

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

September 1, 2000

Dear Ms. Murphy:

In compliance with the requirements of MWRA's NPDES Permit MA0103284 - Part I, Item 18. bb (ii) "Infiltration/Inflow" (page 28 of 32), please find the enclosed Attachments:

Attachment 1 – An update on MWRA's Infiltration/Inflow (I/I) Management Program (pages 2 – 4);

Attachment 2 – A list of actions taken by the Authority in the past six months to reduce I/I tributary to the MWRA-owned regional interceptor system (pages 5 and 6);

Attachment 3 – A summary report on the status of I/I Reduction within each MWRA member community (pages 7 – 26); and,

Attachment 4 – Estimates of MWRA member sewer community wastewater flow components that are compiled in a spreadsheet "1999 MWRA Community Wastewater Flow Component Estimates" (page 27).

Attachments 1, 2, and 3 to this submittal are substantially the same as the Attachments to MWRA's July 14, 2000 Infiltration/Inflow submittal under Authority's previous NPDES Permit. Information included in Attachments 1, 2, and 3 cover a six-month reporting period from January 2000 through June 2000. Infiltration/Inflow information for the previous six-month period (July 1999 through December 1999) was included in MWRA's January 14, 2000 submittal.

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

Very truly yours,

Richard P. Trubiano
Deputy Director

cc: DEP – NERO, Wilmington
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ATTACHMENT 1

MWRA I/I MANAGEMENT PROGRAM EFFORTS Reporting Period – January 2000 through June 2000

The MWRA's regional Infiltration/Inflow (I/I) reduction strategy is based primarily on the Authority's 1990 I/I Reduction Policy, which includes six major elements to effect I/I reduction. Implementation of the regional I/I reduction program is being directed by the MWRA, but focuses on I/I reduction and sewer system rehabilitation projects undertaken by MWRA member communities. A synopsis of the six major elements of the regional I/I reduction strategy and an overview of the progress and achievements related to individual projects is provided below.

1. Wastewater Metering Program and Wholesale Rate Methodology. The cornerstone of the MWRA's I/I reduction strategy is the use of flow data from the wastewater metering system as a component of the Authority's wholesale sewer rate methodology. The Authority's sewer rate methodology was revised for FY96 (as of July 1, 1995) to include community average daily and peak month flows as components. Wastewater flow accounts for about 60 percent of the wholesale sewer charge which provides a direct financial incentive for member communities to reduce wastewater flow.

To keep the local communities informed on their wastewater flow contributions throughout the year, the MWRA distributes a bi-monthly community data report. The report includes information on each community's wastewater flow, proportional flow share, and estimated impact on sewer charges. Community wastewater flow data is also used to determine the approximate quantity of I/I within each local system. Although the I/I component data is not used for rates, it is provided to member communities for their use.

2. Minimum I/I Reduction Requirements. During the design phase, MWRA and DEP have cooperatively established an I/I reduction requirement for MWRA interceptor relief projects. I/I reduction measures were implemented by the MWRA and service area communities under DEP approved I/I reduction plans for the Hingham Pump Station Rehabilitation project, the Wellesley Extension Sewer Replacement project, and the New Neponset Valley Relief Sewer project. The MWRA also implemented an inflow reduction plan to meet DEP's requirement for the elimination of 53 mgd of peak inflow in the Authority's Southern Collection System. Also noted in the inflow reduction plan were additional projects that were being performed to reduce I/I below the minimum requirements. To date, the Authority has not included minimum I/I reduction requirements in member community Municipal Discharge Permits. Because of the success the Authority has had working cooperatively with local communities, the use of specific quantitative permit requirements has not yet been necessary. This success can be attributed directly to the expenditure of significant resources for regional I/I reduction management. Significant MWRA resource commitments include: (1) construction, operation, and maintenance of the wastewater metering system (to allow for a flow based wholesale rate component), (2) the commitment of over \$100 million to fund the I/I Local Financial Assistance Program (to assist in the funding of community projects), and (3) staffing of a program dedicated to managing regional I/I reduction (to provide technical assistance and regional coordination between the 43 member communities).

3. I/I Local Financial Assistance Program. Under this program, \$100.75 million in MWRA funds have been budgeted to assist member communities in implementing I/I reduction and sewer rehabilitation projects. The program provides grants and interest-free loans for eligible project costs. Through August 2000, 42 of the 43 member communities have participated and over \$63 million have been distributed to fund 170 local projects. Over 70% of funds have been expended on construction, while the remaining 30% have funded planning, design, and engineering services during construction activities.

4. Community Financing. I/I reduction and sewer system rehabilitation projects are, by their nature, primarily maintenance related. Although the Authority recognizes the need to stimulate rehabilitation of local sewer systems through funding assistance, it is clearly the long-term responsibility of each community to maintain and upgrade its own collection system. The dramatic increase in the cost of providing the required capacity and degree of wastewater treatment, both now and in the future, make flow reduction an ever increasing priority. Many MWRA member communities conduct I/I reduction activities as part of the regular annual operations and maintenance activities.

5. Technical Assistance. The MWRA provides a variety of technical assistance services to member communities. Data from the wastewater metering system and subsequent engineering analyses help quantify I/I rates and may help define specific problem areas in community collection systems. MWRA staff work cooperatively with community representatives and consultants to supply and evaluate metering data which maximizes use of both community and MWRA resources. The Authority also allocates a portion of its sewer cleaning, internal television inspection, and portable flow metering efforts towards work in the community-owned collection systems. These efforts help communities identify and solve O&M problems, as well as, providing assistance for I/I rehabilitation projects. MWRA also distributes I/I reduction and sewer system rehabilitation technology information from both local and national projects through periodic "technology transfer" mailings to member sewer communities.

6. Interagency Agreement Between DEP and MWRA. An Interagency Agreement concerning the conduct of an I/I Management Program for the MWRA service area was signed on April 29, 1991. It was intended to minimizing duplication of effort between the agencies. The Agreement was in effect for a term of 30 months and has not been renewed or extended. As part of the February 1999 DEP Administrative Consent Order for the Braintree/Weymouth Relief Project, MWRA and DEP agreed to participate on the I/I Task Force and to enter into an Interagency Agreement on I/I issues (by July 31, 2001) that will take into account recommendations endorsed by the Task Force.

The MWRA is planning to update its regional I/I reduction goals and strategy options following completion of the efforts of the regional I/I Task Force. MWRA proposed the Task Force as a working group of all stakeholders that could analyze I/I problems, define regional I/I reduction goals, develop appropriate solutions, and seek consensus. MWRA organized two regional I/I Workshops that were attended by over 200 participants. As an outcome of the workshops, the I/I Task Force was established in February 1999 to identify regional I/I reduction goals and associated strategies. The make-up of voting members on the Task Force includes representatives from each of the 43 local sewer communities, the MWRA Advisory Board, the Wastewater Advisory Committee, four watershed organizations, the South Shore Chamber of Commerce, and MWRA staff. EPA and DEP staff are also active members but have declined to participate in Task Force voting. The product of the I/I Task Force will be a cooperatively developed report intended to be used as a guidance document by member sewer communities. The report will list recommended implementation strategies for meeting each of the regional I/I reduction goals.

Twenty meetings of the I/I Task Force have been held since February 1999. Monthly meetings are attended by Task Force members, as well being open to the public. The Task Force voted the following mission statement:

The I/I Task Force will develop goals and implementation strategies that will reduce Infiltration/Inflow to optimize local and regional sewer service. The Task Force will make recommendations for cooperative implementation of the goals and strategies by local communities, MWRA, DEP, EPA, and others.

Seven I/I reduction goals were approved by the Task Force:

1. Eliminate all sewer system backups into buildings/homes;
2. Minimize, with a long-term goal of eliminating, health and environmental impacts of sewage overflows related to I/I;
3. Remove all and prevent new inflow sources in separate sanitary systems;
4. Minimize system-wide infiltration;
5. Educate and involve the public;
6. Develop an operation and maintenance program; and,
7. Funding mechanisms for identifying and removing I/I.

The first four goals are listed in order from higher to lower importance based on short-term need. The fifth, sixth, and seventh goals are key elements required for successful completion of each of the first four goals. A variety of implementation strategies are being developed for each goal. A draft report is currently being prepared and reviewed.

ATTACHMENT 2

MWRA ACTIONS TAKEN TO REDUCE I/I Reporting Period – January 2000 through June 2000

The MWRA Transport Department's Technical Inspection Program staff have internally inspected approximately 43 miles of Authority-owned interceptors and approximately 8 miles of community-owned sewers during the six month reporting period. During the internal inspection process, problems such as physical defects, infiltration, sediment or grease deposits, etc. are noted and stored in the MWRA's electronic maintenance database. Problems identified during TV inspections are referred to engineering staff for follow-up review. All physical defects and infiltration/inflow sources found through pipeline and manhole inspections are reviewed for cost-effective repair.

Manhole inspections are performed in coordination with internal inspection. During this period 115 sewer manholes were rehabilitated.

The Transport Department Metering Unit staff routinely assist member communities in identifying I/I source areas using portable temporary flow meters. During the reporting period, 7 sites were temporarily metered in Braintree and Boston.

The MWRA is undertaking a number of projects to rehabilitate portions of Authority-owned interceptors. Updates on these projects are included below:

1. Construction of the \$12 million North Metropolitan Trunk Sewer Rehabilitation (Phase II) project is complete. Over 3.7 miles of 9-foot diameter brick interceptor in Boston and Winthrop were relined under this project. Significant sources of tidally influenced infiltration were removed.
2. The bid opening for MWRA Section 17.5 Sewer Rehabilitation Contract in Everett has been completed. This \$0.5 million contract consists of rehabilitating approximately 125-feet of 56 x 62-inch brick sewer. Construction is scheduled to start in the late summer 2000. The project will provide a spot repair to replace a section of pipeline with severe physical defects and significant infiltration.
3. MWRA's Wellesley Extension Sewer Replacement Project, Contract 7 will provide for the rehabilitation of about 7 miles of 48 and 54-inch reinforced concrete pipe. The construction of this project is substantially complete resulting in the removal of groundwater infiltration.
4. MWRA's Wellesley Extension Sewer Replacement Project, Contract 8 will provide for relining of about 3.6 miles of 54 and 60-inch reinforced concrete pipe. This project is in the initial construction stage and is primarily intended to minimize future sewer corrosion.
5. MWRA's Framingham Extension Relief Sewer Project, Contract 5 will provide for the rehabilitation of about 3 miles of 42 and 48-inch concrete sewer in Natick and Dover. This \$11 million project is in the initial construction stage and will reduce infiltration entering the pipeline.
6. A contract for design has been initiated for rehabilitation of the 84-inch MWRA West Roxbury Tunnel (Sewer Sections 137 and 138). The project is in the preliminary design stage. Infiltration into this pipeline will be evaluated.

7. MWRA's Braintree/Weymouth Relief Facilities project includes rehabilitation of approximately 300-feet of 57 x 66-inch interceptor within Section 124 in Weymouth. This portion of sewer is severely deteriorated and contributes significant infiltration. This project is in the design stage.
8. MWRA's Upper Neponset Valley Sewer project is intended to provide hydraulic relief to Sewer Sections 26, 27, 28, 29, and 30 in Boston, Brookline and Newton. As an outcome of this project, I/I and periodic sewer system overflows will be reduced. This project is in the preliminary design stage.
9. MWRA's Cummingsville Replacement Sewer project is intended to provide hydraulic relief through replacement of about 1 mile of Sewer Section 46 and rehabilitation of about 1 mile of Sewer Section 86 in Winchester. As an outcome of this project, I/I and periodic sewer system overflows will be reduced. This project is in the final design stage.
10. MWRA's Combine Sewer Overflow (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.

ATTACHMENT 3

I/I STATUS UPDATE FOR MEMBER SEWER COMMUNITIES

Reporting Period – January 2000 through June 2000

The MWRA is working cooperatively with member communities to develop phased I/I reduction programs and ensure uniformity in the programs throughout the service area. The Authority will encourage continuing community efforts in I/I reduction through the programs detailed in Attachment 1. Many community I/I projects are funded through MWRA's I/I Local Financial Assistance Program. The current I/I status update for each MWRA member sewer community is presented below.

1. ARLINGTON: North System

Background Information:

- Miles of Sewer: 106 Sewered Population: 43,612 Three Year ('96-'98) Annual Average I/I: 3.74 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Supplemental SSES and Task Order 14 TV Inspection, January 2000
- Private Source Inflow Removal Program: Using funds from the MWRA I/I Local Financial Assistance Program, the Town has compiled a final report prioritizing all known inflow sources within a SSES study area.
- I/I Rehabilitation Projects in Design or Construction: Main line inspections performed in utility construction and roadway rehabilitation areas. Ongoing service line CCTV inspections in suspected problem areas.

Reporting Period Activity - The sewer replacement work in the Wright Street area is substantially complete. The design and preparation of bid documents has been completed for sewer rehabilitation projects on Summer St and vicinity. Bids to be accepted July 19, 2000. Estimated cost is \$600,000.

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 \$1,950,700 allotted through the Program's Phases 1-3, the community has \$673,500 remaining in funding assistance. The community is also using the MMDT accrued interest (approximately \$75,000) to partially fund Summer Street sewer rehabilitation project.

2. ASHLAND: South System

Background Information:

- Miles of Sewer: 43 Sewered Population: 8,023 Three Year ('96-'98) Annual Average I/I: 0.32 mgd
- Massachusetts DEP Administrative Order: No. 594 Issued on November 7, 1985.
- Latest I/I or SSES Report: SSES - Basin 2, November 1995
- Private Source Inflow Removal Program: The community received a DEP grant (July 2000) to set up a smoke testing/maintenance program in the Wellhead Avenue area.
- I/I Rehabilitation Projects in Design or Construction: Both the Douglas Road and Metcalf Avenue sewer rehabilitation projects have been completed with an estimated I/I removal of 40,000 gallons.

Reporting Period Activity - In the last six months, 32,868 gallons of I/I have been removed by the Developer Flow Reduction Program. Chestnut Street Pump Station rehabilitation/upgrade construction began spring 2000 and is scheduled for completion in October 2000. Fiske Hill Estates, Harvard Estates, Workman's Circle, Apple Ridge, Oregon Heights, Signature Estates, Fayville Farms and Camelot Estates (which discharges to the Town of Framingham) sub-divisions are all under construction.

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 \$403,500 allotted through the Program's Phases 1-3, the community has \$211,000 remaining in funding assistance.

3. BEDFORD: North System

Background Information:

- Miles of Sewer: 68 Sewered Population: 11,625 Three Year ('96-'98) Annual Average I/I: 1.86 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: The new Polysonic transit time flow meter that was installed at the Great Road Pumping Station is presently being studied by the Town, as well as, the MWRA. The Town has submitted a MWRA I/I Local Financial Assistance Application for the rehabilitation design/construction to eliminate private inflow sources at Dunster Road.

Reporting Period Activity – The flow monitoring and SSES study that commenced in December 1996 has been completed and report approved by MWRA in May 2000. Design work by Guertin & Assoc. to replace 3,500 ft. of sewer in Hartwell Road is complete.

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 \$772,400 allotted through the Program's Phases 1-3, the community has \$583,800 remaining in funding assistance.

4. BELMONT: North System

Background Information:

- Miles of Sewer: 78 Sewered Population: 23,539 Three Year ('96-'98) Annual Average I/I: 3.32 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, Phase II Final, April 1988
- Private Source Inflow Removal Program: FST is presently performing home inspections on over 300 properties to determine the extent of sump pump connections to the Town's sanitary sewer system.
- I/I Rehabilitation Projects in Design or Construction: The Town is generating construction design plans for connecting homes with private inflow sources to the Town's storm drain system. Construction will begin upon completion of contract documents.

Reporting Period Activity - The Town has submitted a MWRA I/I Local Financial Assistance Application and received funding from MWRA under Project No. WRA-P3-04-3-319 for design/construction of rehabilitation to eliminate private inflow sources, as presented under private source inflow removal program. The estimated peak daily inflow quantity to be removed is 1.17 mgd.

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 spent its entire \$1,167,400 of funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 840 Sewered Population: 557,836 Three Year ('96-'98) Annual Average I/I: 53.29 mgd
- Massachusetts DEP Administrative Order: None (Cooperative agreement exists)
- Latest I/I or SSES Report: SSES, February 1989
- Private Source Inflow Removal Program: A Private Sector Inflow Survey has been initiated in West Roxbury/Roslindale in six areas tributary to the Roslindale Interceptor involving approximately 5,000 buildings.
- I/I Rehabilitation Projects in Design or Construction: Boston has both completed and is currently working on a wide variety of separation and I/I rehabilitation projects. To date, thirty-three (33) projects have received funding through the MWRA I/I Local Financial Assistance Program. Boston is in the process of a Downspout Disconnection Program of which 50 homeowners have had 101 downspouts disconnected. A total of 2,016 buildings with 5,096 downspouts have been identified. A Disconnection Contract will be awarded in CY00 to disconnect 1,300 downspouts on 700 buildings. Since inception, the program has removed 2,189 downspouts from 949 properties. Approximately 480 buildings were dye tested for the Ward Street Headworks Sewer System Evaluation Survey. Of those, 215 building sewers were confirmed as being connected to a sanitary or combined sewer.

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 thirty-three (33) I/I reduction projects through the Authority's funding assistance program. Of the \$29,280,600 allotted through the Program's Phases 1-3, the community has \$13,690,526 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 135 Sewered Population: 34,534 Three Year ('96-'98) Annual Average I/I: 4.50 mgd
- Massachusetts DEP Administrative Order: No. 546 Issued on April 1, 1985.
- Latest I/I or SSES Report: I/I Investigation HC2 & M2 and Sewer O & M Manual, June 2000
- Private Source Inflow Removal Program: Common St. tributary area was smoke tested. One hundred twenty homes were visited in an attempt to find sump pump inspections.
- I/I Rehabilitation Projects in Design or Construction: Adams Street Sewer rehabilitation is complete. A boulder was removed from the interceptor.

Reporting Period Activity - Allen Street 12-inch siphon barrel was cleaned/plugged with a large boulder removed. Common Street Inflow Investigation was completed March 2000. I/I investigation was completed in Sub-areas HC2 and M2.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$1,614,900 allotted through the Program's Phases 1-3, the community has \$597,800 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 103 Sewered Population: 53,920 Three Year ('96-'98) Annual Average I/I: 7.28 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Wastewater System Master Plan, November 1999
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: Design is underway on sewer separation projects for FY00. Construction is scheduled for August 2000.

Reporting Period Activity - The Wastewater Master Plan report was completed in November 1999. A copy was submitted to MWRA in December 1999.

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 \$2,788,500 allotted through the Program's Phases 1-3, the community has \$1,080,100 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 115 Sewered Population: 22,318 Three Year ('96-'98) Annual Average I/I: 2.27 mgd
- Massachusetts DEP Administrative Order: No. 518 issued (as revised) on October 6, 1986.
- Latest I/I or SSES Report: Supplemental SSES, Phase 1, June 1996
- Private Source Inflow Removal Program: Forty-two sump pumps connected to the sewer system have been identified. Twenty-four of them have been redirected. Redirection of the remaining sump pumps will be completed by the summer of 2000.
- I/I Rehabilitation Projects in Design or Construction: Investigations at Wheeler Road and Blanchard Road are ongoing.

Reporting Period Activity - Ongoing Developer Inflow Program has provided funds from developers to be used to reline sewer pipes. Fifty-five linear feet of 10-inch pipe at Bedford Street, 1,030 LF of 8-inch pipe at Bedford Street, and 250 LF of 12-inch pipe at Corcoran Road has been lined during this period. A total of 168,000 gallons per day have been removed.

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 \$1,087,200 allotted through the Program's Phases 1-3, the community has \$937,200 remaining in funding assistance.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 150 Sewered Population: 93,613 Three Year ('96-'98) Annual Average I/I: 11.23 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES – Ongoing (Funded by MWRA I/I Local Financial Assistance Program)
- Private Source Inflow Removal Program: A total of 3,550 building inspections and over 1029 catch basin dye tracings have been completed.
- I/I Rehabilitation Projects in Design or Construction: The City of Cambridge for many years has engaged in a systematic sewer system improvement program to separate the combined storm and sanitary system. Cambridge is one of MWRA's combined sewer service communities. As noted above, Cambridge has plans for large-scale separation of combined sewer areas. As part of the MWRA CSO Facilities Upgrade Project, Cambridge's flows are being evaluated for volume and discharge locations.

Reporting Period Activity – Common Manhole Contract 1 has been completed with 16 common manholes separated. Common Manhole Contract 2 begins August 2000. Common Manhole Contract 3 begins fall 2000. Phase VI, Contracts 2B and 3B, sewerage and drainage improvements at Fresh Pond and Carver/Crescent Streets are ongoing. Phase VI, Contract 3A, sewerage and drainage improvements at Scott/Holden Streets are complete. Bellis Circle Flood Alleviation construction begins fall 2000. The following projects are currently ongoing: Phase VI, Contract 8 & 9, design phase of CAM 004 sewer separation; Phase VI, contract 12, design phase of new stormwater outfall at Little River; and Cherry Street Area Flood Alleviation design.

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 \$5,345,700 allotted through the Program's Phases 1-3, the community has \$2,980,660 remaining in funding assistance.

10. CANTON: South System

Background Information:

- Miles of Sewer: 60 Sewered Population: 14,423 Three Year ('96-'98) Annual Average I/I: 2.71 mgd
- Massachusetts DEP Administrative Order: No. 537 Issued on April 3, 1984.
- Latest I/I or SSES Report: Additional Investigation based on 1994 SSES, Ongoing
- 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. Contract 98-2S, Phase II Sewer Rehabilitation Construction, is complete.

Reporting Period Activity – The design of 2,500 LF of sewer lateral is complete. The proposed sewer laterals will eliminate two pumping stations, one of which has a high maintenance record. Notice of intent and easement coordination are forthcoming.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. The community has spent its entire \$893,700 of funding assistance.

11. CHELSEA: North System

Background Information:

- Miles of Sewer: 41 Sewered Population: 27,580 Three Year ('96-'98) Annual Average I/I: 2.21 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Inflow Evaluation for Areas Tributary to CHE-007, Draft completed.
- Private Source Inflow Removal Program: Private inflow source identification is complete for CHE-007 tributary areas.
- I/I rehabilitation Projects in Design or Construction: Three projects have been designed for replacement sewers and construction is ongoing: Cottage Street, Chestnut Street, and Cottage Street at Eastern Avenue. Highland Park Drain replacement design includes rerouting two catch basins and eliminating one cross-connection between the sewer and drain. Construction is currently ongoing.

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 - Construction is ongoing to reroute two catch basins at Willow and Central Street. Design is complete for Crescent Avenue sewer replacement with construction awaiting City funding. The City has begun replacement of sewer and drain manholes. This includes replacement and installation of manholes in poor condition and on dead-end lines. FY01 completion date set.

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 \$1,372,100 allotted through the Program's Phases 1-3, the community has \$569,463 remaining in funding assistance.

12. DEDHAM: South System

Background Information:

- Miles of Sewer: 88 Sewered Population: 22,269 Three Year ('96-'98) Annual Average I/I: 4.90 mgd
- Massachusetts DEP Administrative Order: No. 547 Issued on October 1, 1985.
- Latest I/I or SSES Report: East Brook Interceptor Study, January 1995
- Private Source Inflow Removal Program: The Town will be reviewing past inspections and performing smoke testing in conjunction with the Manor/Glenway/Hamilton Avenue investigation to further identify private inflow sources.
- I/I Rehabilitation Projects in Design or Construction: The Town has commissioned M&E to review TV inspection logs and videotapes from approximately 29,400 LF of sewer. A summary report will be submitted to the MWRA upon completion.

Reporting Period Activity – The community is currently developing a Town-wide sewer rehabilitation contract for award in CY00. The proposed work will be based on the results/findings of the TV Inspection Report prepared in September 1998. The Town will be conducting an investigation of the sanitary sewers and storm drains located in the Manor Avenue area (Subareas D-1/D-2/D2-1/D2-2/D2-3). This area is subject to sanitary sewer overflows/backflows.

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 spent its entire \$1,237,600 of funding assistance.

13. EVERETT: North System

Background Information:

- Miles of Sewer: 57 Sewered Population: 34,971 Three Year ('96-'98) Annual Average I/I: 4.00 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES - Final, December 1990
- 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 a construction contract based upon smoke testing and TV inspection performed during Fall 1999.

Reporting Period Activity - The City repaired portions of sewers on Shirley Street and Spring Street.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. Of the \$1,730,900 allotted through the Program's Phases 1-3, the community has \$715,700 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:

- Miles of Sewer: 275 Sewered Population: 59,696 Three Year ('96-'98) Annual Average I/I: 4.56 mgd
- Massachusetts DEP Administrative Order: No. 592 Issued on January 8, 1986.
- Latest I/I or SSES Report: Mini-SSES (Sudbury River Interceptor), Ongoing
- Private Source Inflow Removal Program: Four residences have been removed from the Town's sewer system.
- I/I Rehabilitation Projects in Design or Construction: Sudbury River Interceptor SSES findings in design phase.

Reporting Period Activity - The Town's Developer Flow Reduction program has removed 45,697 gallons in town and 4,290 gallons out of town for savings of \$212,445.

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 \$2,884,200 allotted through the Program's Phases 1-3, the community has \$1,914,500 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 31 Sewered Population: 5,175 Three Year ('96-'98) Annual Average I/I: 1.00 mgd
- Massachusetts DEP Administrative Order: No. 536 Issued on November 15, 1985.
- Latest I/I or SSES Report: TV Inspection, October 1987
- Private Source Inflow Removal Program: The Town is performing house-to-house inspections.
- I/I Rehabilitation Projects in Design or Construction: The Town is conducting internal inspection of approximately 2,500 LF of sewer and inspecting associated manholes. Also, a sump pump identification program is being initiated with Town forces. The above mentioned work is being funded through the MWRA I/I Financial Assistance Program (MWRA Project No. WRA-P3-15-1-330).

Reporting Period Activity – Instantaneous flow monitoring and manhole inspection was performed to identify sewer segments contributing excessive infiltration. The primary area of focus was the cross-country section of sewer along the beach immediately upstream of the Belair station where approximately 100,000 gpd of I/I was found. Flow monitoring was also performed in the area tributary to the Malcolm Street pumping station. Approximately 29,000 gpd of I/I was found to be tributary to this station.

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 \$302,100 allotted through the Program's Phases 1-3, the community has \$197,200 remaining in funding assistance.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 40 Sewered Population: 7,099 Three Year ('96-'98) Annual Average I/I: 0.50 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Facilities Plan, November 1985
- Private Source Inflow Removal Program: Properties connected to municipal systems were inspected by Public Works Supervisors. New homes were inspected during the installation of water meters. Some commercial establishments were revisited to monitor possible inflow problems.
- I/I Rehabilitation Projects in Design or Construction: Various areas of main trunk lines were flushed during the year.

Holbrook's collection system is relatively new (post 1976). The Town has proposed to hold off on a SSES until additional sewer contracts will have been constructed. The Holbrook collection system is being extended under the present Phase II Construction Project.

Reporting Period Activity - The Town has completed its yearly check of all cross-country sewer manholes. The Town is in the process of applying for funding under the MWRA I/I Local Financial Assistance Program.

MWRA I/I Local Financial Assistance Program: The community has yet to finance any I/I reduction projects through the Authority's funding assistance program. The community has \$361,300 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 156 Sewered Population: 27,509 Three Year ('96-'98) Annual Average I/I: 4.72 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: I/I Analysis, Sewer Basin Nos. 9 and 10
- Private Source Inflow Removal Program: The Town is in the process of preparing a public education brochure.
- I/I Rehabilitation Projects in Design or Construction: The rehabilitation project for Basin No. 1, which received funding through the MWRA Phase 2 I/I Local Financial Assistance Program (WRA-P2-17-3-238), is in progress. The Town issued 84 new sewer service permits this reporting period.

Reporting Period Activity - Contracts were awarded for rehabilitation work in Basins 2, 6, 7 and 8 with an estimated I/I reduction of 100,000 gpd annually. They are now 75% complete. Funding was provided through MWRA I/I Local Financial Assistance Program (WRA-P3-17-3-324).

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 spent its entire \$1,533,600 of funding assistance.

18. MALDEN: North System

Background Information:

- Miles of Sewer: 100 Sewered Population: 52,696 Three Year ('96-'98) Annual Average I/I: 6.51 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: I/I Analysis & SSES in Broadway II Sump Area, March 1996
- 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 in the Broadway II Sump Area, funded through the MWRA I/I Local Financial Assistance Program (MWRA Project No. WRA-P2-18-3-235) has been designed by FST. Insituform Technologies, Inc. began rehabilitation work in December 1999. The project was completed in May 2000. A total of 210,000 gpd of peak I/I has been removed.

Reporting Period Activity - The City has completed design plans and specifications for sewer rehabilitation in the Broadway II Sump Area. Funding was provided through the MWRA I/I Local Financial Assistance Program (MWRA Project No. WRA-P3-18-3-310).

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 \$2,522,200 allotted through the Program's Phases 1-3, the community has \$533,203 remaining in funding assistance.

19. MEDFORD: North System

Background Information:

- Miles of Sewer: 113 Sewered Population: 56,134 Three Year ('96-'98) Annual Average I/I: 6.29 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, Phase I completed June 2000; Phase II is ongoing.
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The SSES activities, including metering, mapping, flow isolation, limited smoke testing, dyed water testing, and manhole inspection, which received funding from the MWRA I/I Local Financial Assistance Program (MWRA Project No. WRA-P2-19-1-256) has been completed. The report has been reviewed and finalized.

Reporting Period Activity – Sewer Lining (Contract 99-1A) is ongoing and completion is scheduled for September 2000. Contract documents were prepared for the manhole lining (Contract 00-1), which is scheduled for bid in August 2000. Approximately 100 sewer manholes found to need rehabilitation through the SSES work will be rehabilitated. This work is being funded under MWRA Project No. WRA-P3-19-3-337. Infiltration removal for both projects is estimated at 180,000 gpd. Sewer Rehabilitation (Contract 99-1B), which was funded by MWRA under Project No. WRA-P3-19-3-334, is being prepared for bid. An additional SSES study in subsystems not covered by the recently completed SSES study is being conducted. This work, which is being funded by MWRA under Project No. WRA-P3-19-3-334, involves flow metering, flow isolation, smoke testing, and internal inspection.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. The community has spent its entire \$2,656,500 of funding assistance under Phases 1-3.

20. MELROSE: North System

Background Information:

- Miles of Sewer: 74 Sewered Population: 27,399 Three Year ('96-'98) Annual Average I/I: 2.78 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: I/I Rehabilitation Design Project, June 1999
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: None.

Reporting Period Activity - The City is continuing its public and private inflow source identification and removal program.

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 \$1,269,800 allotted through the Program's Phases 1-3, the community has \$690,000 remaining in funding assistance.

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

Background Information:

- Miles of Sewer: 83 Sewered Population: 23,730 Three Year ('96-'98) Annual Average I/I: 3.63 mgd
- Massachusetts DEP Administrative Order: No. 580 Issued on June 13, 1985.
- Latest I/I or SSES Report: Design of Additional Rehabilitation, Ongoing
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The I/I Reduction Program investigations are complete (May 2000). Rehabilitation recommendations identified approximately 0.60 mgd of removable I/I. New sewer connections are being constructed to redirect sewage from MWRA High Level Sewer at Brook Road and Audubon Road.

Reporting Period Activity - The design plans/specifications for adding sewer, rerouting sewer (Ferencroft and Brook Road sewer diversion), adding pump stations, and pump station rehabilitation (Libby Road and Auburn Road pump stations) to prevent sewer backups during severe storms are complete.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$1,248,200 allotted through the Program's Phases 1-3, the community has \$314,000 remaining in funding assistance.

22. NATICK: South System

Background Information:

- Miles of Sewer: 107 Sewered Population: 25,737 Three Year ('96-'98) Annual Average I/I: 2.38 mgd
- Massachusetts DEP Administrative Order: No. 593 Issued on November 15, 1985.
- Latest I/I or SSES Report: Construction Rehabilitation, Ongoing
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The Town has completed Sewer System Rehabilitation Contract No. S-82. This work is partially funded through the MWRA Phase 2 I/I Local Financial Assistance Program (MWRA Project No. WRA-P2-22-3-206). Re-lining of 30-inch sewer in West Central Street (MWRA connection to Washington Avenue) is complete. Estimated infiltration reduction is 7,500 gpd. Re-lining of 24-inch sewer in Washington Avenue (West Central Street to Middlesex Avenue) is complete. Estimated infiltration reduction is 10,000 gpd.

Reporting Period Activity – Boden Lane Pump Station flow diversion construction began June 2000. Pump station will be eliminated via new gravity sewer to Framingham Extension Sewer. Local sewer installation has been completed at Leach Lane/Eliot Street.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$1,309,300 allotted through the Program's Phases 1-3, the community has \$470,300 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 121 Sewered Population: 25,045 Three Year ('96-'98) Annual Average I/I: 4.24 mgd
- Massachusetts DEP Administrative Order: No. 549 Issued on November 21, 1984.
- Latest I/I or SSES Report: Smoke Testing, Ongoing
- Private Source Inflow Removal Program: The Town performed follow-up house-to-house inspections within Needham Sub-Area 19-1.
- I/I Rehabilitation Projects in Design or Construction: The Town is performing manhole rehabilitation in the Mackintosh Avenue area.

Reporting Period Activity - Reservoir Street Pump Station Interceptor Rehabilitation (Contract 98-1) is complete.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$1,428,800 allotted through the Program's Phases 1-3, the community has \$557,200 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 271 Sewered Population: 78,232 Three Year ('96-'98) Annual Average I/I: 14.68 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Concord Street/Albermarle Road Interceptor Investigations, Ongoing
- Private Source Inflow Removal Program: The City has begun home inspections for illicit connections to the sanitary sewer collection system. Thirty residences have been inspected. One sump pump was disconnected in January and reinspected in February.
- I/I Rehabilitation Projects in Design or Construction: Area C construction re-testing was completed in May 2000. Sanitary sewer and underdrain separation Phase I construction was completed June 2000. Area A flow evaluation draft report was completed and submitted to MWRA in March 2000.

Reporting Period Activity - The City added seven new sewer connections to the sanitary system. Newton sanitary sewer and underdrain separation Phase II Bid and Award proceeds in spring 2000. I/I flow evaluation for Area C begins in spring 2000.

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 \$4,590,400 allotted through the Program's Phases 1-3, the community has \$1,854,520 remaining in funding assistance.

25. NORWOOD: South System

Background Information:

- Miles of Sewer: 83 Sewered Population: 28,552 Three Year ('96-'98) Annual Average I/I: 4.87 mgd
- Massachusetts DEP Administrative Order: No. 534 Issued on July 25, 1983.
- Latest I/I or SSES Report: Inflow Identification Program, In Progress
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: Contract 4 Sewer Rehabilitation Project construction is substantially complete. Anticipated completion date is summer 2000. Contract 4 is financed through SRF loan funding.

Reporting Period Activity - Norwood Commerce Center Phase II Sewer System Improvements 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 \$1,444,600 allotted through the Program's Phases 1-3, the community has \$591,200 remaining in funding assistance.

26. QUINCY: South System

Background Information:

- Miles of Sewer: 240 Sewered Population: 85,446 Three Year ('96-'98) Annual Average I/I: 10.96 mgd
- Massachusetts DEP Administrative Order: No. 644 Issued on October 22, 1986.
- Latest I/I or SSES Report: Quincy Shore Drive TV Inspection of Sewers and Drains, September 1999
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The North Quincy Sewer Interceptor Improvements (Phase II) is under construction and is scheduled to be completed August 2000.

Reporting Period Activity - Design of sewer improvements in Drainage Area 7 was completed June 1999. Construction has begun and is scheduled to be completed in August 2000. Design of sewer improvements in Drainage Area 4 is complete. Construction has begun and will be completed September 2000.

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 spent its entire \$4,235,000 of funding assistance.

27. RANDOLPH: South System

Background Information:

- Miles of Sewer: 101 Sewered Population: 30,401 Three Year ('96-'98) Annual Average I/I: 2.54 mgd
- Massachusetts DEP Administrative Order: No. 548 Issued on July 29, 1985.
- Latest I/I or SSES Report: SSES Phase 2, Ongoing
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: Phase II SSES report within Sub-Areas 1/2/3/4/8 (MWRA Project No. WRA-P2-27-1-255) has been completed.

Reporting Period Activity - No additional work was reported during this period.

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 spent its entire \$1,330,900 of funding assistance.

28. READING: North System

Background Information:

- Miles of Sewer: 106 Sewered Population: 21,349 Three Year ('96-'98) Annual Average I/I: 1.97 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: Flow Isolation and TV Inspection Program 1994
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: Conducted evaluation of sewers on Eaton Street, Pleasant Street, and Wilson Street to determine necessary repairs. Construction scheduled for CY00. Estimated I/I removal is approximately 0.01 mgd.

Reporting Period Activity – The Walkers Brook Drive Sewer project was bid in June 2000. Construction is expected to begin in late July/early August. Estimated I/I removal: 269,000 mgd. The Town awarded a contract for TV inspection and joint testing and sealing. Work expected to commence in August 2000.

MWRA I/I Local Financial Assistance Program: The community has financed one (1) I/I reduction project through the Authority's funding assistance program. The community has spent its entire \$975,400 of funding assistance.

29. REVERE: North System

Background Information:

- Miles of Sewer: 78 Sewered Population: 41,719 Three Year ('96-'98) Annual Average I/I: 5.21 mgd
- Massachusetts DEP Administrative Order: No. 837 Issued on April 21, 1991
- Latest I/I or SSES Report: SSES Phase III, August 1999
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The City insituformed 236 LF of 8-inch sewer pipe and 590 LF of 12-inch sewer pipe on Fenno Street. Construction was completed November 1999. The City insituformed 1,300 LF of 24-inch sewer pipe between the B&M train tracks and Route 60. Construction was completed October 1999.

Reporting Period Activity - The City instituted a policy for I/I reduction for new developments based on a 10 to 1 removal ratio. The City is continuing to identify and remove private inflow sources.

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 \$2,074,200 allotted through the Program's Phases 1-3, the community has \$1,578,600 remaining in funding assistance.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 107 Sewered Population: 74,282 Three Year ('96-'98) Annual Average I/I: 7.50 mgd
- Massachusetts DEP Administrative Order: No. NON-NE-00-1006 Issued January 21, 2000
- Latest I/I or SSES Report: Final Report - In House Data Sheet, October 1998
- Private Source Inflow Removal Program: Approximately 15 additional homes were inspected. No illegal connections were found.
- I/I Rehabilitation Projects in Design or Construction: The City is continuing with the ongoing maintenance program repairing catch basins, manholes, and sewer segments. The community has spent approximately \$360,000 in the last 6 months. Estimated I/I reduction of 1,500 gpd.

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 – Proposed 19 unit residential development (1.0 acres), 14 unit residential/retail development (0.4 acres), and 18 unit residential/commercial development (0.6 acres) will include a detention/infiltration stormwater management system. Estimated I/I removal for all three is two times the sanitary flows.

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 \$3,320,700 allotted through the Program's Phases 1-3, the community has \$2,431,000 remaining in funding assistance.

31. STONEHAM: North System

Background Information:

- Miles of Sewer: 63 Sewered Population: 21,578 Three Year ('96-'98) Annual Average I/I: 2.92 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, January 1983
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: In 1998 the Town initiated a phased program to internally inspect the entire sewer system and to rank the state of deterioration of the manholes and pipelines. From this ranking system, a schedule for further inspection and/or rehabilitation work would be recommended. Phase 5 of the TV Inspection project has been completed.

Reporting Period Activity – The Phase 1 work order for repairs has been completed. The Phase 2 work order is approximately 60% complete and is scheduled for completion in July and August.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. The community has spent its entire \$1,157,000 of funding assistance.

32. STOUGHTON: South System

Background Information:

- Miles of Sewer: 60 Sewered Population: 17,038 Three Year ('96-'98) Annual Average I/I: 2.70 mgd
- Massachusetts DEP Administrative Order: No. 538 Issued on June 17, 1984.
- Latest I/I or SSES Report: Phase IV I/I Reduction Report, November 1999
- Private Source Inflow Removal Program: Sub-area TV inspection of service connections is ongoing.
- I/I Rehabilitation Projects in Design or Construction: Phase IV I/I Reduction Project design complete. Construction award anticipated for Summer/Fall 2000.

Reporting Period Activity - York Street Pumping Station upgrade awarded as part of Stoughton Contract 99-1. Rehabilitation began June 2000. Construction to be completed September 2000. Morton Street Pumping Station rehabilitation design is complete. Construction to begin August 2000.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. The community has spent its entire \$1,001,400 of funding assistance.

33. WAKEFIELD: North System

Background Information:

- Miles of Sewer: 82 Sewered Population: 23,692 Three Year ('96-'98) Annual Average I/I: 3.82 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, December 1986
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The Town has commenced the design associated with the recommended rehabilitation as presented in the "Sewer Television Inspection Analysis Summary" report in the North Avenue/Gould Street/Cedar Street Area. The "Sewer Television Inspection Analysis Summary" Report for work performed in the North Avenue/Gould Street/Cedar Street area was approved in March 2000.

Reporting Period Activity – A draft report on the analysis of the flow metering conducted by MWRA in the North Avenue area of town has been submitted. The Town has initiated a flow monitoring contract and has performed cleaning of select lines.

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 \$1,275,200 allotted through the Program's Phases 1-3, the community has \$477,400 remaining in funding assistance.

34. WALPOLE: South System

Background Information:

- Miles of Sewer: 72 Sewered Population: 13,796 Three Year ('96-'98) Annual Average I/I: 1.68 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES Phases I and II, January 1999
- Private Source Inflow Removal Program: To date, there has been no removal of private inflow sources discovered during the July 1996 smoke testing program.
- I/I Rehabilitation Projects in Design or Construction: The Diamond Brook Sewer/Drain Separation Project (Contract 2000-14) was completed in June 2000.

Reporting Period Activity - The Gill Street Sewer Rehabilitation Project was completed in June 2000.

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 spent its entire \$819,300 of funding assistance.

35. WALTHAM: North System

Background Information:

- Miles of Sewer: 138 Sewered Population: 57,157 Three Year ('96-'98) Annual Average I/I: 7.25 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, Ongoing
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: Design work has begun to replace over 5,000 LF of the Hobbs Brook Sewer. In the past, this 15-inch sewer has revealed structural defects warranting replacement. Preliminary analysis of CY98 flow metering data indicates approximately 6,000 gpd of I/I in this sewer segment.

Reporting Period Activity - The City is currently addressing sewer rehabilitation projects that would remove illicit sewer connections to the community's storm drainage system.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$3,002,500 allotted through the Program's Phases 1-3, the community has \$1,510,200 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:

- Miles of Sewer: 75 Sewered Population: 32,458 Three Year ('96-'98) Annual Average I/I: 2.93 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004
- Latest I/I or SSES Report: SSES Analysis, June 1989
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The Town is continuing a SSES study funded through the MWRA Phase 2 I/I Local Financial Assistance Program (MWRA Project No. WRA-P2-36-1-239).

Reporting Period Activity - As SSES work locates direct public inflow sources (particularly catch basins and storm drains), the Town is removing them from the sanitary system.

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 \$1,487,400 allotted through the Program's Phases 1-3, the community has \$1,164,835 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:

- Miles of Sewer: 130 Sewered Population: 25,147 Three Year ('96-'98) Annual Average I/I: 3.04 mgd
- Massachusetts DEP Administrative Order: No. 579 Issued on May 23, 1985.
- Latest I/I or SSES Report: Phase II SSES, November 1994
- Private Source Inflow Removal Program: The Town is preparing for sump pump removal by first identifying existing drainage facilities.
- I/I Rehabilitation Projects in Design or Construction: The Town contracted with ADS Environmental Services to measure, analyze, and report on the sewage flow in three small drainage areas and correlate these flows to rainfall data. Two of these subareas will be rehabilitated, with the third used as a control. If no measured documentation of improvement is seen, the community will move toward private sector rehabilitation work to reduce I/I.

Reporting Period Activity - A lateral sewer extension for Schaller Street awaits MWRA approval to connect to the Framingham Extension Relief 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 \$1,255,100 allotted through the Program's Phases 1-3, the community has \$952,600 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:

- Miles of Sewer: 77 Sewered Population: 10,736 Three Year ('96-'98) Annual Average I/I: 1.23 mgd
- Massachusetts DEP Administrative Order: No. 578 Issued on May 23, 1985.
- Latest I/I or SSES Report: SSES Phases 1 and 2, January 1991
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: FY99 Sewer System Maintenance Program consists of five miles of cleaning and TV inspections, 25 manhole sealings, and flow monitoring in sections of Sub-systems 18/22. The FY99 Maintenance Report is complete. The FY00 Sewer System Maintenance Program investigations are complete and a draft report has been submitted.

Reporting Period Activity - Hartford Street and Central Area Sewer Lateral Extensions (Contract 97-1) is complete. The design of approximately 6,500 LF of new sewer laterals continues.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. The community has spent its entire \$509,100 of funding assistance.

39. WEYMOUTH: South System

Background Information:

- Miles of Sewer: 238 Sewered Population: 50,706 Three Year ('96-'98) Annual Average I/I: 6.87 mgd
- Massachusetts DEP Administrative Order: No. 543 Issued on November 14, 1984.
- Latest I/I or SSES Report: Sanitary Sewer System Assessment Report, March 2000.
- Private Source Inflow Removal Program: 202 sump pumps were redirected for a total of 101,000 gallons of I/I removal.
- I/I Rehabilitation Projects in Design or Construction: Contract 99-2, Manhole Rehabilitation, is complete. The City has completed 1700 manhole inspections, Phase "C" Pump Station repairs, and a Flow Isolation Project. Construction is set to begin on the Saunders Street Ejector Rehabilitation Project and on Contract 99-3.

Reporting Period Activity - The City has enacted a Water Conservation Program and has reduced 102,914 gpd this reporting period. The City has been very active in the I/I Identification phase of its I/I Program. The City has developed a sump pump identification and redirection program. The City recently completed a Sanitary Sewer System Assessment Report in March 2000. To date 202 sump pumps have been redirected.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$2,481,700 allotted through the Program's Phases 1-3, the community has \$539,200 remaining in funding assistance.

40. WILMINGTON: North System

Background Information:

- Miles of Sewer: 19 Sewered Population: 2,981 Three Year ('96-'98) Annual Average I/I: 1.27 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES October 1996
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The Town is currently updating the original Town-wide I/I Analysis with supplementary flow isolation. The draft I/I update has been submitted to the Town by FST.

Reporting Period Activity – In May 2000, the Town initiated a phased program to internally inspect the major portion of their sewer system and to rank the state of deterioration of manholes and pipelines. From this ranking system, a schedule for further inspection and/or rehabilitation work will be recommended. The first phase of the work, which is being funded by MWRA under Project No. WRA-P3-40-3-338, has commenced.

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 spent its entire \$523,000 of MWRA Funding Assistance through Phases 1-3.

41. WINCHESTER: North System

Background Information:

- Miles of Sewer: 83 Sewered Population: 20,298 Three Year ('96-'98) Annual Average I/I: 2.06 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES, February 1983
- Private Source Inflow Removal Program: Approximately 20 private inflow sources have been disconnected.
- I/I Rehabilitation Projects in Design or Construction: The Town received funding for sewer rehabilitation work involving the elimination of private inflow sources under Phase 3 of the MWRA I/I Local Financial Assistance Program. The elimination program reimburses the homeowner up to \$1,000 if they have illegal sump pump connections rerouted to storm drains. To date 81 homes and businesses have taken advantage of the I/I Sump Pump Redirection/Reimbursement Program.

Reporting Period Activity - The private inflow sources mentioned above were disconnected.

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 \$952,300 allotted through the Program's Phases 1-3, the community has \$338,400 remaining in funding assistance.

42. WINTHROP: North System

Background Information:

- Miles of Sewer: 36 Sewered Population: 17,228 Three Year ('96-'98) Annual Average I/I: 1.52 mgd
- Massachusetts DEP Administrative Order: None
- Latest I/I or SSES Report: SSES Part 2, Ongoing
- Private Source Inflow Removal Program: No additional inspections were reported during this period.
- I/I Rehabilitation Projects in Design or Construction: The Town has recently completed a Phase 2 SSES. This work, funded through the MWRA I/I Local Financial Assistance Program, includes: rainfall simulation, house-to-house inspections and flow data analysis.

Reporting Period Activity – The town is preparing a construction contract to eliminate the 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 \$783,400 allotted through the Program's Phases 1-3, the community has \$496,300 remaining in funding assistance.

43. WOBURN: North System

Background Information:

- Miles of Sewer: 141 Sewered Population: 35,346 Three Year ('96-'98) Annual Average I/I: 6.32 mgd
- Massachusetts DEP Administrative Order: No. 619 issued (as revised) on July 14, 1987.
- Latest I/I or SSES Report: Long Term Flow Monitoring of the Horn Pond Sewer, May 1999
- Private Source Inflow Removal Program: The City is in the process of developing a private source inflow removal program.
- I/I Rehabilitation Projects in Design or Construction: The City has completed the design work associated with the Horn Pond Sewer Rehabilitation Project which is being funded through the MWRA Phase 2 I/I Local Financial Assistance Program (MWRA Project No. WRA-P2-43-3-249). Construction began in March 2000.

Reporting Period Activity – The construction associated with the Horn Pond Sewer Rehabilitation Project began in March 2000. Work is expected to be completed by August 2000. An estimated 80,000 gpd of I/I is expected to be removed.

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 \$2,370,200 allotted through the Program's Phases 1-3, the community has \$1,453,800 remaining in funding assistance.

1999 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY99 - 12 MONTHS)

COMMUNITY	Community Demographics		No. of Connects to MWRA System	Miles of Local Sewers (3)	No. of Meters for Permanent System	1999 Averages (1)			Components of Average Daily Flow (Estimated) (2)						Peak Month ADF (MGD)	Percent Peak Month ADF (6)
	Total Population	Sewered Population				Average Daily Flow ADF (MGD)	Percent Average Daily Flow (6)	Selected Dry Day ADF (MGD)	Average Daily Infiltration (MGD)	Infiltration As a % of Average Daily Flow	Average Sanitary Flow (MGD)	Sanitary As a % of Average Daily Flow	Average Daily Inflow (4) (MGD)	Inflow As a % of Average Daily Flow		
Arlington	43,431	43,388	321	106	7	5.14	1.59%	4.75	2.14	41.6%	2.61	50.8%	0.39	7.6%	7.55	1.69%
Ashland	13,482	8,628	2	43	2	0.72	0.22%	0.64	0.16	22.2%	0.48	66.7%	0.07	9.7%	0.97	0.22%
Bedford	13,947	12,273	2	68	2	2.76	0.85%	2.64	1.39	50.4%	1.25	45.3%	0.12	4.3%	3.77	0.84%
Belmont	23,907	23,429	2	78	2	3.97	1.22%	3.52	2.09	52.6%	1.43	36.0%	0.44	11.1%	6.46	1.44%
BWSC (5)	555,447	554,892	234	840	33	90.54	27.94%	75.33	23.11	25.5%	52.22	57.7%	15.22	16.8%	120.45	26.94%
Braintree	34,906	34,871	15	133	7	6.51	2.01%	5.91	3.62	55.6%	2.29	35.2%	0.60	9.2%	9.43	2.11%
Brookline	53,911	53,372	9	102	12	10.39	3.21%	9.36	4.95	47.6%	4.41	42.4%	1.03	9.9%	13.84	3.10%
Burlington	23,694	22,983	0	115	1	3.29	1.02%	3.16	1.74	52.9%	1.42	43.2%	0.13	4.0%	4.53	1.01%
Cambridge (5)	93,352	93,259	116	150	9	17.43	5.38%	14.57	6.21	35.6%	8.36	48.0%	2.86	16.4%	21.67	4.85%
Canton	20,677	15,301	63	62	6	3.23	1.00%	2.67	1.73	53.6%	1.14	35.3%	0.36	11.1%	4.12	0.92%
Chelsea (5)	27,426	27,398	40	41	5	4.41	1.36%	3.62	1.06	24.0%	2.56	58.0%	0.80	18.1%	5.77	1.29%
Dedham	23,721	22,298	25	76	6	5.28	1.63%	4.56	3.06	58.0%	1.50	28.4%	0.73	13.8%	8.50	1.90%
Everett	34,922	34,887	20	57	7	5.86	1.81%	5.32	2.90	49.5%	2.42	41.3%	0.54	9.2%	6.97	1.56%
Frammingham	64,646	60,121	4	275	4	7.47	2.30%	7.03	2.66	35.6%	4.37	58.5%	0.44	5.9%	10.44	2.33%
Hingham	6,289	5,283	1	31	1	1.26	0.39%	1.11	0.68	54.0%	0.43	34.1%	0.15	11.9%	2.13	0.48%
Holbrook	11,125	7,287	2	31	2	0.84	0.26%	0.80	0.42	50.0%	0.38	45.2%	0.04	4.8%	1.09	0.24%
Lexington	29,594	28,114	17	151	4	5.23	1.61%	4.87	2.41	46.1%	2.46	47.0%	0.36	6.9%	7.87	1.76%
Malden	52,644	52,591	242	99	6	7.70	2.38%	7.10	4.07	52.9%	3.03	39.4%	0.60	7.8%	10.09	2.26%
Medford	35,981	35,925	71	113	6	8.35	2.58%	7.49	3.60	43.1%	3.89	46.6%	0.86	10.3%	11.17	2.50%
Melrose	27,376	27,349	187	74	5	3.57	1.10%	3.07	1.38	38.7%	1.69	47.3%	0.50	14.0%	5.32	1.19%
Milton	25,662	24,122	45	83	14	4.20	1.30%	3.57	2.25	53.6%	1.32	31.4%	0.62	14.8%	7.02	1.57%
Natick	31,491	26,452	27	107	4	3.40	1.05%	3.10	1.34	39.4%	1.76	51.8%	0.30	8.8%	5.05	1.13%
Needham	27,924	25,690	21	115	2	5.14	1.59%	4.66	2.86	55.6%	1.80	35.0%	0.48	9.3%	7.61	1.70%
Newton	80,345	78,176	51	271	7	16.64	5.13%	15.24	8.58	51.6%	6.66	40.0%	1.40	8.4%	24.82	5.55%
Norwood	28,824	28,507	30	83	6	5.56	1.72%	4.75	2.90	52.2%	1.85	33.3%	0.81	14.6%	8.75	1.96%
Quincy	85,752	85,666	56	202	6	14.85	4.58%	13.42	7.96	53.6%	5.46	36.8%	1.43	9.6%	19.03	4.26%
Randolph	30,567	30,322	2	101	2	3.77	1.16%	3.47	1.63	43.2%	1.84	48.8%	0.30	8.0%	5.43	1.21%
Reading	23,371	21,969	2	86	2	2.48	0.77%	2.34	0.84	33.9%	1.50	60.5%	0.14	5.6%	3.56	0.80%
Revere	41,663	41,621	3	78	1	6.82	2.10%	6.06	3.55	52.1%	2.51	36.8%	0.77	11.3%	9.15	2.05%
Somerville (5)	74,100	74,026	43	107	7	10.14	3.13%	8.11	4.45	43.9%	3.66	36.1%	2.03	20.0%	13.08	2.93%
Stoneham	22,254	21,809	23	63	7	4.01	1.24%	3.82	1.88	46.9%	1.94	48.4%	0.19	4.7%	4.74	1.06%
Stoughton	27,664	17,428	1	60	2	3.59	1.11%	3.22	2.16	60.2%	1.06	29.5%	0.37	10.3%	5.33	1.19%
Wakefield	24,772	23,732	10	82	2	4.36	1.35%	3.99	2.30	52.8%	1.69	38.8%	0.36	8.3%	6.54	1.46%
Walpole	22,640	14,490	1	56	2	2.39	0.74%	2.11	1.20	50.2%	0.91	38.1%	0.28	11.7%	3.54	0.79%
Waltham	58,540	58,481	3	138	3	10.45	3.22%	9.69	5.73	54.8%	3.96	37.9%	0.76	7.3%	14.00	3.13%
Watertown	32,435	32,403	14	75	3	3.89	1.20%	3.61	1.54	39.6%	2.07	53.2%	0.28	7.2%	5.28	1.18%
Wellesley	26,789	25,396	2	130	3	3.68	1.14%	3.28	1.66	45.1%	1.62	44.0%	0.40	10.9%	5.50	1.23%
Westwood	13,160	11,186	3	77	3	1.78	0.55%	1.58	0.88	49.4%	0.70	39.3%	0.19	10.7%	2.70	0.60%
Weymouth	54,903	51,334	17	238	4	8.30	2.56%	7.39	4.21	50.7%	3.18	38.3%	0.91	11.0%	12.73	2.85%
Wilmington	20,593	3,295	2	19	1	1.54	0.48%	1.50	0.60	39.0%	0.90	58.4%	0.04	2.6%	1.78	0.40%
Winchester	20,339	20,319	72	83	7	2.54	0.78%	2.36	1.10	43.3%	1.26	49.6%	0.18	7.1%	3.85	0.86%
Winthrop	17,179	17,162	21	36	6	1.97	0.61%	1.80	0.96	48.7%	0.84	42.6%	0.17	8.6%	2.39	0.53%
Woburn	37,070	36,329	18	141	13	8.65	2.67%	7.84	3.80	43.9%	4.04	46.7%	0.81	9.4%	13.12	2.93%
Totals/Averages	2,038,515	1,953,564	1,840	5,076	234	324.10	100.00%	284.63	133.76	41.3%	150.87	46.6%	39.46	12.2%	447.14	100.00%

FOOTNOTES:

- (1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 1999.
- (2) Wastewater flow components are estimated through engineering analysis by MWRA staff.
- (3) Miles of Local Sewers are from MWRA's regional collection system database or as reported by the Community and do not include service laterals.
- (4) Average Daily Inflow is calculated as a total inflow over the period of January through December 1999 divided by 365 days. Actual inflow during a specific storm event must be calculated separately.
- (5) Community with combined sewers. Inflow figures include combined flow during storm events tributary to MWRA's WWTP.
- (6) Percent average Daily Flow and Percent Peak Month ADF are the two flow-based components of MWRA's Wholesale Sewer Rate Methodology.

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