



MASSACHUSETTS WATER RESOURCES AUTHORITY

WATER QUALITY UPDATE An Analysis of July 2002 Sampling Data

This is a monthly report containing information about the quality of water supplied by MWRA. We hope this report is useful to you as a local water supplier, public health official, water consumer or observer of MWRA's system performance. It provides a more detailed review of water quality than the annual water quality report that is mailed each June to every customer in our service area. To view this annual report, please visit www.mwra.com/water/html/awqr.htm.

Indicators of Water Quality

MWRA routinely uses six general indicators of water quality:

- Microbial
- Corrosiveness (pH and alkalinity)
- Disinfection By-Products
- Turbidity & Algae
- Disinfectant Residual
- Mineral Analysis

Tests are conducted on water sampled at the source reservoirs (source or raw water) and also on water after treatment that is sampled from MWRA or community lines (treated water). A map on Page 2 indicates the location of reservoirs, treatment facilities, and service communities. Testing frequencies vary by parameter. The following pages contain information on all of the above indicators.

July 2002 Highlights

•**MWRA achieved CT disinfection requirements for the month** at both Ware Disinfection Facility (WDF) and Cosgrove Disinfection Facility (CDF). Chlorine dose at CDF was raised from 1.6 mg/L to 1.8 mg/L on the 2nd. Dose at Ware Disinfection Facility remained at 1.4 mg/L. Dose at Norumbega remained at 1.6 mg/L. Levels of disinfection by-products (DBPs) were comparable to those in June for the CVA communities. One town violated the Total Coliform Rule criteria. CT results appear on Page 5. TCR results appear on Page 6. DBP results appear on Page 7.

•**Melrose reported 55 "no water" complaints and 18 were reported in Saugus** on the 2nd. MWRA was supporting a pipeline rehabilitation project which resulted in the loss of water. The main supply valve which supplies water to the communities was shutdown for work, but the backup valve which was to supply water to the communities was off. Staff worked diligently to flush and activate the backup supply source to restore the water service to the communities.

•**A turbidity increase over 1 NTU was attributed to increasing the flow to the Swift River on the 15th** at the Ware Disinfection Facility. The increased flow caused a disturbance in flow in the pipeline resulting in the sloughing off of biofilm material. Levels returned to normal within an hour after the incident. See Page 4.

•**A local main break in Quincy resulted in 6 discolored water complaints** on the 17th. Locating the pipe to fix the leak has been slow due to the many underground local utilities in the area. A new section of pipe will be installed and the old pipeline will be abandoned.

•**Lead Levels: Lead and copper results for May 2002 showed promising results.** 92% of targeted worst case homes met the lead action level, meeting the 90% standard. For more information, see page 9.

•**For your convenience, and to help save money and paper, you can now receive the monthly *Water Quality Update* on-line instead of via post.** Each month, we will send you an e-mail with [the highlights and the link to the *Water Quality Update* on-line](#) on our web-page. Please send an e-mail to Joshua.Das@mwra.state.ma.us if you are interested.

For more information, please contact MWRA at (617) 242-5323, or visit www.mwra.com

100 First Avenue, Charlestown Navy Yard, Boston, MA 02129.

*For further information regarding health concerns, please contact
the Department of Public Health/Division of Epidemiology at (617) 983-6800
or Boston Public Health Commission at (617) 534-5611.*

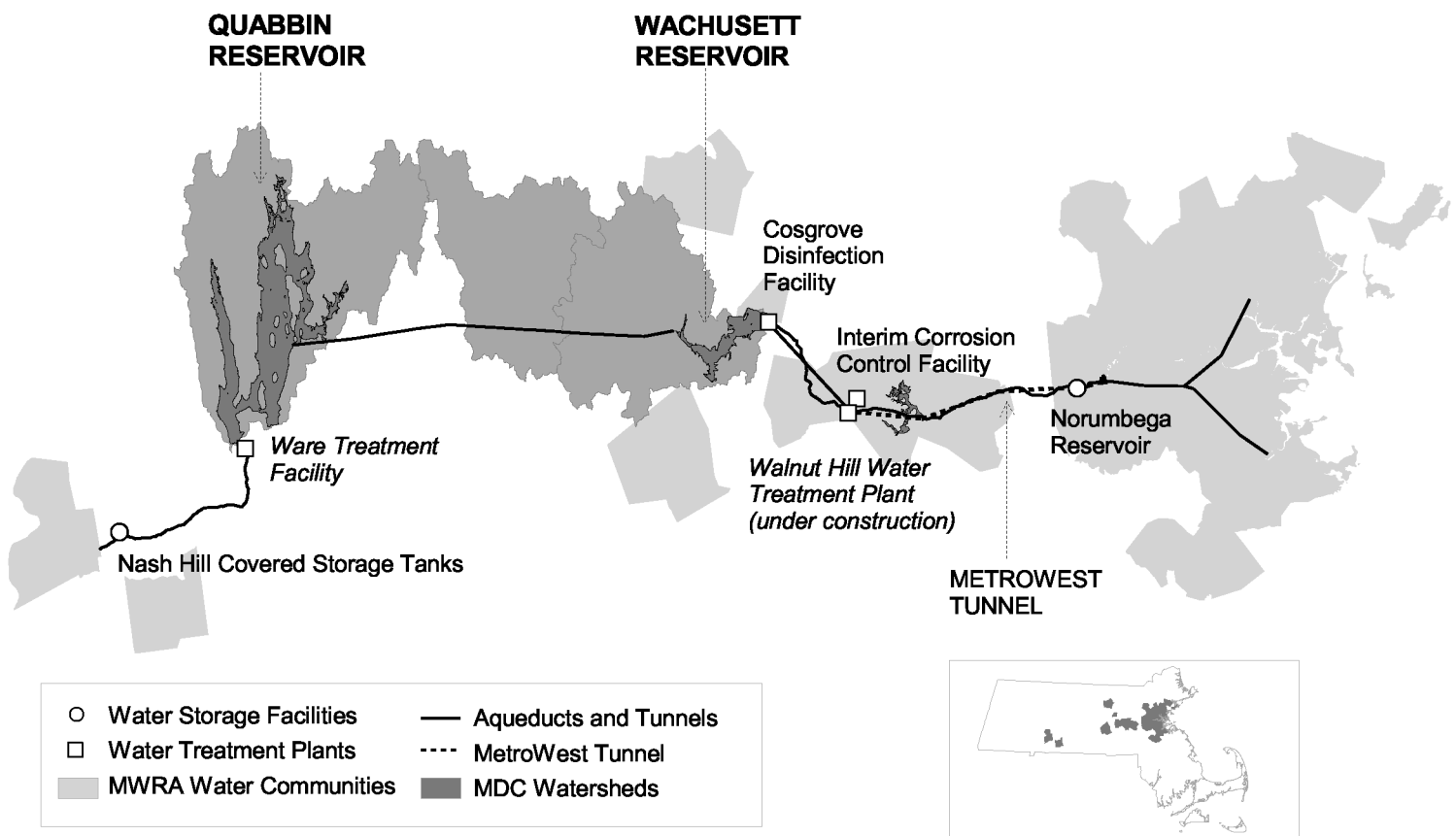
Release Date: August 20, 2002

The Water System

MWRA provides about 250 million gallons of water each day to 46 cities and towns in Massachusetts. Each municipality is responsible for distributing the water within its own community. Thirty of the customer communities are fully supplied by MWRA. The other communities use MWRA water to augment their own supplies, either on a regular basis or in times of water shortage. More than two million people are served by the MWRA water supply system.

Quabbin Reservoir is the primary source of water for our system and one of the country's largest water supply impoundments, with a capacity of 412 billion gallons. Quabbin water represents source water for the Chicopee Valley Aqueduct (CVA) system, serving South Hadley Fire District #1, Chicopee, and Wilbraham. Water is transferred from Quabbin Reservoir to the 65 billion gallon Wachusett Reservoir in Clinton via the Quabbin Aqueduct. Wachusett water represents source water for MetroWest and Metropolitan Boston communities.

The watershed areas of the Quabbin and Wachusett Reservoirs total 401 square miles. The Metropolitan District Commission (MDC), which manages the watersheds, and MWRA are committed to protection of the water supply through aggressive watershed protection as the first line of defense against water contamination. Three-quarters of the watersheds are protected lands and over 80% are either forest or wetlands.



Federal Safe Drinking Water Act (SDWA)

The SDWA sets standards for source and treated water quality. The standards relate to coliform, turbidity, watershed protection, disinfection and disinfection by-products, over 120 potential chemical contaminants, and waterborne disease outbreaks. MWRA monitors for these parameters on schedules ranging from daily to annually.

Customer communities must also meet certain standards under the SDWA concerning distribution of treated drinking water. The Total Coliform Rule (TCR) helps to alert communities to possible microbial contamination as well as the adequacy of residual disinfection within the local distribution system. MWRA provides testing services for many of the communities, and tests over 1500 samples per month. Under the SDWA, a violation of the TCR occurs when greater than 5% of the samples in a community are positive for total coliform during a month.

Source Water – Microbial Results

July 2002

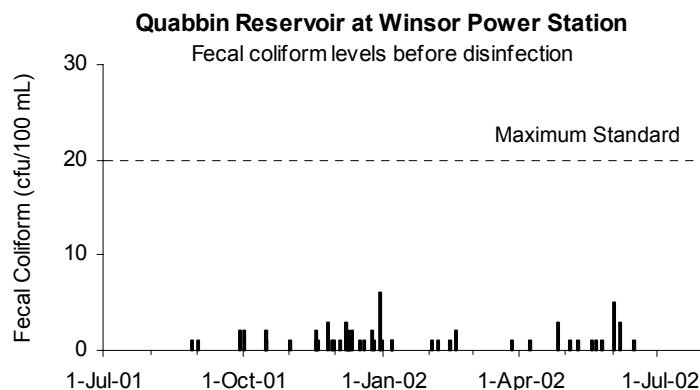
Source Water - Microbial Results

Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. Fecal coliform is a subclass of the coliform group which are identified by their growth at temperatures comparable to those in the intestinal tract of mammals. They act as indicators of possible fecal contamination. The Surface Water Treatment Rule for unfiltered supplies requires that no more than 10% of source water samples prior to disinfection over any six-month period have over 20 fecal coliforms per 100ml.

Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at Winsor Dam before entering the CVA system. MWRA met the six-month running average standard for fecal coliform continuously at this location over the last year.

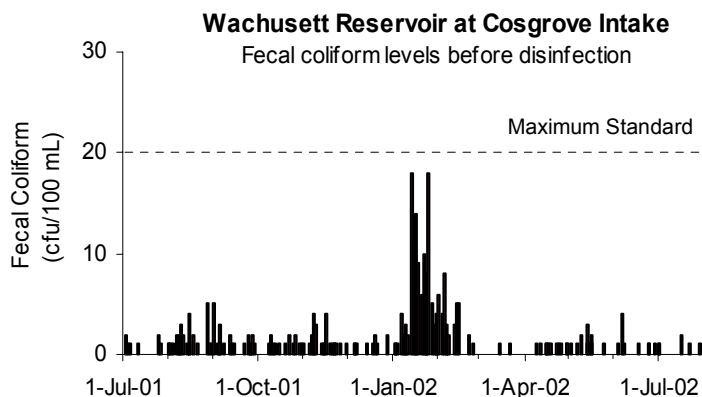
None of the 31 samples were positive during July.



Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled at Cosgrove Intake before entering the MetroWest and Metropolitan Boston systems. MWRA met the six-month running average standard for fecal coliform continuously at this location over the last year.

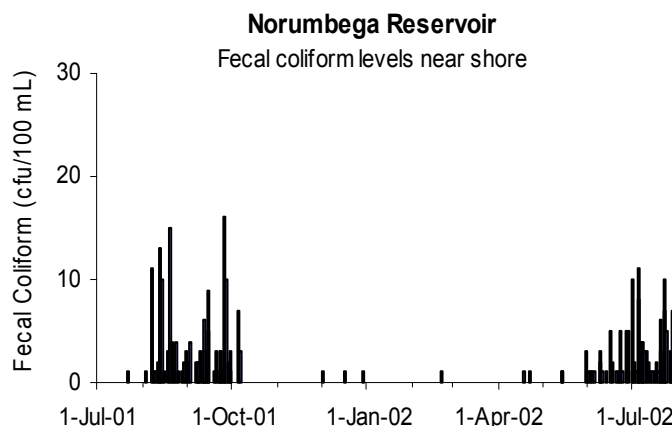
5 of 23 samples were positive for fecal coliform. Colony counts were in the single digits.



Sample Site: Norumbega Reservoir

Norumbega Reservoir in Weston receives flows from Wachusett for temporary storage each day during low demand hours, which are then discharged during high demand. Norumbega water is sampled from the shore near the gatehouse before disinfection. Coliform levels are elevated periodically, partly because samples collected from the shore of this small reservoir are more susceptible to local disturbances. Covered storage is scheduled to replace this open reservoir in 2004.

27 of 31 samples from water taken along the shore were positive for fecal coliform during July. All of colony counts were below 20 cfu/ 100 mL.



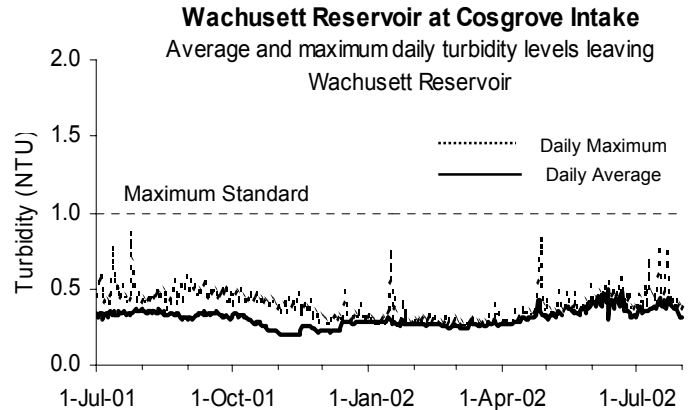
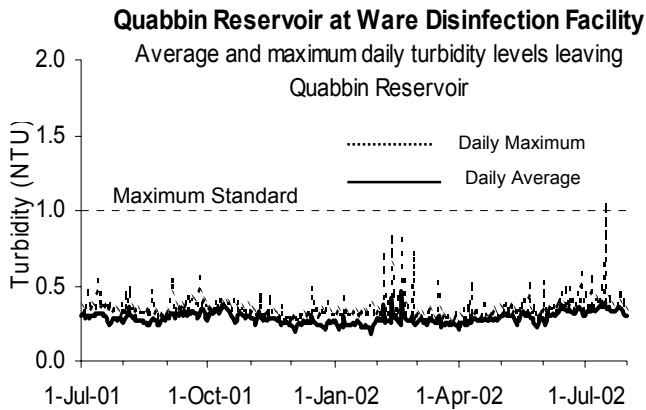
Source Water – Turbidity and Algae Results

July 2002

Source Water – Turbidity Results

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher chlorine demand or may protect bacteria from the disinfectant effects of chlorine, thereby interfering with the disinfectant residual throughout the distribution system.

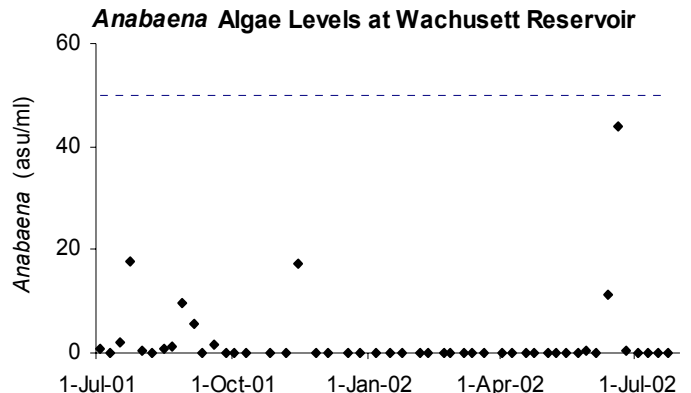
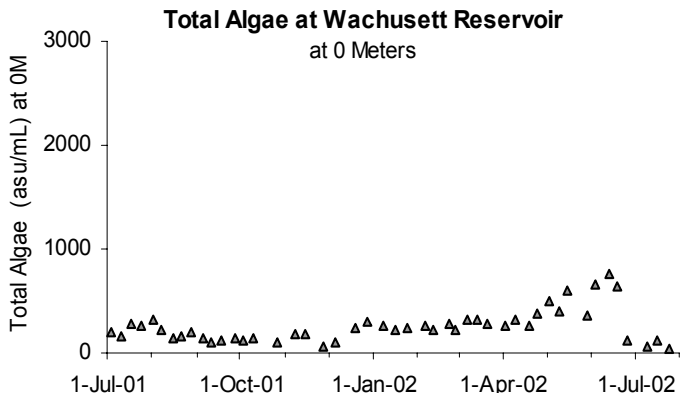
Samples for turbidity from Quabbin Reservoir are collected at the Ware Disinfection Facility before chlorination. These samples represent reservoir water entering the CVA system. Samples are also taken at Cosgrove Intake, representing water quality before chlorination for source water serving the MetroWest and Metropolitan Boston systems. The Massachusetts Department of Environmental Protection standard for source water turbidity for unfiltered water supply systems is a maximum of 1.0 NTU; the EPA standard is a maximum of 5.0 NTU. Maximum turbidity results at Wachusett Reservoir were within DEP standards for the month. On July 15th, the Quabbin turbidity exceeded 1.0 NTU. The incident was attributed to a valve operation that increased the flow to the Swift River. Levels returned to normal within an hour after the incident.



Source Water – Algae Results

Algal levels in reservoirs are monitored by MDC and MWRA. These results, along with taste and odor complaints, are used to make decisions on source water treatment for algae control.

Most taste and odor complaints at the tap are due to algae, which originate in source reservoirs, typically in trace amounts. Occasionally, a particular species grows rapidly, increasing its concentration in water. When *Synura*, *Anabaena*, or other nuisance algae blooms, MWRA treats the reservoirs with copper sulfate, an algicide. Of 130 complaints received during July from local water departments, only 14 concerned taste and odor that may be due to algae. Algae levels were down in July.



Treated Water – Disinfection and pH Results

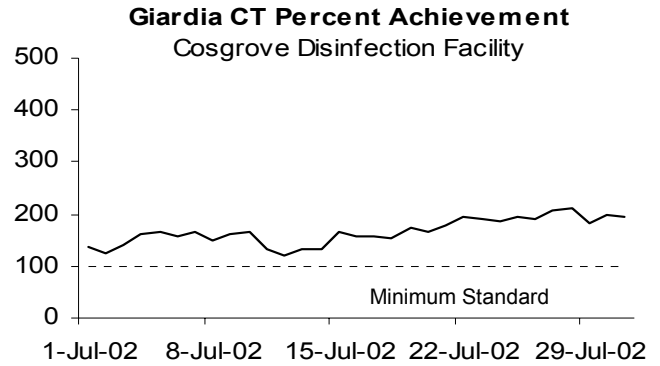
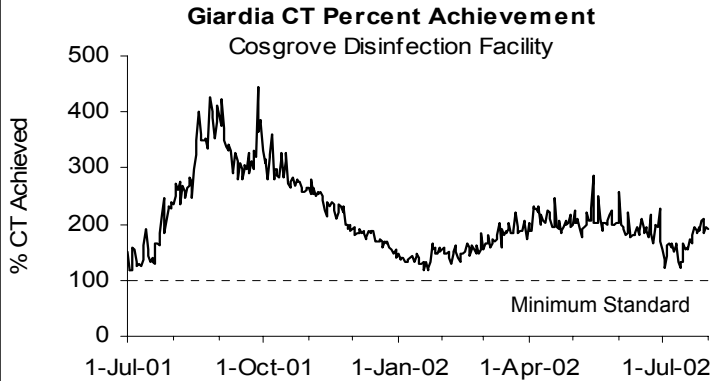
July 2002

Treated Water - Primary Disinfection

Wachusett Reservoir at Cosgrove Disinfection Facility (MetroBoston Supply):

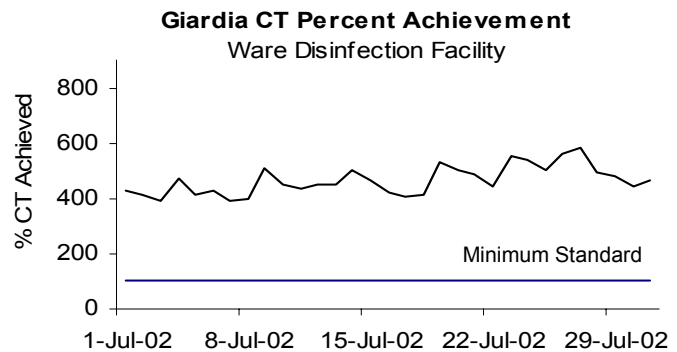
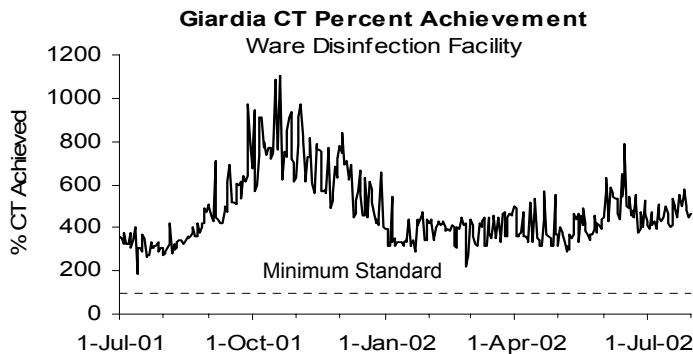
MWRA provides disinfection adequate to achieve EPA's requirement of 99.9% inactivation of *Giardia* cysts and 99.99% inactivation of viruses in drinking water using a calculation based on three sample points that DEP approved in June, 1999. CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. The concentration (C) of the disinfectant in the water over time (T) yields a measure of the effectiveness of disinfection, CT. The required CT varies with disinfectant type, water temperature, pH, and other factors. MWRA calculates daily CT inactivation rates at maximum flow, as specified by EPA regulations.

Chlorine dose was raised from 1.6 mg/L to 1.8 mg/L on the 2nd. It was lowered on the 10th to 1.7 mg/L out of concern for DBP levels. A concern for bacterial levels raised the dose back to 1.8 mg/L on the 19th. CT was met each day in July, as well as every day for the last year.



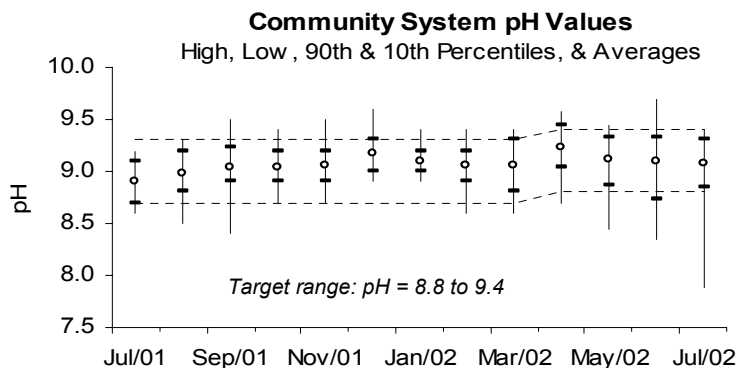
Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

Chlorine dose remained at 1.4 mg/L. CT was met each day in July, as well as every day for the last year.



Treated Water – pH Results

MWRA adjusts the alkalinity and pH of Wachusett water to reduce its corrosivity in order to minimize the leaching of lead and copper from service lines and home plumbing systems into the water. MWRA's target for distribution system pH was raised from 9.0 to 9.1 on March 25th as directed DEP. Upper and lower target bands were adjusted to 8.8 and 9.4: MWRA's goal is to have all distribution system samples fall between these targets. MWRA staff collects and analyzes samples for pH from 26 community locations on a biweekly schedule to measure pH levels. In July, about 96% of the samples were within the target range.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

July 2002

Background

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 36 cities and towns (including Westboro State Hospital) use the MWRA Laboratory for TCR compliance testing. These communities collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection. The other 10 MWRA customer communities have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

There are 144 sampling locations in which the MWRA is required to report TCR results. This includes a subset of the communities as well as sites along the transmission system, tanks and pumping stations.

The SDWA requires that no more than 5% of all samples may be total coliform positive in a month (or that no more than 1 sample be positive when less than 40 samples are collected each month). Public notification is required if this standard is exceeded.

Escherichia coli (*E. coli*) is a specific coliform species that is almost always present in fecal material and whose presence indicates likely bacterial contamination of fecal origin. If *E. coli* are detected in a drinking water sample, this is considered evidence of a critical public health concern. Additional testing is conducted immediately and joint corrective action by DEP, MWRA, and the community is undertaken. Public notification is required if follow-up tests confirm the presence of *E. coli* or total coliform. MWRA considers a disinfectant residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

Eleven of the 1983 samples (0.55% system-wide) tested positive for confirmed total coliform during the month of July. 10 of 720 MWRA samples tested positive for confirmed total coliform. No samples tested positive for *E. coli*. One town, Weston, failed the TCR rule for the month.

All thirty-six communities that submitted chlorine residual data maintained an average disinfectant residual of at least 0.2 mg/L. Twenty communities had one or more samples with a disinfectant residual lower than 0.2 mg/L.

TCR results by Community

Town	Samples Tested for Coliform (a)	Total Coliform # (%) Positive	E.coli % Positive	Public Notification Required?	July 2002 Minimum Chlorine Residual (mg/L)	July 2001 Minimum Chlorine Residual (mg/L)	July 2002 Average Chlorine Residual (mg/L)	July 2001 Average Chlorine Residual (mg/L)
ARLINGTON	56	0 (0%)	0.0%		0.05	0.09	0.63	0.82
BELMONT	40	0 (0%)	0.0%		0.02	0.05	0.85	0.81
BOSTON	269	1 (0.37%)	0.0%	no	0.36	0.16	1.21	1.44
BROOKLINE	85	0 (0%)	0.0%		0.89	1.10	1.40	1.62
CHELSEA	40	0 (0%)	0.0%		0.03	0.01	1.02	1.24
EVERETT	50	0 (0%)	0.0%		0.32	1.00	0.99	1.46
FRAMINGHAM (c)	80	1 (1.25%)	0.0%	no	0.21	0.38	1.22	1.40
LEXINGTON	45	0 (0%)	0.0%		0.32	0.60	1.28	1.69
LYNNFIELD	6	0 (0%)	0.0%		0.58	0.80	1.04	1.19
MALDEN	75	0 (0%)	0.0%		0.07	0.07	0.93	1.13
MARBLEHEAD	24	0 (0%)	0.0%		0.37	0.51	1.22	1.26
MARLBOROUGH (b)(c)	63	1 (1.59%)	0.0%	no	0.14	0.11	1.18	1.14
MEDFORD	85	0 (0%)	0.0%		0.06	0.10	0.88	1.00
MELROSE	45	0 (0%)	0.0%		0.10	0.10	0.79	1.13
MILTON	43	0 (0%)	0.0%		0.73	0.17	1.16	1.27
NAHANT	10	0 (0%)	0.0%		0.00	0.03	0.42	0.55
NEEDHAM (b)	60	1 (1.67%)	0.0%	no	0.04	0.03	0.59	0.96
NEWTON	88	0 (0%)	0.0%		0.21	0.57	1.41	1.47
NORTHBOROUGH	13	0 (0%)	0.0%		0.89	1.06	1.49	1.93
NORWOOD	69	3 (4.35%)	0.0%	no	0.00	0.05	0.81	0.57
QUINCY	115	0 (0%)	0.0%		0.06	0.20	1.07	1.31
REVERE	52	0 (0%)	0.0%		0.46	0.76	1.04	1.38
SAUGUS	40	0 (0%)	0.0%		0.80	1.23	1.10	1.51
SOMERVILLE	100	0 (0%)	0.0%		0.02	0.30	0.89	1.10
SOUTHBOROUGH (c)	13	0 (0%)	0.0%		0.11	0.21	0.77	0.91
STONEHAM	28	0 (0%)	0.0%		0.76	0.83	1.18	1.34
SWAMPSCOTT	18	0 (0%)	0.0%		0.57	0.53	1.06	0.89
WAKEFIELD (b)	44	0 (0%)	0.0%		0.08	0.17	0.88	0.86
WALTHAM	85	0 (0%)	0.0%		0.16	0.50	1.16	1.34
WATERTOWN	40	0 (0%)	0.0%		0.24	0.50	0.95	1.28
WELLESLEY (b)	43	2 (4.65%)	0.0%	no	0.03	0.20	0.64	0.55
WESTBORO HOSPITAL	7	0 (0%)	0.0%		0.04		0.66	
WESTON (c)	23	2 (8.7%)	0.0%	yes	0.04	0.15	0.86	1.02
WINCHESTER (b)	25	0 (0%)	0.0%		0.13	0.08	0.62	0.67
WINTHROP	24	0 (0%)	0.0%		0.25	0.40	1.02	1.10
WOBURN (b)	80	0 (0%)	0.0%		0.04	0.04	0.68	0.59
Total:	1983	11(0.55%)						
MASS. WATER RESOURCES AUTHORITY (d)	720	10 (1.39%)	0.0%	no	0.02	0.01	1.18	1.32

(a) The number of samples collected depends on the population served and the number of repeat samples required.

(b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

(c) These communities locally chloramine.

(d) MWRA sampling program includes the subset of communities as well as sites along the transmission system, tanks and pumping stations.

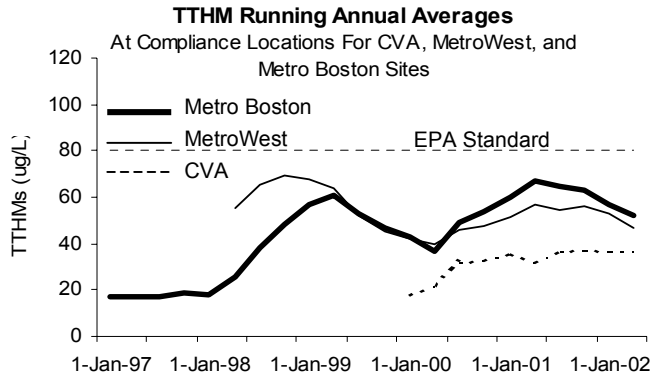
Treated Water - Disinfection By-Product (DBP) Levels in Communities

July 2002

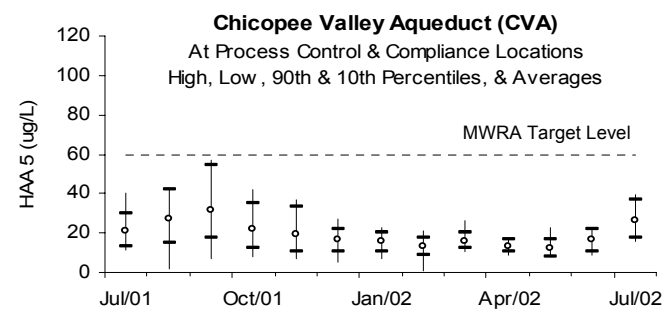
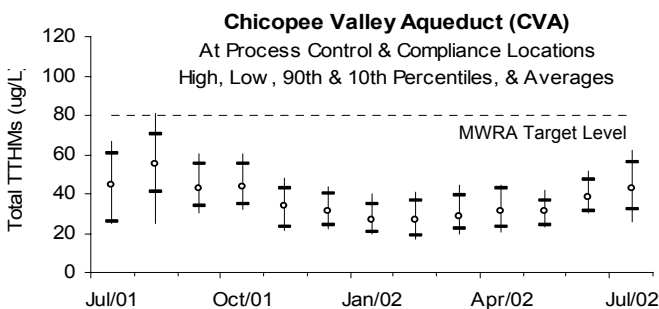
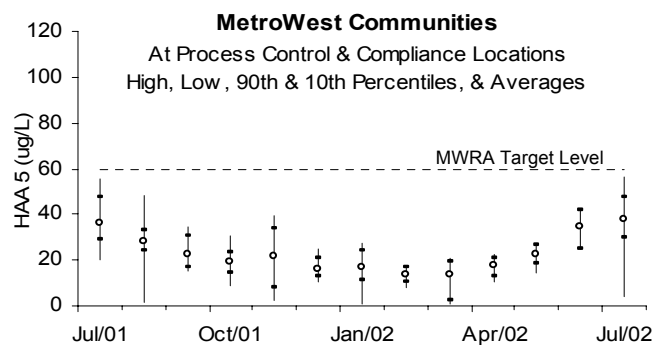
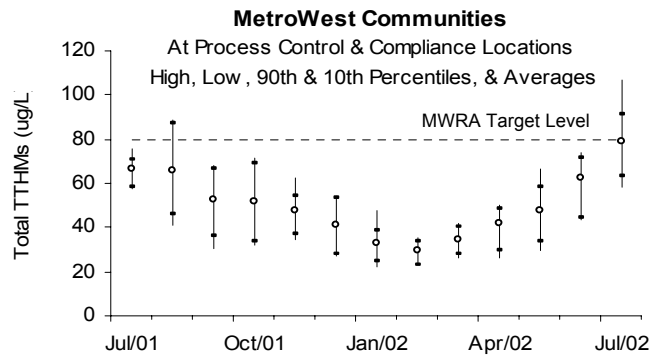
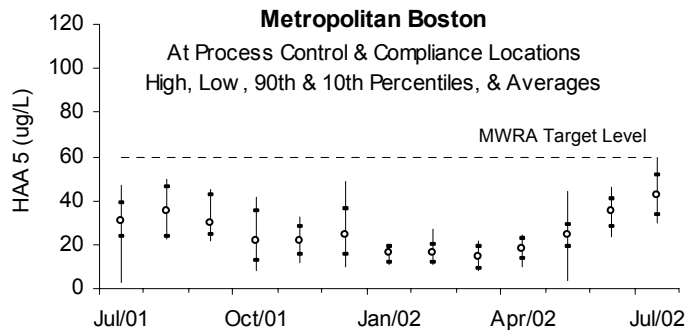
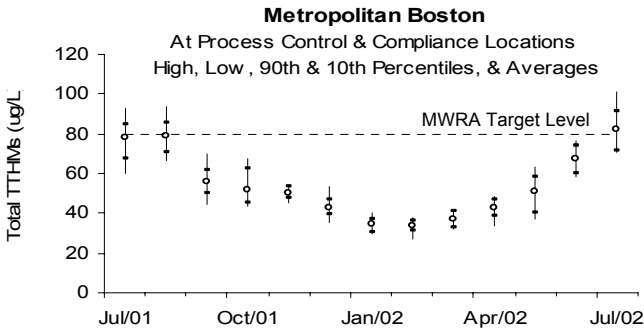
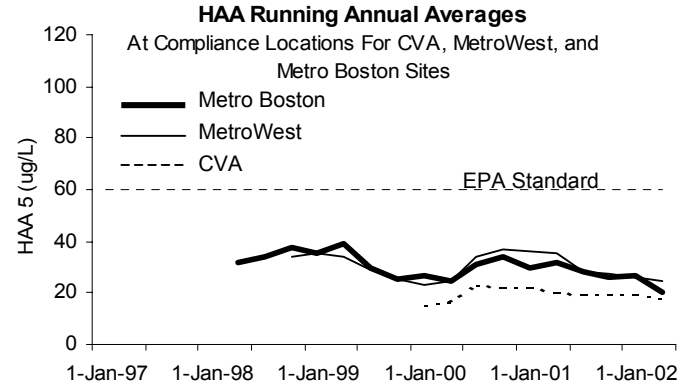
Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAAs) are by-products of disinfection treatment with chlorine. Chlorination levels, the presence of organic precursors, pH levels, the contact time of water with chlorine used for disinfection, and temperature all affect TTHM and HAA levels. DBPs are of concern due to their potential adverse health effects at high levels. The EPA running annual average standards are 80 ug/L for TTHMs and 60 ug/L for HAA 5. DEP requires that compliance samples be collected quarterly. MWRA samples weekly at some locations, monthly and quarterly at others. **Metro Boston numbers are used for compliance purposes**; results presented below from CVA and MetroWest sampling sites enable MWRA staff to monitor control of MWRA treatment processes. Individual CVA and MetroWest communities are responsible for their own compliance monitoring and reporting. They must be contacted directly for their results.

Monthly TTHM and HAA5 levels at all process control sampling locations are similar to those of last year in the CVA communities. The Metropolitan Boston and MetroWest communities were slightly higher than last year. The running annual average for TTHMs at compliance locations, represented in the graphs at the top of the page, remained below current standards.

TOTAL TRIHALOMETHANES



HALOACETIC ACIDS



MWRA Monthly Water Quality Analysis

July 2002

This page provides information on water quality at six locations in the MWRA transmission system. Results reflect a "snapshot" in time and may not represent typical conditions. Elevated levels of a particular parameter may occur from time to time. MWRA staff review these numbers carefully and follow-up unusual results by re-analyzing samples, collecting new samples, or auditing sample sites. More rigorous daily or weekly monitoring of select parameters at these and other locations provides a better overall picture of water quality and is reported for some parameters elsewhere in this document. Monitoring for a number of parameters in this table will be reduced to quarterly, if they either (1) have minimal variability or (2) are always below detection levels.

Component	CVA System →		Metropolitan Boston →				Standards →		
	Quabbin Reservoir at Ware Disinfection Facility (Raw)	Nash Hill Storage Tanks (Treated)	Wachusett Reservoir at Cosgrove Intake (Raw)	ICC, Marlboro (Treated)	Comm Ave., Newton (Treated)	Shaft 9A, Malden (Treated)	MCL Standard	Units	Exceedance
Alkalinity	2.8	3.6	5.2	35.4	34.1	33.8		MG/L	
Aluminum	16	<15	29	96	18	20	50-200 (a)	UG/L	NO
Ammonia-N	<0.005	<0.005	0.013	0.005	0.359	0.353		MG/L	
Antimony	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9		UG/L	
Arsenic	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	50 (b)	UG/L	NO
Barium	6.73	6.50	9.5	9.0	9.4	9.5	2000 (b)	UG/L	NO
Beryllium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4 (b)	UG/L	NO
Bromate	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	10	UG/L	NO
Bromide	11.2	<2.5	13.2	4.4	3.9	3.2		UG/L	
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5 (b)	UG/L	NO
Calcium	2380	2520	4750	4500	4650	4640		UG/L	
Chloride	5.3	7.2	18.7	20.0	21.2	21.2	250 (a)	MG/L	NO
Chlorine, Free	NS	0.31	NS	0.49	0.08	0.38		MG/L	
Chlorine, Total	NS	NS	NS	0.66	1.83	1.75		MG/L	
Chromium	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	100 (b)	UG/L	NO
Coliform, Fecal, MF Method	0	NS	0	NS	0	NS	20 (c)	CFU/100 mL	NO
Coliform, Total, MF Method (e)	0	0	0	0	0	0	100 (c) 0 (d)	CFU/100 mL	NO
Copper **	<0.8	12.1	13.1	8.6	13.8	6.7	1300 (b)	UG/L	NO
Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2 (b)	MG/L	NO
Fluoride	<0.02	<0.02	<0.02	1.05	1.17	1.00	4 (b)	MG/L	NO
Hardness	8.2	8.5	15.5	15.0	14.6	15.2		MG/L	
Iron **	9.6	11.2	20.9	22.8	23.7	22.6	300 (a)	UG/L	NO
Lead	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	15 (b)	UG/L	NO
Magnesium	550	535	890	906	855	876		UG/L	
Manganese	3.0	4.8	4.6	6.2	7.5	6.1	50 (a)	UG/L	NO
Mercury	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2 (b)	UG/L	NO
Nickel	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		UG/L	
Nitrate-N	0.024	<0.005	0.026	0.089	0.047	0.019	10 (b)	MG/L	NO
Nitrite	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		MG/L	
Orthophosphate	<0.003	<0.003	<0.003	0.006	0.006	0.005		MG/L	
pH	6.9	7.2	6.8	9.4	9.0	9.0		S.U.	
Potassium	473	492	855	859	844	836		UG/L	
Selenium	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	50 (b)	UG/L	NO
Silica (SiO2)	966	1000	1230	1660	1630	1640		UG/L	
Silver	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	100 (a)	UG/L	NO
Sodium	4.4	5.4	12.4	28.9	28.3	27.9		MG/L	
Specific Conductance	42	NS	99	162	163	165		UMHO/C	
Standard Plate Count, HPC (48 Hrs @ 35C)	NS	NS	20	23	0	34	500 (d)	CFU/mL	NO
Sulfate (SO4)	5.2	5.2	6.7	6.6	6.7	6.6		MG/L	
Thallium	<1	<1	<1	<1	<1	<1		UG/L	
Total Dissolved Solids	31	38	57	87	101	89		MG/L	
Total Organic Carbon	1.76	1.78	2.19	2.44	2.40	2.57		MG/L	
Total Phosphorus	0.006	0.005	0.007	0.012	0.012	0.011		MG/L	
UV-254	0.020	0.015	0.056	0.043	0.051	0.052		A	
Zinc **	7.7	7.1	14.2	5.9	13.0	4.5	5000 (a)	UG/L	NO

- (a) = Secondary MCL standard (aesthetic related). DEP "Drinking Water Regulations", 310CMR 22.00.
- (b) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00.
- (c) = Primary MCL standard (health related), applies to source (raw) water only. DEP "Drinking Water Regulations", 310CMR 22.00.
- (d) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00. Applies to samples of treated water downstream of Wachusett and Quabbin Reservoirs.
- (e) - Confirmed results only are reported

MCL = Maximum Contaminant Level
 CFU = Colony Forming Unit
 S.U. = Standard Units
 UG/L = micrograms per liter = parts per billion
 NS = No sample

C.U. = Color Unit
 NTU = Nephelometric Turbidity Unit
 MG/L = milligrams per liter = parts per million
 < = less than method detection limit
 ** = Metal results may be elevated due to local plumbing at the sample tap.

Q = Reduced to Quarterly Monitoring
 HPC = Heterotrophic Plate Count
 umhos = ohms/1000
 Inv Res = Invalid sample result

Most results are based on single grab samples collected on July 8 & 9, 2002 and analyzed by MWRA and contract laboratories.

NOTE: MWRA tests for cadmium and mercury are more sensitive than the EPA-set levels of detection and reporting. For cadmium any level below 1.0 ug/L and for mercury any level below 0.2 ug/L are under the EPA minimum detection limits. MWRA will continue to report any result below these detection limits here in the monthly report but will follow EPA reporting requirements and not report them in the EPA-regulated annual Consumer Confidence Report.

Special Update on Lead and Copper Sampling for 2002

Good News on Lead Levels

Results from the May 2002 lead and copper sampling round show that ninety-two percent of the targeted high-risk homes had lead levels equal to or below the Lead Action Level of 15 parts per billion (ppb), compared to a requirement of at least 90 percent. The 90th percent was 11.7 ppb. If the September sampling round results also meet the Lead Action Level, the system will be in compliance with this important health goal.

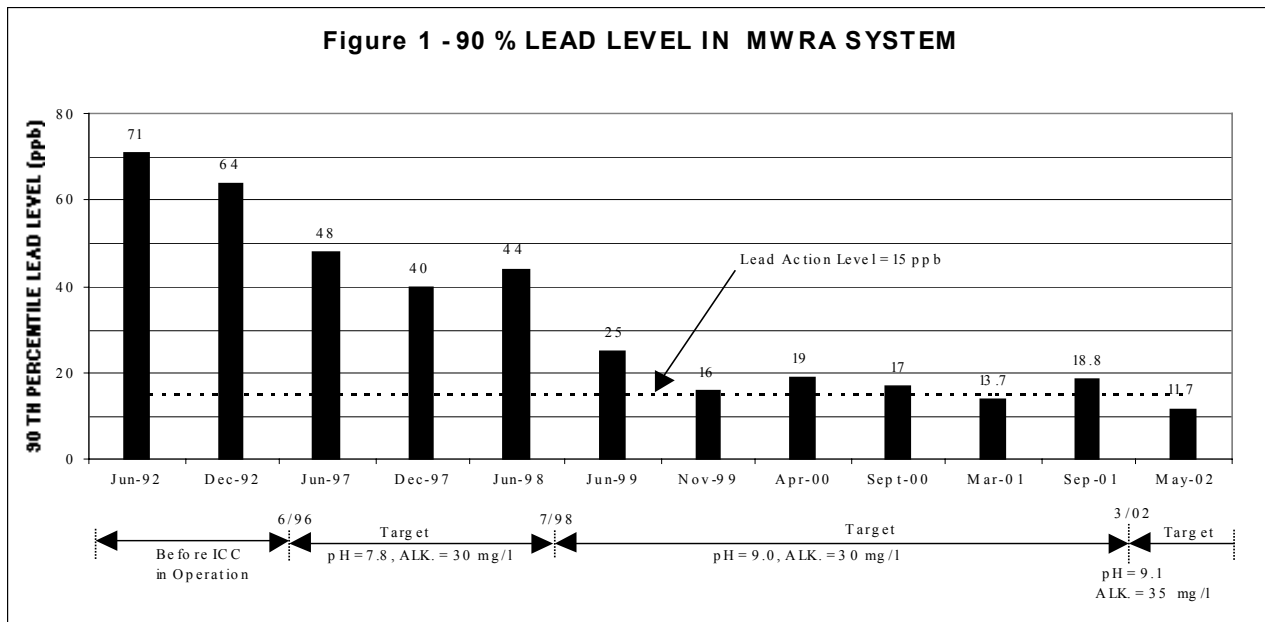
Background

MWRA source waters contain virtually no lead, but lead can leach from lead service pipes connecting homes to water mains and from lead solder and brass fixtures in homes. In 1991, EPA issued the Lead & Copper Rule which set action levels of 15 ppb for lead and 1,300 ppb for copper, and required that 90 percent or more of targeted high risk homes be below that level. MWRA conducts two rounds of sampling for lead and copper at consumer's taps each year. The samples must be first flush samples taken at homes and locations most likely to have high levels of lead after the water has sat stagnant overnight. Over 500 samples are collected for each sampling round, of which over 400 samples are residential samples and about 100 samples are school samples. Samples are collected by each of the 29 fully served communities in the metro Boston area.

In 1993, the Board of Directors approved a fast-track program to improve treatment to reduce lead levels at consumers' taps through construction of the Interim Corrosion Control (ICC) facility in Marlborough. This interim facility will be used until the new Walnut Hill Water Treatment Plant is completed in 2004.

Results

After the last corrosion control adjustment in July 1998, lead levels quickly dropped from 44 ppb to 25 ppb. The 90th percentile lead levels of the next five sampling periods generally fluctuated between 16 and 19 ppb, with only one round being lower than the lead Action Level of 15 ppb. On March 25, 2002, after discussions with DEP, MWRA adjusted the corrosion control treatment process and raised the pH level from 9.0 to 9.1 and the alkalinity level from 30 mg/l to 35 mg/l. While a more definitive analysis will need to wait for at least one more round of sampling, these recent treatment changes appear to have further reduced lead levels to meet the Lead and Copper Rule. MWRA has always been in compliance with the Copper Action Level of 1300 ppb.



Other Water Quality Benefits

In addition to the lead and copper reduction, the corrosion control treatment has provided additional benefits in helping maintain chlorine residual and controlling nitrification within community pipelines. Since the implementation of high pH for corrosion control and modification of chloramine disinfection, chlorine booster stations for remote communities have been shut down, average chloramine residuals have risen substantially, and less than 2% of the over 400 chlorine sample locations have residuals less than 0.10 mg/l. Complaints about red/yellow water from iron corrosion of unlined cast iron pipes have also gone down significantly.

Benefits have extended to the wastewater system as well. Copper levels in the biosolid fertilizer pellets produced at the Fore River pelletizing plant have dropped substantially. The weekly lead concentrations have lower peaks and have not exceeded the EPA standard for unrestricted use of 300 mg/kg since September 1999. The copper concentrations have been significantly below the EPA standard for unrestricted use of 1000 mg/kg since August 1998.

Lead and Copper Rule Public Education

MWRA has helped to develop and support education efforts targeted to the most vulnerable populations (children under 6 and pregnant women). A brochure is available. It covers:

- The many exposures of lead, including the leading causes of lead poisoning: lead paint and lead paint dust.
- The sources of lead in consumer tap water - home service piping, lead solder and some brass fixtures.
- A description of health effects of lead.
- A summary of what MWRA and local water departments are doing to reduce lead levels at the tap.
- A list of eight simple steps to reduce exposure to lead in tap water.
- Other sources of information including many useful web links and phone numbers.

The response to this improved lead education brochure has been positive, and we expect many of our service communities to continue to use it. Other lead education and outreach efforts include an improved web page on lead in tap water based on the lead brochure with links to the lead results for each town in the *Report on Your Drinking Water*. Also included on this improved web page are links to a list of DEP approved labs to test tap water, the DPH Childhood Lead Prevention Program, the NSF, and local water departments. Check out these resources through the available links at our web page, www.mwra.com, and feel free to direct consumer questions on lead to this site. For copies of the lead education brochure, contact your local water department, or contact MWRA at (617) 242-5323 or visit us on-line.