

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

WATER QUALITY UPDATE An Analysis of a July 2004 Sampling Data

MASSACHUSETTS WATER RESOURCES AUTHORITY
100 First Avenue, Charlestown Navy Yard, Boston, MA 02129



MWRA WATER QUALITY UPDATE

July 2004 Highlights

- **MWRA achieved CT disinfection requirements for the month** at the Ware Disinfection Facility (WDF) and the Cosgrove Disinfection Facility (CDF). CT results appear on Page 5. The running annual averages for DBPs are higher this year as compared to last year, but still within standards. See page 7. Two communities had samples which violated the Total Coliform Rule criteria. See Page 6.
- **On July 13th, the Quabbin raw water quality sampling was relocated to the Ware Disinfection Facility** from Winsor Dam.
- **A significant “metallic” taste and odor episode** related to a bloom of algae (*Chryso-sphaerella*) in the Wachusett Reservoir began July 5th. MWRA treated the reservoir to reduce algae problems on July 7th, 12th, 20th, 29th and 30th. Typically this type of algae bloom results in about two weeks of taste and odor problems, however, this bloom has been problematic and persistent. The water remains safe to drink. See www.mwra.com for more information.
- **The most recent lead sampling round by the MWRA met the Lead Action Level.** For more information, see the Special Update on Lead and Copper Sampling for 2004 on page 9.
- **A strain of E. coli bacteria** was discovered in the Town of Weston’s water supply on August 16, 2004. Residents north of Route 20 were issued a boil water alert. All subsequent samples have been clear, and the boil water alert was lifted on August 20, 2004.

Let us know what you think (617) 242-5323

Release Date: August 20, 2004

Water Quality Update

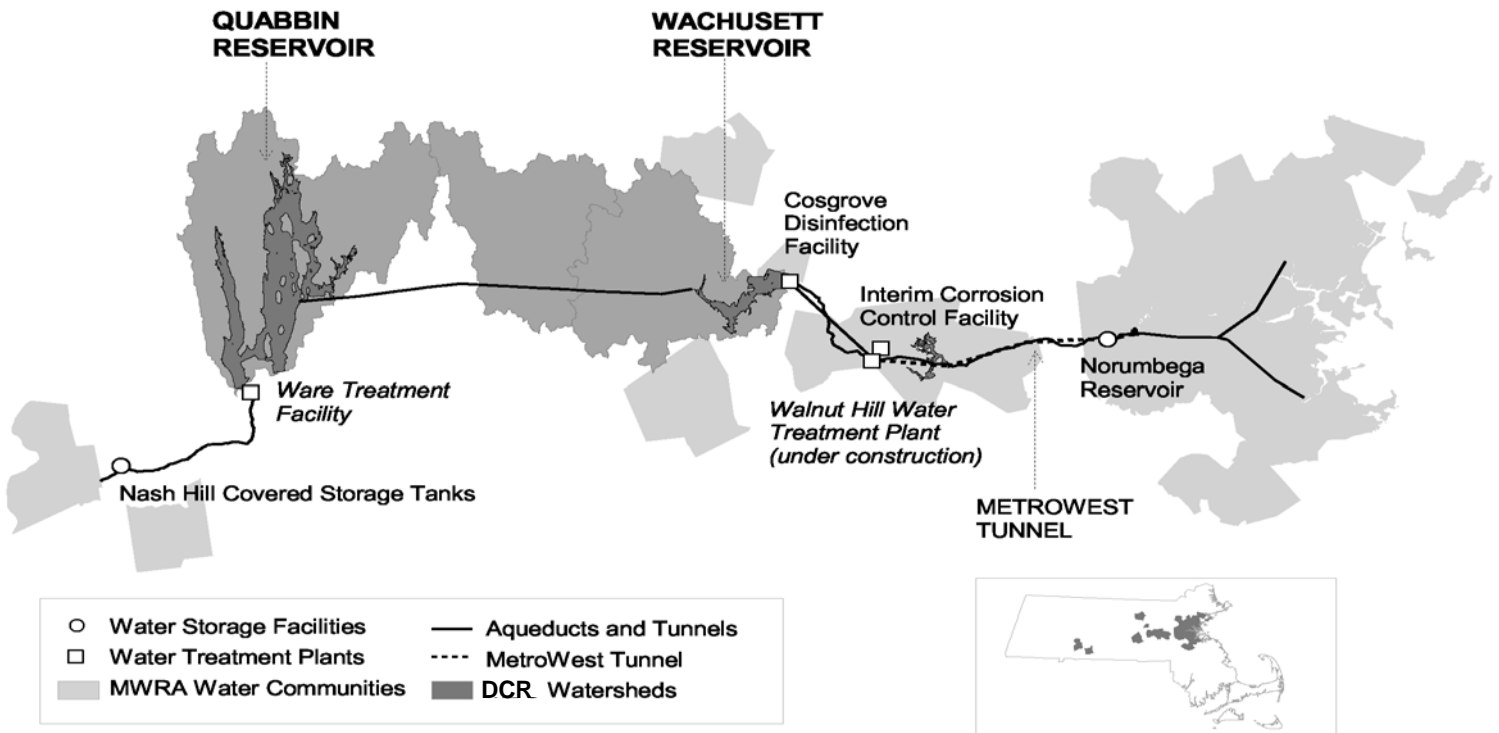
This is a monthly report containing information about the quality of water supplied by MWRA. It provides a more detailed review of water quality than the annual water quality report that is mailed each June to customers in our service area. The report is available at www.mwra.com.

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. 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. 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 Department of Conservation and Recreation (DCR), 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.

The map below indicates the location of reservoirs, treatment facilities, and service communities.



Indicators of Water Quality

Tests are conducted on water sampled at the source reservoirs (source or raw water) and also on water after treatment (treated water). MWRA routinely uses six general indicators of water quality: microbial, corrosiveness, disinfection by-products, turbidity and algae, disinfectant residual, and mineral analysis. Testing frequencies vary by parameter.

The Federal Safe Drinking Water Act (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 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 2004

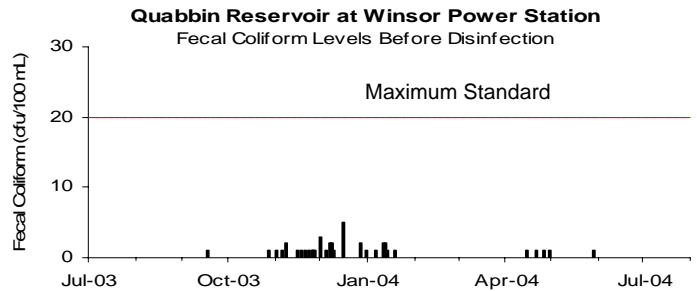
Source Water - Microbial Results

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, 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 more than 20 fecal coliforms per 100ml.

Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the Ware Disinfection Facility (WDF) raw water tap before entering the CVA system as of July 13th. Prior data was sampled at Winsor Dam. MWRA met the six-month running average standard for fecal coliform continuously at this location over the last year.

None of the 30 samples were positive during July.

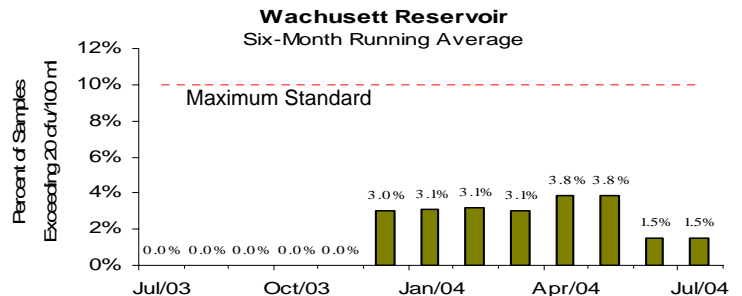
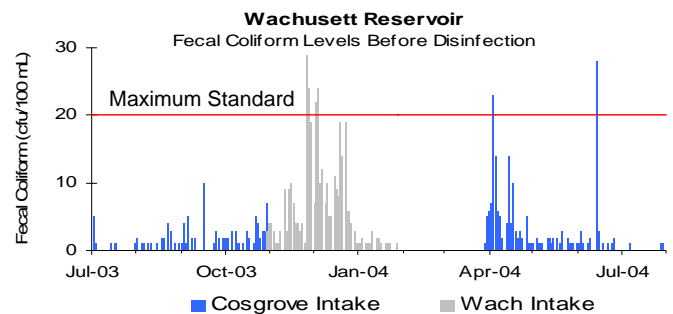


Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled before it enters the MetroWest and Metropolitan Boston systems. Samples were collected at the Wachusett Intake from November 1, 2003 to March 16, 2004; samples before and after this period are taken at the Cosgrove Intake. For the current six-month period, 1.5% of the samples have exceeded a count of 20 cfu/100ml (2 samples have exceeded 20 cfu/100ml).

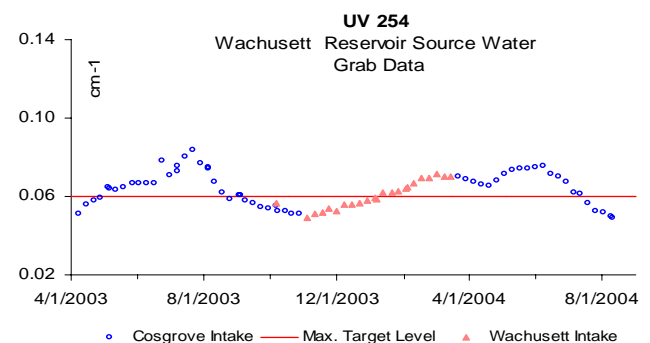
Fecal coliform levels tend to increase during the winter because, when water bodies near Wachusett ice over, waterfowl seek open water. Many roost at Wachusett, which tends to freeze later in the year than smaller ponds nearby.

Three of the 22 samples were positive during July. None of the samples exceeded the 20 cfu/100ml count. All of the colony counts were in the single digits.



UV

UV-254 is a surrogate measure of reactive organic matter and is a good predictor for DBP levels. It remained above the Quabbin transfer trigger level of 0.06 A/cm from early January of 2004 until July 12th. Quabbin transfer was initiated on May 19 and while levels are still seasonally high, they have dropped to 0.49 A/cm.

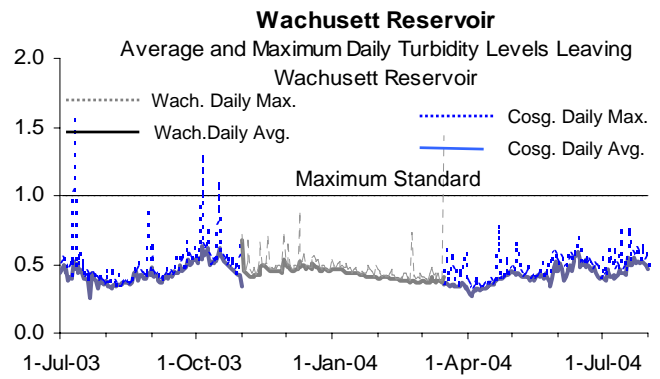
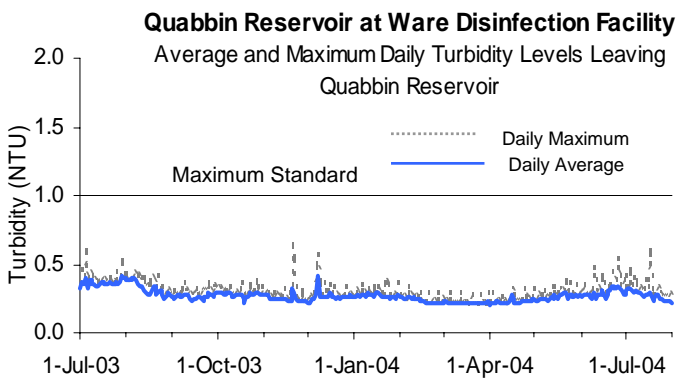


Source Water – Turbidity and Algae Results July 2004

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.

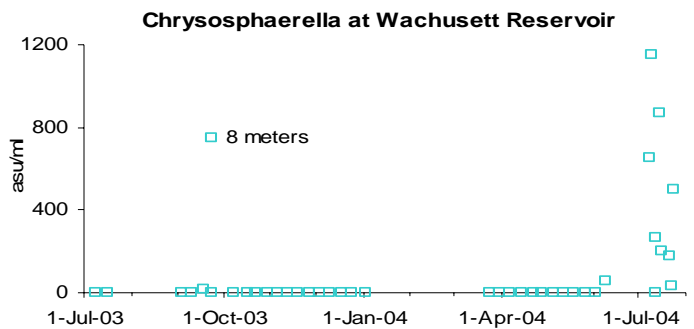
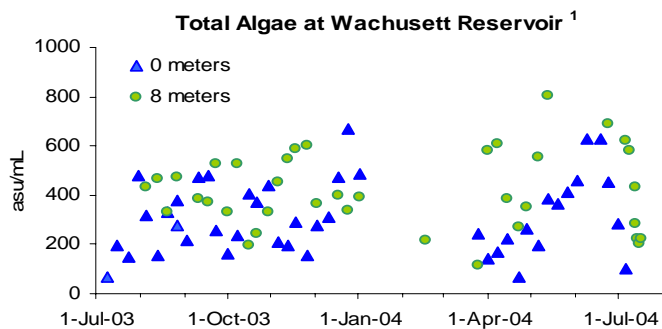
Samples for turbidity from Quabbin Reservoir are collected at the Ware Disinfection Facility before chlorination. Samples from Wachusett Reservoir were taken at Wachusett Intake before chlorination from November 1, 2003 to March 16, 2004; samples before and after this period were/ are taken at the Cosgrove Intake. 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 Quabbin and Wachusett were within DEP standards for the month.



Source Water – Algae Results

Algal levels in reservoirs are monitored by DCR 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 may treat the reservoirs with copper sulfate, an algacide.

Of 628 complaints received during July from local water departments, 624 concerned taste and odor due to algae. All were varying degrees of a metallic taste/odor attributed to a *Chryso-sphaerella* bloom in the Wachusett Reservoir. The complaints were reported system wide. The Wachusett Reservoir was treated with copper sulfate on July 7th, 12th, 20th, 29th and 30th to control the algae blooms.



1. Algae samples collected between 0 to 3 meters represent the same area of water column and are generally equivalent. These samples will be shown in the graphs as 0 meters.

Treated Water – Disinfection and pH Results

July 2004

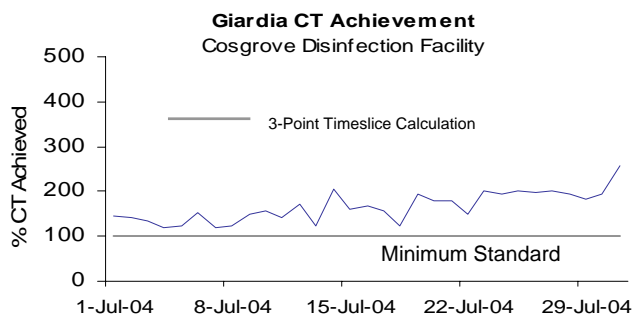
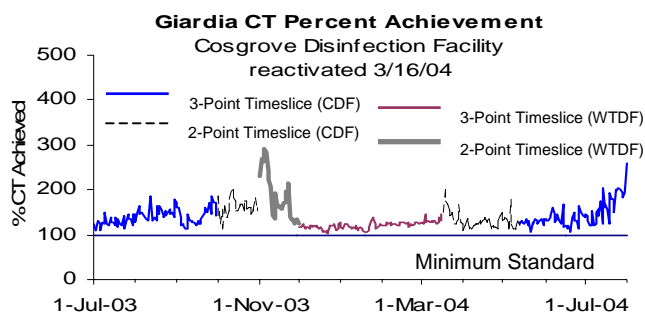
Treated Water - Primary Disinfection

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. The two-point timeslice, three-point timeslice, or integrated methods are alternative calculation methods which can also be used to comply with CT regulations.

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.

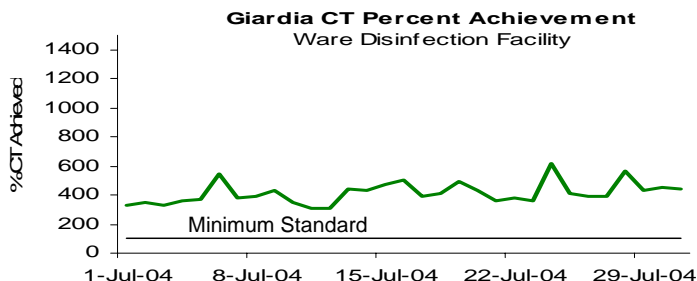
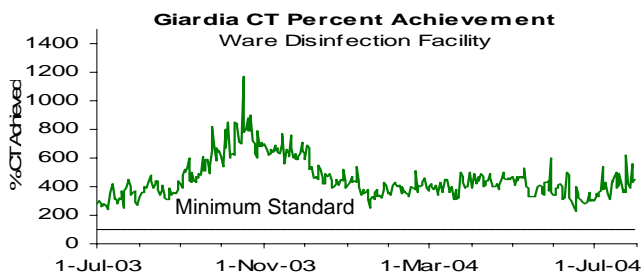
Wachusett Reservoir - MetroBoston Supply:

Chlorine dose at the Cosgrove Disinfection Facility (CDF) varied between 1.7 and 2.1 mg/L. CT was met each day in July, as well as every day for the last year.



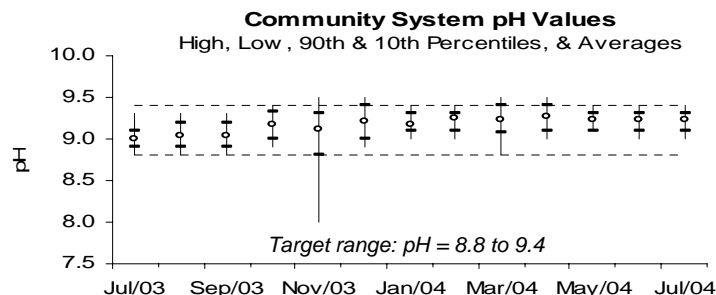
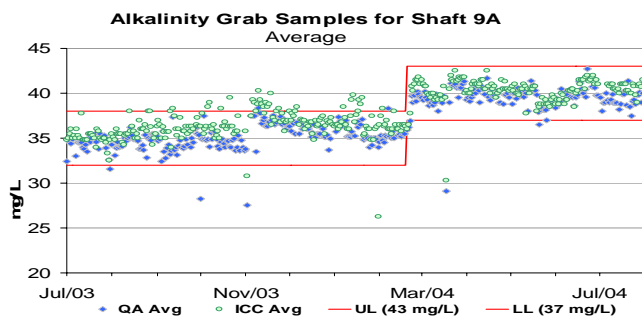
Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

Chlorine dose remained at 1.3 mg/L. CT was met each day in July, as well as every day for the last year.



Treated Water – pH and Alkalinity 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 is 9.1 and alkalinity is 40 mg/l. MWRA's goal is to have 80% of distribution system pH samples fall between 8.8 and 9.4. MWRA staff collects and analyzes samples for pH from 28 community locations on a biweekly schedule to measure pH levels. In July, 100% of the samples were within the target range.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program July 2004

Background

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 36 cities and towns (including Westboro State Hospital) use the MWRA's 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 9 MWRA customer communities have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

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

The Safe Drinking Water Act (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

Forty of the 1,838 community samples (2.18%) system-wide tested positive for confirmed total coliform during the month of July. Marlborough and Westborough State Hospital failed the TCR for July. Two of the 652 MWRA samples (0.31%) tested positive for confirmed total coliform. No samples tested positive for *E. coli*.

All thirty-six communities that submitted chlorine residual data maintained an average disinfectant residual of at least 0.2 mg/L. 3.6% of the community samples had 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 2004 Minimum Chlorine Residual (mg/L)	July 2003 Minimum Chlorine Residual (mg/L)	July 2004 Average Chlorine Residual (mg/L)	July 2003 Average Chlorine Residual (mg/L)
ARLINGTON	70	0 (0%)			0.04	0.63	0.63	0.66
BELMONT	32	0 (0%)			0.13	1.03	1.03	0.88
BOSTON	238	0 (0%)			0.31	1.18	1.18	1.20
BROOKLINE	68	0 (0%)			0.91	1.36	1.36	1.33
CHELSEA	32	0 (0%)			0.44	1.08	1.08	1.00
DEER ISLAND	16	0 (0%)			0.06	0.91	0.91	1.18
EVERETT	40	0 (0%)			0.54	1.00	1.00	0.88
FRAMINGHAM (c)	72	0 (0%)			0.11	1.04	1.04	1.30
LEXINGTON	36	0 (0%)			0.17	1.15	1.15	1.20
LYNNFIELD	6	0 (0%)			0.67	0.88	0.88	0.94
MALDEN	60	0 (0%)			0.74	0.88	0.88	0.97
MARBLEHEAD	24	0 (0%)			0.21	1.02	1.02	1.15
MARLBOROUGH (b)(c)	95	16 (16.84%)		yes	0.04	0.71	0.71	1.18
MEDFORD	68	0 (0%)			0.23	1.06	1.06	0.99
MELROSE	36	0 (0%)			0.03	0.62	0.62	0.55
MILTON	32	0 (0%)			0.28	1.02	1.02	1.05
NAHANT	10	0 (0%)			0.30	0.60	0.60	0.78
NEEDHAM (b)	41	0 (0%)			0.06	0.57	0.57	0.83
NEWTON	88	0 (0%)			0.22	1.13	1.13	1.18
NORTHBOROUGH	16	0 (0%)			0.15	1.24	1.24	1.01
NORWOOD	36	0 (0%)			0.02	0.71	0.71	0.66
QUINCY	92	0 (0%)			0.10	1.04	1.04	1.06
REVERE	65	0 (0%)			1.00	1.29	1.29	0.92
SAUGUS	32	0 (0%)			1.02	1.13	1.13	1.16
SOMERVILLE	100	0 (0%)			0.02	0.91	0.91	0.91
SOUTHBOROUGH (c)	10	0 (0%)			0.12	0.70	0.70	1.17
STONEHAM	35	0 (0%)			1.02	1.56	1.56	1.08
SWAMPSCOTT	18	0 (0%)			0.19	0.82	0.82	1.19
WAKEFIELD (b)	55	0 (0%)			0.17	0.79	0.79	0.90
WALTHAM	68	0 (0%)			0.10	0.93	0.93	1.12
WATERTOWN	50	0 (0%)			0.23	1.02	1.02	0.86
WELLESLEY (b)	36	0 (0%)			0.09	0.47	0.47	0.47
WESTBORO HOSPITAL	42	24 (57.14%)		yes	0.10	0.40	0.40	0.91
WESTON (c)	16	0 (0%)			0.04	0.63	0.63	1.07
WINCHESTER (b)	20	0 (0%)			0.05	0.57	0.57	0.59
WINTHROP	24	0 (0%)			0.17	1.01	1.01	0.95
WOBURN (b)	59	0 (0%)			0.10	0.71	0.71	0.96
Total:	1838	40(2.18%)						
MASS. WATER RESOURCES AUTHORITY (d)	652	2 (0.31%)		no	0.02	0.04	1.11	1.14

(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 a subset of community TCR sites as well as sites along the transmission system, tanks and pumping stations.

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

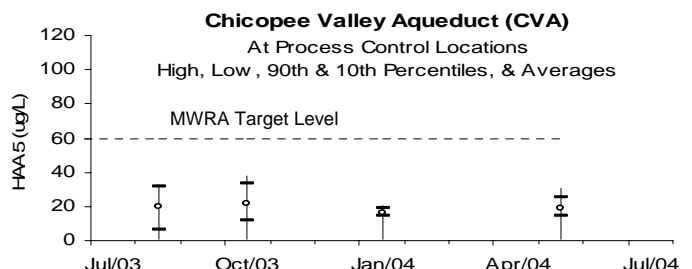
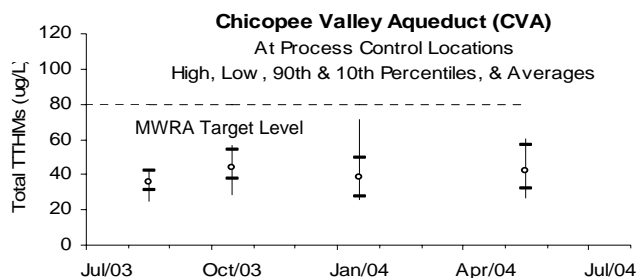
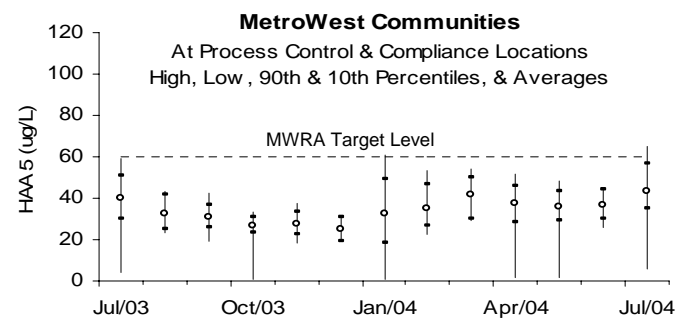
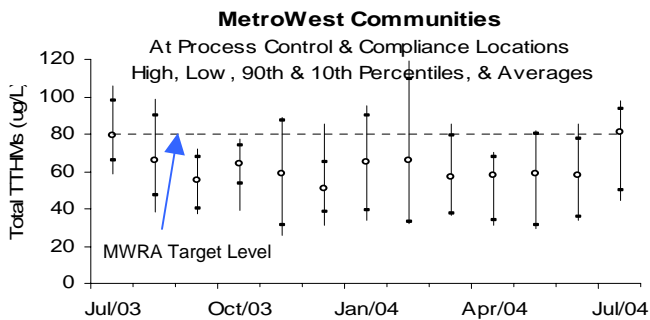
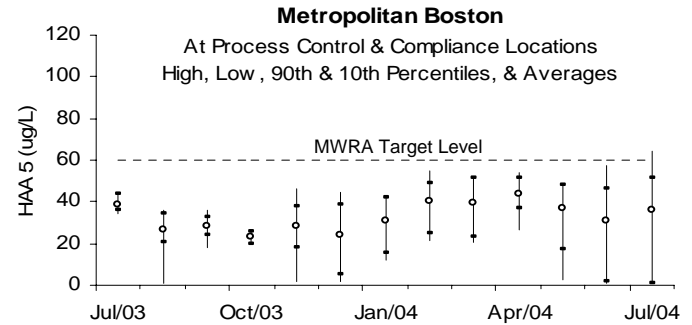
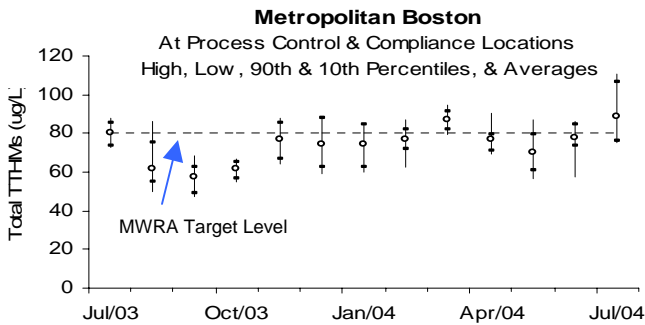
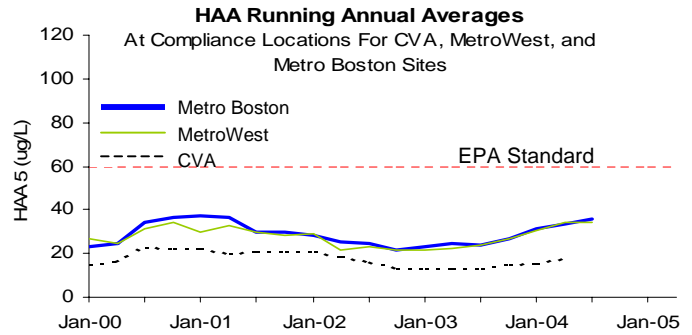
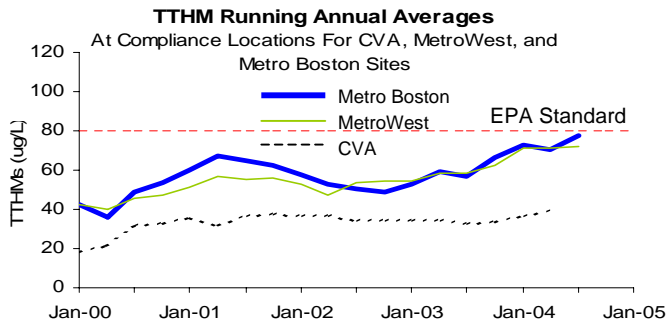
July 2004

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. EPA's running annual average standards are 80 ug/L for TTHMs and 60 ug/L for HAA5. 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.

The running annual average for TTHMs and HAA5s at compliance locations, represented in the graphs at the top of the page, remained below current standards. Average monthly TTHM levels at all process control sampling locations for the MetroWest communities are similar to those of last year, while the Metropolitan Boston communities levels are higher. Average monthly HAA5 levels at all process control sampling locations for the MetroWest and Metropolitan Boston communities are generally similar to those of last year. The CVA system monitoring has been reduced from monthly to quarterly per DEP requirements.

TOTAL TRIHALOMETHANES

HALOACETIC ACIDS



MWRA Monthly Water Quality Analysis

July 2004

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 parameters indicated in bold is quarterly, as they either (1) have minimal variability or (2) are always below detection levels.

CVA System | Metropolitan Boston | Standards

Component	Quabbin Reservoir at Ware Disinfection Facility (Raw)	Ludlow Monitoring Station (Treated)	Wachusett Reservoir at Cosgrove Intake (Raw)	ICC Marlboro (Treated)	Comm Ave., Newton (Treated)	Shaft 9A, Malden (Treated)	Standard	Units	Exceedance
Alkalinity	2.5	3.1	4.8	37.5	39.9	39.5		MG/L	
Aluminum	< 15.0	< 15.0	< 15.0	19.0	21.3	20.9	50-200 (d)	UG/L	NO
Ammonia-N	< 0.005	< 0.005	0.018	< 0.005	0.35	0.348		MG/L	
Antimony	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	6 (a)	UG/L	NO
Arsenic	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	50 (a)	UG/L	NO
Barium	6.8	6.7	9.85	9.8	10.1	9.8	2000 (a)	UG/L	NO
Beryllium	< 0.1	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1	4 (a)	UG/L	NO
Bromate	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	10 (a)	UG/L	NO
Bromide	10.2	5.72	16.6	7.9	8.78	9.0		UG/L	
Cadmium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	5 (a)	UG/L	NO
Calcium	2220	2220	4450	4400	4680	4590		UG/L	
Chloride	7.5	8.7	22.6	22.5	24.3	24.2	250 (d)	MG/L	NO
Chlorine, Free	NS	0.69	NS	0.07	NS	NS		MG/L	
Chlorine, Total	NS	NS	NS	NS	1.56	1.47		MG/L	
Chromium	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	100 (a)	UG/L	NO
Coliform, Fecal, MF Method	0	NS	0	NS	NS	NS	20 (b)	CFU/100 mL	NO
Coliform, Total, MF Method (e)	51	0	15	0	0	0	100 (b) 0 (c)	CFU/100 mL	NO
Copper **	< 0.9	< 0.9	6.1	6.9	4.8	7.5	1300 (a)	UG/L	NO
Cyanide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.2 (a)	MG/L	NO
Fluoride	0.03	0.09	0.05	0.98	0.93	0.93	4 (a)	MG/L	NO
Hardness	7.7	7.8	14.8	14.7	15.4	15.2		MG/L	
Iron **	8.7	9.4	23.5	24.5	29.1	29.1	300 (d)	UG/L	NO
Lead	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	15 (a)	UG/L	NO
Magnesium	546	542	894	904	901	910		UG/L	
Manganese	1.6	2.1	4.4	3.9	4.4	3.8	50 (d)	UG/L	NO
Mercury	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	2 (a)	UG/L	NO
Nickel	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		UG/L	
Nitrate-N	< 0.005	< 0.005	0.088	0.089	0.105	0.098	10 (a)	MG/L	NO
Nitrite	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1 (a)	MG/L	NO
Orthophosphate	0.003	0.003	0.003	0.008	0.009	0.009		MG/L	
pH	6.8	6.9	6.8	9.2	9.0	9.2		S.U.	
Potassium	488	525	909	961	950	938		UG/L	
Selenium	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	50 (a)	UG/L	NO
Silica (SiO2)	1590	1620	2250	2900	3020	3020		UG/L	
Silver	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	100 (d)	UG/L	NO
Sodium	4.8	5.8	12.6	29.8	31.2	30.9		MG/L	
Specific Conductance	48	52	106	173	182	182		UMHO/cm	
Standard Plate Count, HPC (48 Hrs @ 35C)	NS	NS	1900*	8	5	0	500 (c)	CFU/mL	NO
Sulfate (SO4)	5.2	5.1	6.6	6.5	6.6	6.6		MG/L	
Thallium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2 (a)	UG/L	NO
Total Dissolved Solids	45	37	74	97	87	120		MG/L	
Total Organic Carbon	1.7	1.74	2.2	2.5	2.1	2.2		MG/L	
Total Phosphorus	< 0.005	< 0.005	0.007	0.012	0.012	0.012		MG/L	
UV-254	0.025	0.019	0.061	0.051	0.056	0.056		A	
Zinc **	1.8	2.6	1.9	1.8	2.2	2.1	5000 (d)	UG/L	NO

(a) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00.

(b) = Primary MCL standard (health related), applies to source (raw) water only. DEP "Drinking Water Regulations", 310CMR 22.00.

(c) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00. Applies to samples of treated water downstream of Wachusett and Quabbin Reservoirs.

(d) = Secondary MCL standard (aesthetic related). DEP "Drinking Water Regulations", 310CMR 22.00.

(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

NTU = Nephelometric Turbidity Unit

MG/L = milligrams per liter = parts per million

< = less than method detection limit

HPC = Heterotrophic Plate Count

Inv Res = Invalid sample result

** = Metal results may be elevated due to local plumbing at the sample tap.

Most results are based on single grab samples collected on July 1st and 12th, 2004 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.

*HPC standards pertain to the distribution system. This site represents the raw water, before primary treatment. Normal levels in 2004 are between 15 and 49 CFU/mL.

Special Update on Lead and Copper Sampling for 2004

Good News on Lead Levels

The most recent sampling round met the Lead Action Level. Results from lead and copper samples collected between March and June 2004 show that just over ninety percent of the targeted high-risk homes had lead levels equal to or below the Lead Action Level (AL) of 15 parts per billion (ppb), meeting the requirement of at least 90 percent. The 90th percentile value was 14.6 ppb. If the September sampling round results, scheduled for the week of the 22nd, also meet the Lead Action Level, the system will be back in compliance with this important goal.

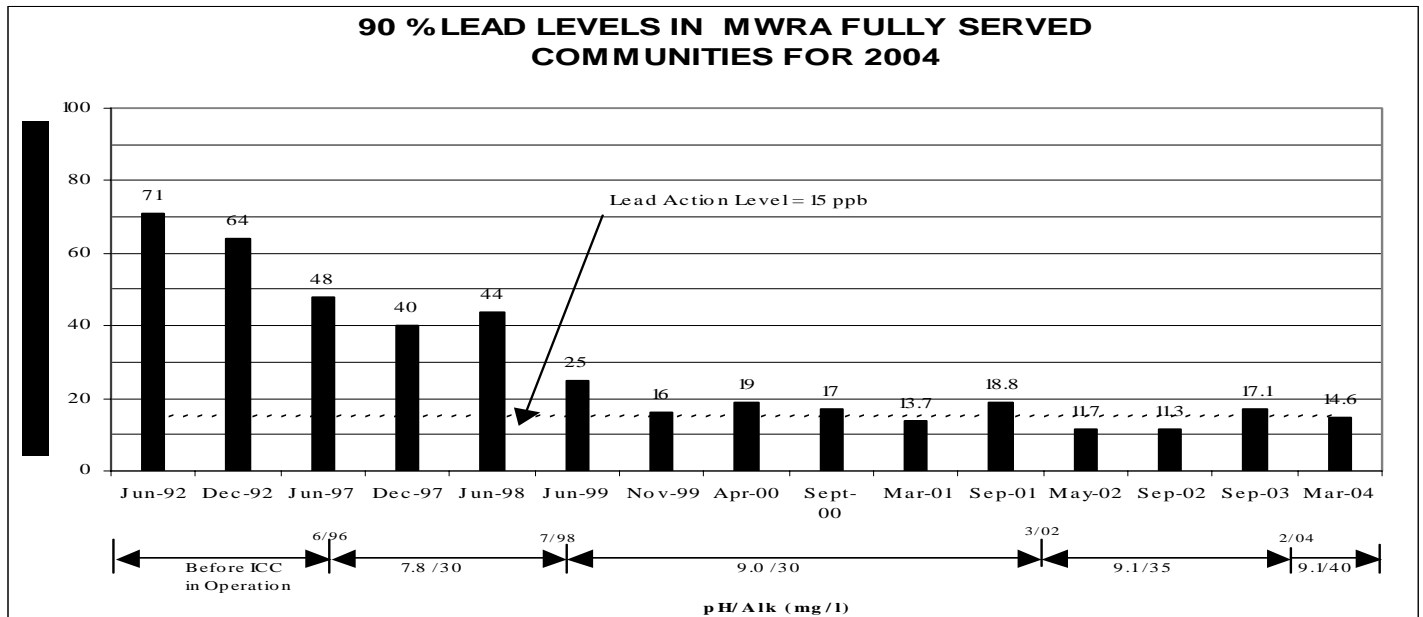
Background

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 usually 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.

In 1993, the MWRA 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 early 2005. A three phase ramp-up of the facility began in June 1996 and was completed in July 1998. Lead levels dropped significantly after the change in treatment, but still did not consistently meet the standard. Therefore, in 2002 and 2003, MWRA adjusted the corrosion control process by fine-tuning the pH and alkalinity levels. Four of the last six rounds of lead sampling have been below the 15 ppb Action Level, and MWRA continues to work so that the MWRA service area will consistently be below the 15-ppb Action Level. Further optimization may be possible and will be evaluated when the new ozone plant goes on-line in early 2005.

Current Results

The March-June 2004 data showed that 90 percent of the targeted high-risk homes had lead levels below the Action Level, meeting the target of 90 percent. The 90th percentile of lead results was 14.6 ppb, compared to the 15-ppb standard. Figure 1 shows the 80% reduction in lead levels since 1992.



The 90th percentile for copper was 164 ppb, compared with the Action Level of 1,300 ppb. MWRA has always been in compliance with the Copper Action Level.

Lead and Copper Rule Public Education

MWRA has continued to support education efforts throughout the MWRA system area that target 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 including the most important step - flushing your tap to get any potential lead out.
- Other sources of information including many useful web links and phone numbers.

The response to this 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 Annual Water Quality Report. 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.

More Lead in Tap Water Information

Other important information that MWRA staff provides to customers includes the following:

- Lead in Brass Faucets – The federal standard allows “lead-free” faucets to have up to 8% lead. To ensure that the faucet you buy is completely without lead, look for California Prop 65 – see the lead page on www.mwra.com.
- Emphasize flushing of your tap water – Flushing tap water is a simple and inexpensive way to reduce potential lead exposure. To flush, let the water run from the tap until it is noticeably colder (about 30 seconds) before using it for drinking or cooking any time the water has gone unused for more than 6 hours. The longer the water sits in your pipes or faucets, the more likely lead can enter the water. Flushing usually uses less than one or two gallons per month and costs less than 50 cents per month.
- Lead Services – Even though lead services may not affect lead sample results, lead service lines can also contribute to possible lead exposure. The service line is the pipe that connects your home or apartment to the water main. To determine if your service line is made of lead and if your community has a lead replacement program, contact your local water department. All communities with any lead services have some program to replace them.