

MWRA ADVISORY BOARD

WATER SUPPLY UPDATE

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CONTACT: ALLEN ADELMAN

A monthly report of news and information about water management and conservation in the MWRA area. Provided as a service to cities and towns by the Advisory Board.

- * Operation Watersense Kicks Off in Boston
- * Public Information Campaign Targets Four Communities
- * Progress Reported on Community Leak Detection Surveys
- * MWRA Cuts Water Losses in its Delivery System
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- * Conservation Quote on Domestic Water Meter Accuracy

OPERATION WATERSENSE KICKS OFF IN BOSTON NEIGHBORHOOD

Following a successful debut in Milton in August, the MWRA's domestic device retrofit pilot program moved to Boston last week. The program, named "Operation Watersense," was introduced to neighborhood residents at a kick-off ceremony held in the front yard of a private home in Roslindale. MWRA staffers there demonstrated the use of various water-saving devices, such as efficient showerheads, faucet aerators, toilet tank dams, and leak detection tablets, all of which can help residents reduce indoor water consumption by up to 40 percent. Inside the private home, an MWRA device installer retrofitted the kitchen and two bathrooms with low-flow fixtures as a small band of photographers and reporters followed along.

Operation Watersense will move into other Boston neighborhoods, as well as Brookline and Waltham, during the next several months. The results of this \$855,000 program will help determine whether to expand the effort to include all communities in the future.



INTENSIVE CONSERVATION CAMPAIGN TARGETS FOUR COMMUNITIES

During the past several months conservation coordinators from the Waterworks division have been laying the groundwork for a special informational campaign to promote water conservation in four communities--Belmont, Everett, Medford, and Newton. The campaign will be planned and implemented in cooperation with each of the selected communities, and will use a variety of marketing techniques and special events to motivate residents and businesses to take specific steps to reduce water usage. Based on the experiences and knowledge gained from this effort, a model informational campaign will be developed for use in other communities.

The goal of the effort is to promote voluntary water conservation among water users by informing them why water conservation is needed and how to do it. One measure of the campaign's effectiveness will be the extent to which residents can be motivated to purchase and install water-saving devices in their homes.

The campaign will bring three important facts to the attention of the public: 1) The amount of water the system can safely supply is being exceeded by an average of 35 million gallons per day; 2) Each person uses more water than is generally realized--average water use per person is 60 gallons per day; 3) Water use can easily be reduced by up to 40% through simple changes in habits, installation of water-saving fixtures, and repair of leaky pipes and fixtures.

To help disseminate this information, a working group consisting of municipal officials, civic groups, media, business interests, and individuals, will be established within each community. The working group is intended to serve several important functions, including: providing fresh ideas for the community campaign, being a communications link between the community and the MWRA, and helping to establish a local network of organizations and people interested in the water conservation effort.

Other features of the conservation campaign will include: 1) Coordinating with existing community programs and events such as household hazardous waste collection days, waste recycling projects, energy audit programs, etc. 2) Conducting meetings and workshops on water conservation for civic groups and other targetted audiences 3) Encouraging local hardware stores to stock and promote water-saving devices 4) Using media opportunities to disseminate information via press releases, Cable TV programs, radio interviews, and public service announcement. and 5) Sending information and materials directly to residents. For more information on the intensive conservation campaign, contact Hildy Armour at 242-6000.

ADVISORY BOARD SURVEY IN PROGRESS

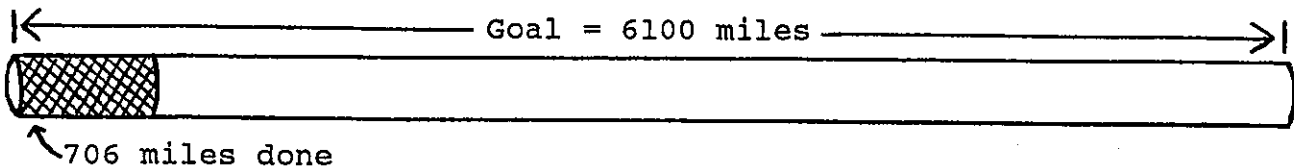
The Advisory Board is currently surveying the 60 MWRA communities to collect information on rates, rate structures, metering, and plans for local infrastructure improvements. Results are expected to be compiled by the end of October.

DEQE METER MODERNIZATION GRANTS PROGRAM DELAYED

Due to the Commonwealth's current financial plight, funding to start-up the long-awaited DEQE meter modernization grants program has been delayed. The \$15 million assistance program for communities was expected to begin during the summer, but it now appears that the delay will extend for at least several more months.

PROGRESS REPORTED ON COMMUNITY LEAK DETECTION SURVEYS

Significant progress has been made on the MWRA's Community Leak Detection Program since it began last June. Fourteen communities have had sonic listening surveys conducted, with seven more due to begin later this month. Four firms have been contracted to perform the work, they are: Pitometer Associates, Donohue, Heath Consultants, and C/P Utility Services. According to Program Manager Dave Liston, the work is going well, although it is slightly behind schedule because several of the firms have not yet staffed their crews fully. Progress data is presented below, as reported by the MWRA Waterworks Division.



As of September 2:

No. of Communities Participating	14
No. of Miles of Pipe Surveyed	706
No. of Leaks Detected	457
Estimated Leakage Rate (mgd)	5.91

Surveys Completed Recently:

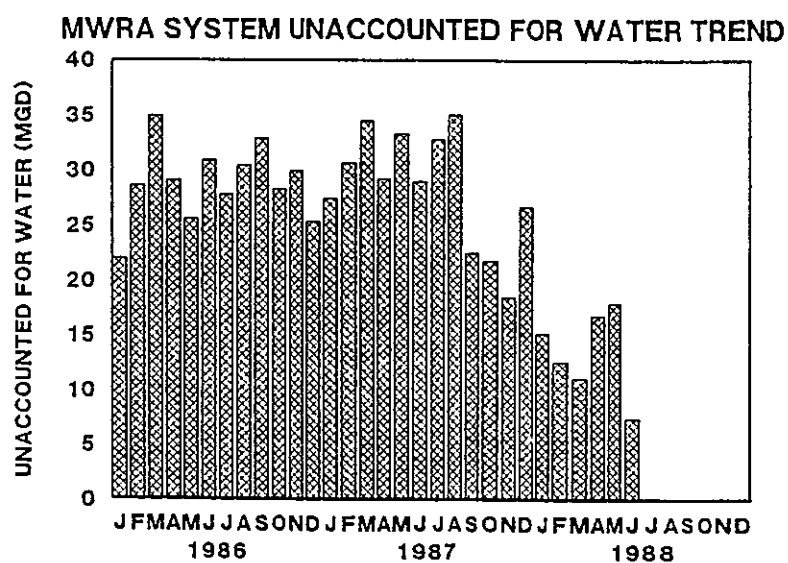
Northborough	65 miles....14 leaks....0.07 mgd
Clinton	40 miles....14 leaks....0.13 mgd
Boston*	109 miles...160 leaks....1.56 mgd
	*(Brighton, South End)

UNACCOUNTED-FOR WATER IN MWRA DELIVERY SYSTEM CUT SHARPLY

Unaccounted-for water in the MWRA delivery system has dropped to 7.5 mgd, the lowest it's been in the past three years (see figure below). The MWRA measures its unaccounted-for water as the difference between the quantity of water flowing from the reservoir system and the quantity of water delivered to user communities.

The dramatic decrease in lost water can be attributed to two factors. One, improved revenue meter accuracy, and two, repair of leaks in MWRA mains.

MWRA staff recently completed a survey of all 270 miles of distribution pipes. 81 leaks were found, with an estimated leakage of 3.7 mgd. To date, 59 leaks have been repaired, resulting in a savings of 3.4 mgd.



At its August meeting, the Advisory Board passed a resolution in support of House Bill 6106, An Act to Protect the Metropolitan Drinking Water Supply. Representative David Cohen of Newton, sponsor of the bill, appeared at the meeting and discussed the critical problem of development occurring on watershed lands near the reservoirs. He explained that communities within the watersheds are, through inadequate zoning controls, allowing land to be used in ways which could harm water quality. Generally, the bill prohibits construction of any kind within 200 feet of a stream, creek, or river which ultimately flows into the water supply system. On lands between 200 and 400 feet from such streams, some low-density housing is allowed. In addition, a number of dangerous waste disposal and chemical storage activities are prohibited on these lands. The Advisory Board's resolution called for its members to lobby state senators on behalf of the bill.

CONSERVATION QUOTE ON DOMESTIC WATER METER ACCURACY

This quote appears in the article "Increasing Water System Efficiency Through Control of Unaccounted-For Water," by William D. Hudson, from the 1980 AWWA booklet, Water Conservation Strategies.

Domestic meters are the principal revenue producers in many suburban cities and share importance in cities where there is large revenue from industrial and commercial meters. Domestic meters are the most neglected part of the water system in many cities and villages. Unfortunately, a domestic meter can run for many years before it stops completely, and for most of its operating life it underregisters and thus loses revenue for the water utility. As soon as any meter is installed and begins to operate, its internal parts begin to wear, causing underregistration on low flows. The longer the wearing process continues, the greater the underregistration, with the rate of wear dependent on the properties of the water.

The amount of water used in a water system at low rates of flow is larger than is realized. To determine the amount of water used at various rates of flow through domestic meters, the results of five studies on this subject were examined.⁴⁻⁸ Table 1 shows the average figures obtained for the percentage of water used at various rates of flow through domestic meters. These data show that 23.2 per cent of all water used flows at rates of 0.06 l/s (1 gpm) or less. This is the range where the domestic meters first start to underregister, especially at the lowest flow rate.

Some years ago a study was conducted to determine the amount of water lost through underregistration of the domestic meters.¹ The meter test data studied comprised approximately 3 per cent of the total number of meters in the system, but this was sufficient to indicate a definite pattern of underregistration by meter age group, as shown in Table 2. Because these meters were part of a system in which the water is not corrosive and sand and grit is not a problem, the results show the maximum performance that might be expected from a meter.

It is evident from these statistics that under the best possible conditions domestic meters should not be left in service more than 8 to 10 years before they are rebuilt. In water that is more corrosive or contains sand and grit, the service period should be shorter. For

meters with more than 8 or 10 years service, at least 20 per cent will not register flows below 0.045 l/s (0.75 gpm). Because 23.2 per cent of all domestic water is used at this or lower flow rates, approximately 5 per cent of a utility's revenue can be lost by domestic meters that fail to register low flow rates.

Underregistration of meters is a loss of water that is already sold. If the meters are neglected to the point at which 5 per cent of the water is unaccounted for because of inaccurate meters, the water utility experiences a direct loss of 5 per cent of its revenue; if there is a sewer rental charge based on metered water consumption more revenue is lost.

TABLE 1
Percentage of Total Flow Through Domestic Meters at Various Rates

Rate of Flow		Water Used
l/s	gpm	percentage of total
0-0.015	0-0.25	13
0.015-0.03	0.25-0.50	3.4
0.03-0.06	0.50-1	6.8
0.06-0.12	1-2	13.3
0.12-0.24	2-4	43
More than 0.24	More than 4	20.5

TABLE 2
Underregistration of Meters According to Age*

Age of Meters years	Inaccurate Meters per cent	Minimum Registrable Flow	
		l/s	gpm
0-9	5	0.045	0.75
9-19	20	0.045	0.75
19-29	50	0.075	1.25
More than 29	84	0.09	1.50

*Averages based on four separate studies