54.8	31.0	85.8 (71%)
Eng. Services During Const.:	4.4	2.2	6.6 (5%)
TOTAL	\$ 74.9 (62%)	\$ 46.4 (38%)	\$ 121.3 (100%)

Estimated I/I Removal

The estimated average daily flow reduction associated with all MWRA funded I/I reduction projects that have been completed is about 48 mgd. This flow reduction “ballpark” figure is based on the communities’ (or their consultants’) peak I/I reduction estimates. MWRA staff have prorated the peak I/I reduction estimates to estimate the average I/I reduction. The estimated I/I removals noted here represent groundwater and stormwater that no longer enter the collection system. Regional wastewater flow reductions resulting from specific local I/I reduction projects are difficult to substantiate through end-of-the-collection-system meter data, due to factors noted below:

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

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

Projects Funded During FY05

Local projects are funded quarterly by MWRA. Attached are funding summaries for the four quarterly funding distributions during FY05: August 2004, November 2004, February 2005, and May 2005.

ATTACHMENT 5
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

**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 \$180.75 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 FY05, MWRA has distributed \$121 million to fund local projects. A detailed update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4 to this report.

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

1. ARLINGTON: North System

Background Information:

- Miles of Sewer: 106
- Sewered Population: 41,903
- Three Year ('01 - '03) Annual Average I/I: 3.16 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Alewife Brook Area Sanitary Sewer investigation (August 2002)

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

I/I Rehabilitation Projects in Design or Construction: Sewer Improvements on Hemlock St, Pine St & Lansdowne Rd Contract was bid in April 2005; construction is scheduled to be completed by late Summer/early Fall 2005.

Reporting Period Activity: No additional work beside that stated above.

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 \$3,449,000 allotted through the Program's Phases 1-5, the community has \$1,791,100 remaining in funding assistance.

2. ASHLAND: South System

Background Information:

- Miles of Sewer: 43
- Sewered Population: 11,606
- Three Year ('01 - '03) Annual Average I/I: 0.53 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Investigation and Repair (CY 04/05) - Sub-Basins III & IV

Private Source Inflow Removal Program: The Town will be performing I/I removal from residential/commercial properties in Sub-Basins III and IV.

I/I Rehabilitation Projects in Design or Construction: Completed clear flow investigation and manhole frame/cover replacement in Sub-Basin II. Completed internal TV inspection and manhole rehabilitation in Sub-Basin III. Internal TV inspection on-going in Sub-Basin IV.

Reporting Period Activity: The Town has a sewer moratorium on new sewer connections at this time. New connections are only added if I/I removal has been achieved. Pond Street and Downtown sewer extension projects have been approved. Brackett Road Lift Station construction has been completed.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$734,500 allotted through the Program's Phases 1-5, the community has \$184,000 remaining in funding assistance.

3. BEDFORD: North System

Background Information:

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

Latest I/I or SSES Report: I/I Study, May 2000

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

I/I Rehabilitation Projects in Design or Construction: None at this time.

Reporting Period Activity: An SSES study is being conducted on approximately 60,000 l.f. of sanitary sewer in Sewer Subareas 3 & 9; portions of Walsh Rd, Ashby Rd, & Great Rd. The report is scheduled to be completed by the end of 2005.

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 \$1,383,600 allotted through the Program's Phases 1-5, the community has \$608,300 remaining in funding assistance.

4. BELMONT: North System

Background Information:

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

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

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

I/I Rehabilitation Projects in Design or Construction: The contract for connecting private inflow sources to the town's storm drain system which was awarded in February 2004, is now scheduled for completion this Summer. This project will remove approximately 1,165,000 gpd of peak daily inflow from the existing sewer.

Reporting Period Activity: See previous comments.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$2,108,100 allotted through the Program's Phases 1-5, the community has \$815,700 remaining in funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 858
- Sewered Population: 581,034
- Three Year ('01 - '03) Annual Average I/I: 45.65 mgd
- Massachusetts DEP Administrative Order: None (Cooperative agreement exists)

Latest I/I or SSES Report: Upper Neponset Valley Sewer Inflow Survey (On-going); Granite Avenue I/I Survey (On-going); Dorchester High Level Sewer I/I Survey (On-going)

Private Source Inflow Removal Program: Since 1994, the Downspout Disconnection Program has conducted approximately 36,000 building surveys and 10,000 dye water tests. Approximately 6,000 building (13,300 downspouts) have been disconnected. During CY04/05, a total of 75 large impervious areas were surveyed to identify inflow sources. All 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, fifty-two (52) projects have received funding through the MWRA I/I Local Financial Assistance Program. In CY04/05, BWSC completed the following rehabilitation projects: Kilmarnock Street Drainage Improvements, Talbot Avenue I/I Removal, Commercial Street I/I Removal,

Shawmut Avenue Drainage Improvements, D Street/West Second Street Sewer/Drainage Improvements and Neponset Area Large Commercial Properties Separation.

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

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

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

MWRA I/I Local Financial Assistance Program: The community has financed fifty-two (52) I/I identification/reduction projects through the Authority's funding assistance program. Of the \$51,618,200 allotted through the Program's Phases 1-5, the community has \$22,834,354 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 133
- Sewered Population: 33,694
- Three Year ('01 - '03) Annual Average I/I: 4.45 mgd
- Massachusetts DEP Administrative Order: No. 546 (Issued April 1, 1985), ACO-NE-01-1001 (March 27, 2001)

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

Private Source Inflow Removal Program: Eight (8) private source sump pump removal contracts have redirected 247 sump pumps to date. Developer Flow Reduction Program is now 6:1 per DEP ACO.

I/I Rehabilitation Projects in Design or Construction: Howie Road Infiltration Rehabilitation (Sub-Areas L2 through L7) design is complete. The Allen Street interceptor lining and infiltration work in Sub-Areas HC2 and M2 is complete.

Reporting Period Activity: Howie Road Infiltration Rehabilitation (Contract 06-S1) was bid in July 2005. Construction began August 2005 and is scheduled for completion November 2005. The project had an estimated peak infiltration removal of 0.20 mgd.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$3,109,000

allotted through the Program's Phases 1-5, the community has \$625,873 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 111
- Sewered Population: 56,585
- Three Year ('01 - '03) Annual Average I/I: 5.81 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: Town is in the process of developing a Private flow Source Identification and Removal Program.

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

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$5,112,200 allotted through the Program's Phases 1-5, the community has \$1,132,000 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 115
- Sewered Population: 22,643
- Three Year ('01 - '03) Annual Average I/I: 2.17 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1004 (7/25/01)

Latest I/I or SSES Report: Sewer System Evaluation Survey (January 2003)

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

I/I Rehabilitation Projects in Design or Construction: Design & preparation of Contract Documents have been completed for the "Sewer System Rehabilitation Program" as recommended by the SSES Report of January 2003.

Reporting Period Activity: Twelve more sump pumps have been redirected. Bids for the above mentioned sewer rehabilitation program were opened on July 30, 2005. Construction phase has begun.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$1,949,800.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 194
- Sewered Population: 101,485
- Three Year ('01 - '03) Annual Average I/I: 9.45 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Phase II Analysis / Fast Track Design of I/I Rehabilitation Projects (March 2003)

Private Source Inflow Removal Program: Building inspections are being completed on an as-needed basis.

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

Reporting Period Activity: Common Manhole Contract No. 3 is substantially completed (30 common manholes in Cambridgeport and 2 common manholes in the Alewife Area have been separated). South Massachusetts Avenue Cam017 Phase II, which involves the extension of the South Massachusetts Avenue drain line into Central Square is continuing. The Bishop Allen Stormwater Management Project, which involves sewer separation and stormwater management of the area north of Massachusetts Avenue and west of Columbia and Main St, is scheduled to begin in December 2005. Porter Square sewer separation and surface enhancement project (Contract #7A) is ongoing. Cambridgeport Roadways construction Project removed 12 common manholes within lower Cambridgeport. Under the Amesbury, Audrey and Pearl St outfall construction project, 2 new drain outfalls have been constructed; the Granite/Pearl St cross connection to the MWRA North Charles Interceptor has been removed; and 3 common manholes on Vassar St have been removed.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$9,323,100 allotted through the Program's Phases 1-5, the community has \$3,021,445 remaining in funding assistance.

10. CANTON: South System

Background Information:

- Miles of Sewer: 62
- Sewered Population: 15,634
- Three Year ('01 - '03) Annual Average I/I: 1.93 mgd
- Massachusetts DEP Administrative Order: No. 537 (Issued April 3, 1984)

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

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

I/I Rehabilitation Projects in Design or Construction: The Additional Investigations Project based on the 1994 SSES is progressing. Design work for the replacement of Green Lodge Interceptor is on-going.

Reporting Period Activity: Ward Well Pump Station Replacement contract was re-bid and awarded June 2005. Construction to be complete December 2005.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$1,645,900 allotted through the Program's Phases 1-5, the community has \$364,000 remaining in funding assistance.

11. CHELSEA: North System

Background Information:

- Miles of Sewer: 41
- Sewered Population: 34,106
- Three Year ('01 - '03) Annual Average I/I: 1.78 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: Private inflow source identification is complete for CHE-007 tributary areas.

I/I Rehabilitation Projects in Design or Construction: Construction of sewer separation in Vale Street, which includes 300 LF of drain to redirect 3 catch basins, is scheduled to be completed by Winter of 2005. Design for one of the three drainage outfalls (Highland St Drainage Outfall) under Phase 1 of the CHE007 Tributary Area Sewer Separation Plan is on-going; construction has been delayed till the fall of 2006. Construction of approximately 2,300 LF of storm drain to separate approximately 8 acres of drain in the Eastern Avenue area is scheduled to be completed by the fall of 2005. The design of the Spruce St Roadway & Utility Project, which involves

construction of 560 lf of 48-inch drain line on Spruce St and construction of a new drain line on Sixth St to allow sewer separation is ongoing. Design is ongoing for the Crescent Avenue Sewer Separation Project, which involves the separation of the combined sewer on Crescent Avenue from Cary Avenue to Eleanor St. and redirection of all catch basins in the project area.

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

Reporting Period Activity: See above comments.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$2,469,100 allotted through the Program's Phases 1-5, the community has \$859,836 remaining in funding assistance.

12. DEDHAM: South System

Background Information:

- Miles of Sewer: 76
- Sewered Population: 21,849
- Three Year ('01 - '03) Annual Average I/I: 3.70 mgd
- Massachusetts DEP Administrative Order: No. 547 (Issued October 1, 1985).

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

Private Source Inflow Removal Program: Review of the past inspection work in the Glenway/Hamilton Avenue area was performed.

I/I Rehabilitation Projects in Design or Construction: Sewer replacement design along East Street from Endicott Street rotary to High Street complete. Work incorporated into Miscellaneous Sewer Improvements Contract 2003-1. Lower Brook Interceptor rehabilitation in design.

Reporting Period Activity: The Town has completed TV inspection of three sewer subareas, totaling approximately 43,000 LF of sewer. Approximately 41,000 LF requires rehabilitation. A new phase of internal TV inspection is scheduled for Fall 2005.

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 \$2,381,000 allotted through the Program's Phases 1-5, the community has \$548,000 remaining in funding assistance.

13. EVERETT: North System

Background Information:

- Miles of Sewer: 57
- Sewered Population: 37,540
- Three Year ('01 - '03) Annual Average I/I: 3.64 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: The City is in the process of designing another construction contract based upon smoke testing and TV inspection performed during Fall 1999.

Reporting Period Activity: No major work to report.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$3,141,500 allotted through the Program's Phases 1-5, the community has \$716,000 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:

- Miles of Sewer: 275
- Sewered Population: 59,287
- Three Year ('01 - '03) Annual Average I/I: 2.52 mgd
- Massachusetts DEP Administrative Order: No. 592 (Issued January 8, 1986)

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

Private Source Inflow Removal Program: The SSES included a house-to-house inspection component initiating at properties along the Howard Street Sewer Rehabilitation Project. Three basement sump pumps were identified and are scheduled for removal. Sewer use regulations are being updated to strengthen penalties levied to private source inflow. The Town is also undertaking a Storm Water Management Study that will provide mapping of the town-wide sewer (completed April 2004) and storm water drainage (on-going) systems.

I/I Rehabilitation Projects in Design or Construction: Cleaning and TV inspection of 18,940 LF of sewer was conducted in the downtown area of the community (primarily near Waverly Street and Howard Street). Design work for the Howard Street Sewer Rehabilitation Project is complete. Construction is scheduled to be completed December 2005. Design work for the

Franklin Street Sewer Rehabilitation Project is complete. Construction is scheduled to be completed December 2005.

Reporting Period Activity: Sewer system cleaning and TV inspection were conducted along the Farm Pond and Beaver Dam Interceptors during Spring 2005. Hemenway Pump Station rehabilitation is in design.

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 \$5,003,000 allotted through the Program's Phases 1-5, the community has \$1,194,605 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 6,207
- Three Year ('01 - '03) Annual Average I/I: 0.85 mgd
- Massachusetts DEP Administrative Order: No. 536 (Issued November 15, 1985)

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

Private Source Inflow Removal Program: The house-to-house sump pump inspection program continues. Based on these inspections, five sump pumps and one roof leader were located and redirected. Three house laterals and six manholes have been replaced.

I/I Rehabilitation Projects in Design or Construction: Sewer relining along North Street is complete. Adjacent chimney repair work is complete. An estimated I/I reduction of 50,000 gpd was reported.

Reporting Period Activity: The Town will use Developer Flow Reduction Program funds to identify I/I sources in conjunction with the forthcoming Comprehensive Wastewater Management Study. Twenty new sewer connections were added during FY05.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$589,500.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 8,494
- Three Year ('01 - '03) Annual Average I/I: 0.46 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Identification Plan (August 2004)

Private Source Inflow Removal Program: The on-going SSES includes a house-to-house inspection component. Town officials will continue to inspect new residential/commercial properties for illicit connections during the installation of water meters.

I/I Rehabilitation Projects in Design or Construction: SSES entails inspection of 445 manholes, house-to-house investigation of 2,700 properties and smoke testing of 40,000 LF of sewer.

Reporting Period Activity: The Town has completed its yearly check of all cross-country sewer manholes. The Holbrook collection system is being extended under the present Phase II–VI Sewer Project.

MWRA I/I Local Financial Assistance Program: The community has financed one (1) I/I reduction project through the Authority’s funding assistance program. Of the \$640,600 allotted through the Program’s Phases 1-5, the community has \$144,000 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 151
- Sewered Population: 30,508
- Three Year ('01 - '03) Annual Average I/I: 3.36 mgd
- Massachusetts DEP Administrative Order: None

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

Private Source Inflow Removal Program: Inspections are performed through two Town Departments. For all buildings that have been issued Town work permits, the Building Division inspectors check basements for the presence of floor drains and sump pumps. During the past year, 25 floor drains were sealed and sump pumps removed. The Public Works Department also checks homes during routine business. During the past year, 10 sump pumps or floor drains were ordered sealed.

I/I Rehabilitation Projects in Design or Construction: See description below.

Reporting Period Activity: 4 leaking manholes were repaired by town forces.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority’s funding assistance program. Of the \$2,827,300 allotted through the Program’s Phases 1-5, the community has \$1,293,700 remaining in funding assistance.

18. MALDEN: North System

Background Information:

- Miles of Sewer: 100
- Sewered Population: 55,760
- Three Year ('01 - '03) Annual Average I/I: 5.58 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Malden Sewer System Survey Report (April 2004)

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

I/I Rehabilitation Projects in Design or Construction: Construction has begun for the Sewer Rehabilitation Contract No. 2004-S-1.

Reporting Period Activity: The construction for the Sewer Rehabilitation Contract No. 2004-S-1 is continuing. This rehabilitation project, which is estimated to remove 0.43 mgd of I/I, was recommended by the Sewer System Survey Report of April 2004.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$4,593,900 allotted through the Program's Phases 1-5, the community has \$1,366,903 remaining in funding assistance.

19. MEDFORD: North System

Background Information:

- Miles of Sewer: 113
- Sewered Population: 54,679
- Three Year ('01 - '03) Annual Average I/I: 5.11 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: Design associated with the Sydney Street Inflow Removal and Drainage Improvement Project is substantially completed with bidding expected in the Fall 2005. Once constructed, this project is estimated to remove 7.0 mgd of peak inflow.

Reporting Period Activity: MWRA Local I/I Financial Assistance funds (MWRA Project No. WRA-P5-19-3-503) were distributed in August 2004 for Infiltration Reduction Construction Contract. This project includes the recommendations presented in the “CY 1999 – 2000 Television Inspection” Report. The sewer rehabilitation work will take place in Sewer Subsystems A, B, E, N, P, R and T.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority’s funding assistance program. The community has received its entire financial assistance allotment of \$4,794,600.

20. MELROSE: North System

Background Information:

- Miles of Sewer: 74
- Sewered Population: 26,757
- Three Year ('01 - '03) Annual Average I/I: 2.64 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: There have been no modifications or extensions to the collection system over the last year.

Reporting Period Activity: The City is continuing its public and private inflow source identification and removal program. The construction of the I/I Rehabilitation Project (Infiltration/Inflow Rehabilitation Project – Contract No. 05-1), as recommended by the 1995 SSES Report, began in June 2005 with completion scheduled for the Fall 2005. This rehabilitation work will involve the rehabilitation of approximately 29,000 LF of sewer in various sections of the City. The estimated infiltration removal is 1.13 mgd.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority’s funding assistance program. Of the \$2,301,300 allotted through the Program’s Phases 1-5, the community has \$532,500 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 83
- Sewered Population: 24,291
- Three Year ('01 - '03) Annual Average I/I: 2.70 mgd
- Massachusetts DEP Administrative Order: No. 580 (Issued June 13, 1985)

Latest I/I or SSES Report: I/I Rehabilitation - Year 3 (June 2005)

Private Source Inflow Removal Program: The Town is continuing to pursue the removal of sump pumps and other private inflow sources identified through a previously completed building inspection program.

I/I Rehabilitation Projects in Design or Construction: Town-Wide Sewer Evaluation Program - Year 2 rehabilitation construction completed November 2004. Estimated infiltration removal is 80,000 gpd. Television and manhole inspection for Year 3 of the Town-Wide Sewer Evaluation Program was conducted in Spring 2004. Town-Wide Sewer Evaluation Program - Year 3 rehabilitation construction began August 2005. Estimated infiltration removal is 206,500 gpd. Television and manhole inspection for Year 4 of the Town-Wide Sewer Evaluation Program was conducted in Spring 2005.

Reporting Period Activity: Fletcher-Steele Way Development will add approximately 1,600 LF of sanitary sewer. The developer for the Milton Landing Project at Wharf Street is conducting an evaluation of Sewer Sub-System S-17. Town-wide sewer GIS mapping scheduled for completion Fall 2005.

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$2,279,500.

22. NATICK: South System

Background Information:

- Miles of Sewer: 107
- Sewered Population: 27,441
- Three Year ('01 - '03) Annual Average I/I: 1.75 mgd
- Massachusetts DEP Administrative Order: No. 593 (Issued November 15, 1985)

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

Private Source Inflow Removal Program: The SSES includes a house-to-house inspection component. Home inspections will continue to be conducted during water meter replacement. The Town is scheduled to complete replacement of all water meters in the next year.

I/I Rehabilitation Projects in Design or Construction: The SSES includes manhole inspection, house-to-house private source investigation and sewer line smoke testing. Replaced 2,900 LF of 8 to 10-inch sewer on East Central Street and West Central Street. Replaced 850 LF of 10-inch sewer on Grant Street.

Reporting Period Activity: Town-Wide SSES on-going.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,270,600 allotted through the Program's Phases 1-5, the community has \$498,600 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 115
- Sewered Population: 27,826
- Three Year ('01 - '03) Annual Average I/I: 3.33 mgd
- Massachusetts DEP Administrative Order: No. 549 (Issued November 21, 1984)

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

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

I/I Rehabilitation Projects in Design or Construction: Sewer Sub-Areas 1, 3 and 4 were TV inspected. A two phase rehabilitation project was designed/constructed. Phase 1 is complete and included root treatment, heavy cleaning, testing and sealing of joints, spot CIP repair and full length (manhole-to-manhole) CIP liner. Phase 2 is on-going and includes spot repairs requiring excavation and manhole-to-manhole pipe replacement.

Reporting Period Activity: Upgrade/rehabilitation at Kendrick Street, Reservoir B, Milo Circle, Great Plain Avenue and Richardson Drive Pumping Stations.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,630,600 allotted through the Program's Phases 1-5, the community has \$1,152,300 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 271
- Sewered Population: 82,637
- Three Year ('01 - '03) Annual Average I/I: 8.83 mgd
- Massachusetts DEP Administrative Order: ACO-NE-00-1001

Latest I/I or SSES Report: Subarea A & C Smoke and Dyed Testing Project

Private Source Inflow Removal Program: The City continues home inspections for illicit connections to the sanitary sewer collection system. A sewer task force has been created to develop and implement a Private Inflow Removal Program.

I/I Rehabilitation Projects in Design or Construction: Infiltration removal Sewer Area C has been completed.

Reporting Period Activity: Investigation of the interceptor sewer located in a portion of the Cochituate Aquaduct was completed. I/I mitigation associated with the Kessler Woods Development is continuing with an estimated I/I removal to date of 60,000 gpd. The total required estimated I/I removal is 154,880 gpd.

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 \$8,265,400 allotted through the Program's Phases 1-5, the community has \$3,719,700 remaining in funding assistance.

25. NORWOOD: South System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 28,443
- Three Year ('01 - '03) Annual Average I/I: 3.85 mgd
- Massachusetts DEP Administrative Order: No. 534 (Issued July 25, 1983)

Latest I/I or SSES Report: Norwood Gardens Service Area SSES (July 2005)

Private Source Inflow Removal Program: As part of the Norwood Gardens SSES, a total of 56 buildings were inspected and 10,000 LF of sewer line was smoke tested.

I/I Rehabilitation Projects in Design or Construction: The Pellana Road Pumping Station Area Sewer Rehabilitation construction is complete. Norwood Gardens SSES complete. Design recommendations forthcoming.

Reporting Period Activity: Margaret Street / Surrey Road Sewer Main Rehabilitation Project (Norwood Contract No. NPW 05-07) scheduled for completion June 2006.

MWRA I/I Local Financial Assistance Program: The community has financed eleven (11) I/I reduction projects through the Authority's funding assistance program. Of the \$2,715,400 allotted through the Program's Phases 1-5, the community has \$660,800 remaining in funding assistance.

26. QUINCY: South System

Background Information:

- Miles of Sewer: 202
- Sewered Population: 88,970
- Three Year ('01 - '03) Annual Average I/I: 8.59 mgd
- Massachusetts DEP Administrative Order: No. 644 (Issued October 22, 1986)

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

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

I/I Rehabilitation Projects in Design or Construction: North Quincy Lateral Sewer Improvements (Phase I) completed July 2005. Quincy Shore Drive Sewer Improvement Project (Phase I) on-going.

Reporting Period Activity: Squantum Bayside Road Emergency Sewer Repair completed June 2005.

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 \$7,665,000 allotted through the Program's Phases 1-5, the community has \$1,680,000 remaining in funding assistance.

27. RANDOLPH: South System

Background Information:

- Miles of Sewer: 101
- Sewered Population: 30,738
- Three Year ('01 - '03) Annual Average I/I: 1.75 mgd
- Massachusetts DEP Administrative Order: No. 548 (Issued July 29, 1985)

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

Private Source Inflow Removal Program: House-to-house inspections in the Amelian Road area.

I/I Rehabilitation Projects in Design or Construction: Amelian Road SSES contract is complete.

Reporting Period Activity: The Town is developing a sump pump removal plan/policy along with expanding its Developer Flow Reduction Plan.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$2,354,800 allotted through the Program's Phases 1-5, the community has \$1,023,900 remaining in funding assistance.

28. READING: North System

Background Information:

- Miles of Sewer: 96
- Sewered Population: 22,311
- Three Year ('01 - '03) Annual Average I/I: 1.23 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Pilot House-to-House Inspection Program Summary Report (July 2002)

Private Source Inflow Removal Program: The Town has received proposals to complete the Town-wide House-to-House Inspection Program.

I/I Rehabilitation Projects in Design or Construction: Cleaned approximately 23,629 LF of sewer; tested 3,976 joints and sealed 3,485 joints; root treatment performed on 8,612 lf of sewer; sealed and cement-lined 39 sewer manholes.

Reporting Period Activity: MWRA Local I/I Financial Assistance funds (MWRA Project No. WRA-P5-19-3-503) were distributed in May 2005 for the completion of a House-to-House Survey for the remainder of the Town. This survey began in the fall of 2004. This program is approximately 74% complete. To date, 72 sump pumps have been identified as being connected to the sewer.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$1,736,100.

29. REVERE: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 46,955
- Three Year ('01 - '03) Annual Average I/I: 4.06 mgd
- Massachusetts DEP Administrative Order: No. 837 (Issued April 21, 1991)

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

Private Source Inflow Removal Program: Removed 4 sump pump connections from the sewer.

I/I Rehabilitation Projects in Design or Construction: No activity during this period.

Reporting Period Activity: Cleaned and televised 37,500 lf of sewer.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. Of the \$3,750,900 allotted through the Program's Phases 1-5, the community has \$1,343,111 remaining in funding assistance.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 128
- Sewered Population: 75,533

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

Latest I/I or SSES Report: Sewer System Rehabilitation Design (April 2002)

Private Source Inflow Removal Program: Private Inflow source investigation ongoing in the Mystic River watershed area. This work includes sampling and dye-testing of houses suspected of having illegal connections.

I/I Rehabilitation Projects in Design or Construction: See comments below.

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

Reporting Period Activity: Installations of stormwater detention tanks on Beacon St has been completed. The first phase of the replacement of sewer/drain pipe in the Ten Hills area has been completed. This project involved the replacement of 1,100 lf of pipe. The next phase of this project is scheduled to begin in the late Summer 2005.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$6,155,800 allotted through the Program's Phases 1-5, the community has \$3,480,510 remaining in funding assistance.

31. STONEHAM: North System

Background Information:

- Miles of Sewer: 63
- Sewered Population: 21,581
- Three Year ('01 - '03) Annual Average I/I: 1.42 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: CCTV Report in Study Areas V & VI (June 2004); Phase II Aqua Zoom Assessment (June 2004)

Private Source Inflow Removal Program: Inspections were conducted in the Avalon Road area.

I/I Rehabilitation Projects in Design or Construction: Total replacement of the sewer main, manholes and service connections (as needed) on Summer Street between Main Street and Pond Street and a segment of the Pond Street sewer has been completed and Record Drawings delivered in Spring 2004.

Reporting Period Activity: Sewer Manhole replacement at Marble and Main St. CCTV inspections were performed in Marble St/Lincolnvile area, Cedar Ave & Poplar St, Main St

from Summer St to Peabody Rd, Middlesex Rd. Cleaning and televising was also conducted in the Avalon Rd area

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$2,043,900.

32. STOUGHTON: South System

Background Information:

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

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

Private Source Inflow Removal Program: TV inspection of service connections on-going.

I/I Rehabilitation Projects in Design or Construction: Phase VI sewer rehabilitation on-going.

Reporting Period Activity: Phase VI rehabilitation design completed August 2004. Phase V rehabilitation construction complete.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$1,852,900 allotted through the Program's Phases 1-5, the community has \$416,000 remaining in funding assistance.

33. WAKEFIELD: North System

Background Information:

- Miles of Sewer: 93
- Sewered Population: 23,881
- Three Year ('01 - '03) Annual Average I/I: 3.05 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Subarea 6 Flow Isolation, TV and Manhole Inspection Report (March 2005); Subarea 6 Smoke Testing Dyed Water Testing Report (March 2005)

Private Source Inflow Removal Program: Continuing to review alternatives for a program. Inspection at the Colonial Point complex in Edgewater Park is on-going.

I/I Rehabilitation Projects in Design or Construction: Bid opening was held in June 2005 for the Subarea 6 Infiltration Rehabilitation Project (Contract 05-S1-1292). Construction is scheduled to

begin in August 2005. It is estimated that approximately 158,700 gpd of infiltration will be removed.

Reporting Period Activity: Town is in the process of evaluating the Quannapowitt Trunk Interceptor for any I/I removal based on internal TV inspection by MWRA. A large inflow source was found by MWRA at one of the sewer manholes in the swampy area. The corbel of this manhole was rebuilt by the Town thus eliminating the inflow source.

MWRA I/I Local Financial Assistance Program: The community has financed eleven (11) I/I reduction projects through the Authority's funding assistance program. Of the \$2,356,900 allotted through the Program's Phases 1-5, the community has \$270,300 remaining in funding assistance.

34. WALPOLE: South System

Background Information:

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

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

Private Source Inflow Removal Program: There have been 85 suspect roof leaders identified. Town working with property owners for redirection design. Town includes house-to-house inspection program as part of its water meter replacement program.

I/I Rehabilitation Projects in Design or Construction: Flow isolation of 24,600 LF of sewer and 150 manhole inspections in Subarea 8 (Common/Elm Street Area) and Subarea 15 (Maguire Park) performed under Contract 2005-23.

Reporting Period Activity: Construction of 600 LF of 2.5-inch force main at New Fisher Lane. Construction of 4,500 LF of 8-inch sewer within Toll Brothers subdivision.

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 \$1,447,000 allotted through the Program's Phases 1-5, the community has \$308,000 remaining in funding assistance.

35. WALTHAM: North System

Background Information:

- Miles of Sewer: 138
- Sewered Population: 58,305
- Three Year ('01 - '03) Annual Average I/I: 6.18 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-IN004 (3/16/05)

Latest I/I or SSES Report: Infiltration/Inflow Investigation Draft Report (June 2004)

Private Source Inflow Removal Program: No activity during this period.

I/I Rehabilitation Projects in Design or Construction: Sewer Rehabilitation (Contract 02-2) has been completed. The construction of the Beaver Brook Sewer Rehabilitation has been substantially completed with only punch list items remaining. Sewer Rehabilitation for Hobbs Brook contract was awarded June 2005, the construction is underway with completion expected in April 2006. The Metropolitan State Hospital Sewer Rehabilitation contract was awarded in July 2005 with construction scheduled for completion in July 2006. The Roberts Trunk Sewer Rehabilitation, and Carter/Felton/Elm Streets are in preparation to go to bid.

Reporting Period Activity: The City is continuing in the development of a Sewer Bank Program.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$5,392,400 allotted through the Program's Phases 1-5, the community has \$1,180,000 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:

- Miles of Sewer: 75
- Sewered Population: 32,915
- Three Year ('01 - '03) Annual Average I/I: 1.84 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004

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

Private Source Inflow Removal Program: The sump pump at the DPW facility was removed from the sewer and redirected to a new storm drain.

I/I Rehabilitation Projects in Design or Construction: In July 2004, the Town issued a contract for catch basin cleaning and rebuilding. A new sanitary sewer was installed to the DPW facility.

Reporting Period Activity: Town conducted 9,700 lf of smoke testing of the sanitary sewer.

MWRA I/I Local Financial Assistance Program: The community has financed one (1) I/I investigation project through the Authority's funding assistance program. Of the \$2,581,800 allotted through the Program's Phases 1-5, the community has \$2,259,235 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:

- Miles of Sewer: 130
- Sewered Population: 25,648
- Three Year ('01 - '03) Annual Average I/I: 2.52 mgd
- Massachusetts DEP Administrative Order: No. 579 (Issued May 23, 1985)

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

Private Source Inflow Removal Program: The DPW is contacting the owners of illegal sump pumps, based on previous private source inflow studies. To date, 18 sump pumps have been removed from the sanitary system.

I/I Rehabilitation Projects in Design or Construction: Contract No. 04C-50-05 (Sewer Rehabilitation in the Wellesley Farms Area - Year 2) completed March 2005. The project included the cleaning and television inspection of approximately 25,260 LF of sanitary sewer, testing 6,000 joints and sealing 1,200 joints.

Reporting Period Activity: The replacement/rehabilitation of 15 existing pneumatic ejector stations and 4 package sewage pump stations is on-going. Greylock Road Pump Station rehabilitation is complete. A feasibility study to determine if alternatives exist to direct the discharge of the Boulevard Road Pump Station away from an intermunicipal connection with Newton's system is ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$2,255,700 allotted through the Program's Phases 1-5, the community has \$1,401,076 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:

- Miles of Sewer: 77
- Sewered Population: 13,407
- Three Year ('01 - '03) Annual Average I/I: 1.12 mgd
- Massachusetts DEP Administrative Order: No. 578 (Issued May 23, 1985)

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

Private Source Inflow Removal Program: House-to-house inspection survey, as part of the FY05 Annual Inspection Program, has been completed. Three properties were identified with illicit connections.

I/I Rehabilitation Projects in Design or Construction: The maintenance program for FY05 has been completed. The program included television inspection of seven miles of sewer, the testing

and sealing of sewer manholes, and house-to-house inspection surveys to identify illicit connections to the sewer system. The manhole sealing eliminated an estimated 14,000 gpd of I/I.

Reporting Period Activity: The construction of 1,700 LF of new sewer laterals on Grove Street is complete.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$973,300 allotted through the Program's Phases 1-5, the community has \$240,000 remaining in funding assistance.

39. WEYMOUTH: South System

Background Information:

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

Latest I/I or SSES Report: I/I Identification Sub-Basin Reports (February 2004);
I/I Program Evaluation: Flow Monitoring (On-going)

Private Source Inflow Removal Program: The Town has completed the redirection of 304 sump pumps (for an estimated 152,000 gpd of inflow removal). Four (4) sump pumps were redirected during FY05.

I/I Rehabilitation Projects in Design or Construction: Lower Central/Old Swamp River Infiltration Rehabilitations (Contract S04-1) completed July 2005. Approximately 438,200 gpd of infiltration removed from sanitary system. Southeast/Landing Infiltration Rehabilitations (Contract S04-2) completed July 2005. Approximately 726,200 gpd of infiltration removed from sanitary system. Sewer System CIP Contract 1, Winter Street to Essex Street Sewer Replacement, scheduled for completion September 2006. Approximately 123,900 gpd of infiltration estimated to be removed from sanitary system.

Reporting Period Activity: Cleaned and TV inspected 3,100 LF of pressure sewer between Pleasant Street and the grit chamber within the Route 3 easement. Sewer System CIP Contract 3, Libbey Industrial Parkway Pump Station and Influent Gravity Sewer Rehabilitation construction initiated December 2005. Sewer System CIP Contract 4, Force Main and Winter Street Gravity Sewer Rehabilitation construction initiated June 2005.

MWRA I/I Local Financial Assistance Program: The community has financed thirteen (13) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$4,529,900.

40. WILMINGTON: North System

Background Information:

- Miles of Sewer: 20
- Sewered Population: 3,827
- Three Year ('01 - '03) Annual Average I/I: 0.74 mgd
- Massachusetts DEP Administrative Order: None

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

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

I/I Rehabilitation Projects in Design or Construction: The Sewer System Rehabilitation project was completed in the fall of 2004. An estimated 160,560 gpd was removed by this sewer rehabilitation contract. This contract also included additional CCTV and sewer rehabilitation recommendations.

Reporting Period Activity: The Town is continuing with the next phase of their Infrastructure Maintenance and Management Program (IMMP). This will include a Phase 2 sewer rehabilitation contract. This work is scheduled to begin in August 2005. An estimated 285,500 gpd of infiltration is expected to be removed.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$968,000.

41. WINCHESTER: North System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 21,161
- Three Year ('01 - '03) Annual Average I/I: 1.67 mgd
- Massachusetts DEP Administrative Order: Draft ACO in 2001.

Latest I/I or SSES Report: I/I Removal Report (April 1994)

Private Source Inflow Removal Program: Under the Town Private Inflow Source Removal Program approximately 130 private inflow sources have been disconnected to date.

I/I Rehabilitation Projects in Design or Construction: No design work is currently being prepared. See below for construction work.

Reporting Period Activity: Allstate Power Vac has completed the cleaning and TV inspecting 52,000 l.f. of sewers and testing and sealing 11,300 pipe joints. The Town is in the process of setting up a House-to-House Survey and Smoke Testing Program with its consultant.

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 \$1,704,000 allotted through the Program's Phases 1-5, the community has \$751,700 remaining in funding assistance.

42. WINTHROP: North System

Background Information:

- Miles of Sewer: 36
- Sewered Population: 17,981
- Three Year ('01 - '03) Annual Average I/I: 1.14 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Preliminary Design Report/Shirley Street Sewer Rehab. (July 2002)

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

I/I Rehabilitation Projects in Design or Construction: There was no activity during this period.

Reporting Period Activity: The Town is preparing a construction contract to eliminate cost-effective inflow sources.

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 \$1,342,400 allotted through the Program's Phases 1-5, the community has \$1,055,300 remaining in funding assistance.

43. WOBURN: North System

Background Information:

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

Latest I/I or SSES Report: West Side Building Inspections Final Report (April 2005)

Private Source Inflow Removal Program: A new Sewer Use Ordinance and Private Inflow Program was adopted in June 2004. Numerous sources of inflow were removed at the request of the plumbing Inspector and recorded in the Sewer Bank. Building inspections have been

completed in both the Dix Road Pumping Station tributary area and the West Side Interceptor tributary area.

I/I Rehabilitation Projects in Design or Construction: Construction of the Dix Road Area sewer rehabilitations, as recommended by the July 2004 SSES, is on-going with completion scheduled in the Fall 2005. This project will also include recommended rehabilitations of Sylvania Interceptor. Construction associated with the West Side Sewer Rehabilitations is on-going with completion expected in the Spring 2006.

Reporting Period Activity: Design for removal of private inflow sources is scheduled to begin during the winter of 2005 with construction to begin in the summer 2006. Additional building inspections and dye tests are being conducted in the 19% of houses not entered during previous inspection attempts.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. The community has received its entire financial assistance allotment of \$4,302,500.

ATTACHMENT 6
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY05
Reporting Period – July 2004 Through June 2005

CY04 COMMUNITY WASTEWATER FLOW DATA

During CY04, MWRA began a \$5 million capital project to replace and upgrade its wastewater metering system. Beginning in March 2004, all MWRA flow meters used to gather community wastewater flow data were taken out-of-service as part of the upgrade project. All meters remained out-of-service through March 2005 to facilitate installation of the new metering equipment and new data collection hardware/software. No CY04 community wastewater flow data is presented in this report. Data for CY05 (beginning April 2005) will be presented in next year's CY06 report.