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WATER QUALITY UPDATE An Analysis of November 2007 Sampling Data

MASSACHUSETTS WATER RESOURCES AUTHORITY
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MWRA WATER QUALITY UPDATE

November 2007 Highlights

- **MWRA achieved CT disinfection requirements for the month** at the Ware Disinfection Facility and the Carroll Water Treatment Plant. CT results appear on Page 5. No community violated the Total Coliform Rule criteria. See Page 7.
- **Carroll Water Treatment Plant is undergoing winter maintenance.** On November 7, Train A was shut down, isolated, dechlorinated and drained to allow maintenance and other work to be completed. Train A will be disinfected using American Water Works Association standards before being placed back into service.
- **Lead testing results showed the MWRA system to be below the lead Action Level for the eighth consecutive sampling round.** See Page 10.
- **Bird harassment and observation at Quabbin Reservoir was fully implemented on October 29th.** DCR staff continued activities that included observation and harassment. Boat-based harassment performed from 3:30PM until one hour after dark has been effective in keeping waterfowl away from the area around the CVA intake.
- **Save money and the environment, contact us for an e-mail version of this report.**
- **Don't forget that there is more water quality information and an archive of monthly Water Quality Updates at www.mwra.com.**

We are continually updating the report. Let us know what you think (617) 242-5323

Call (617) 242-5323 or email Joshua.Das@mwra.state.ma.us

Release Date: December 20, 2007

Water Quality Update

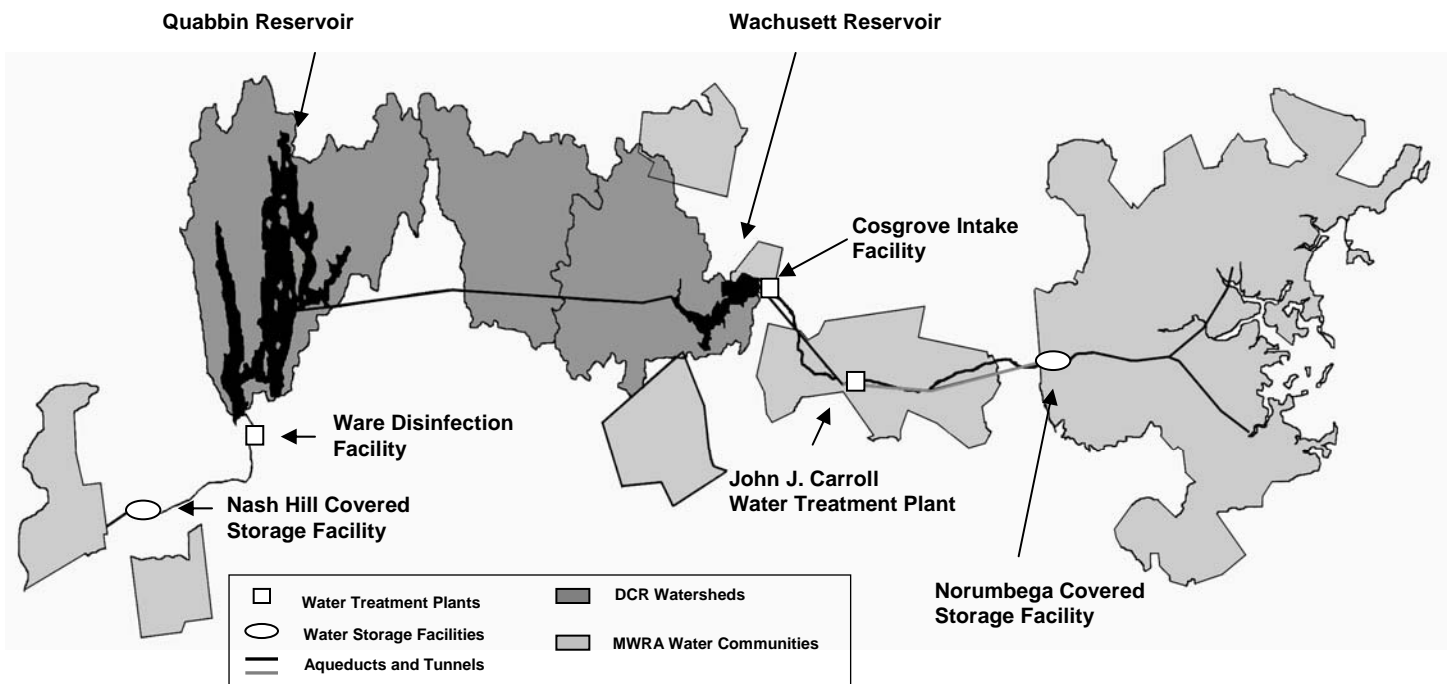
This is a monthly report containing information about the quality of water supplied by MWRA. It provides a more detailed review of water quality than the annual water quality report that is mailed each June to customers in our service area. The report is available at www.mwra.com.

The Water System

The MWRA supplies wholesale water to local water departments in 50 communities, 44 in greater Boston and MetroWest, three in Western Massachusetts, and as a back-up supply for three others. 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

November 2007

Source Water - Microbial Results

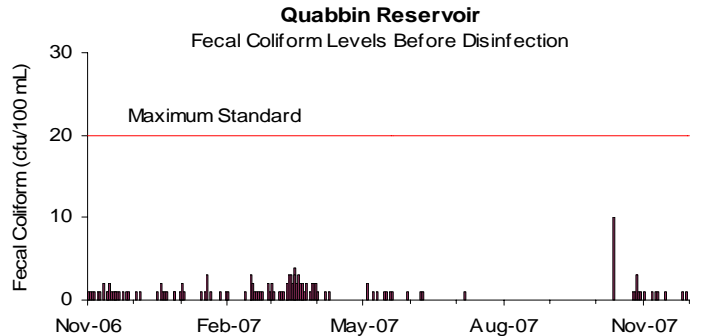
Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. Fecal coliform, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal tract 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 a 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. MWRA met the six-month running average standard for fecal coliform continuously at this location during the last year.

Seven of the 30 samples were positive during November. None of the samples exceeded a count of 20 cfu/100ml.

For the current six-month period, 0.0% of the samples have exceeded a count of 20 cfu/100ml.



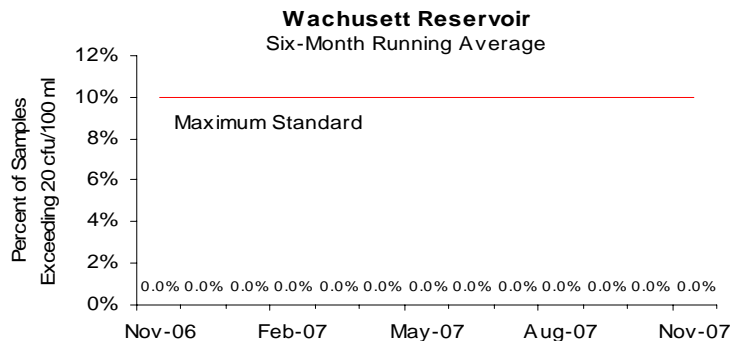
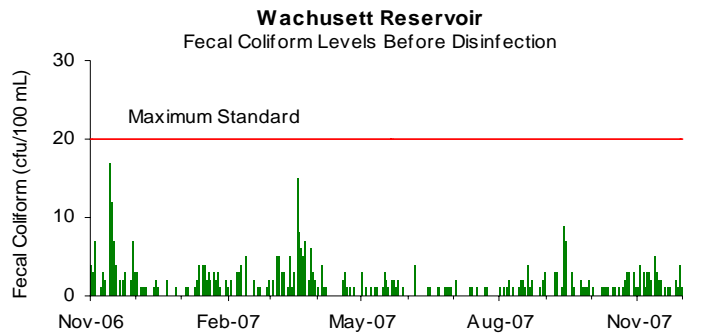
Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled before it enters the MetroWest/Metropolitan Boston systems at the Carroll Water Treatment Plant raw water tap in Marlborough.

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. DCR has an active bird harassment program to move the birds away from the intake area.

Nineteen of the 22 samples were positive during November. None of the samples exceeded a count of 20 cfu/100ml.

For the current six-month period, 0.0% of the samples have exceeded a count of 20 cfu/100ml.

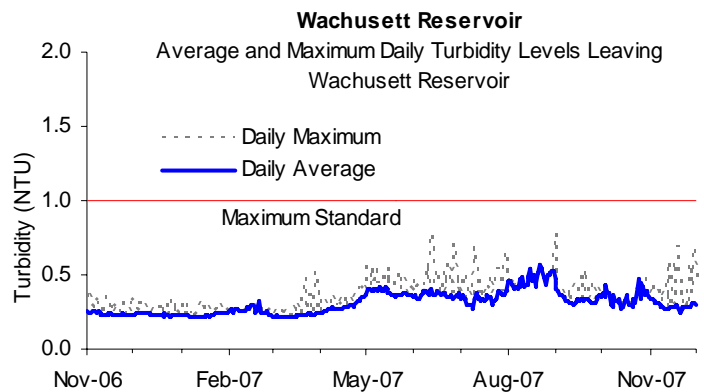
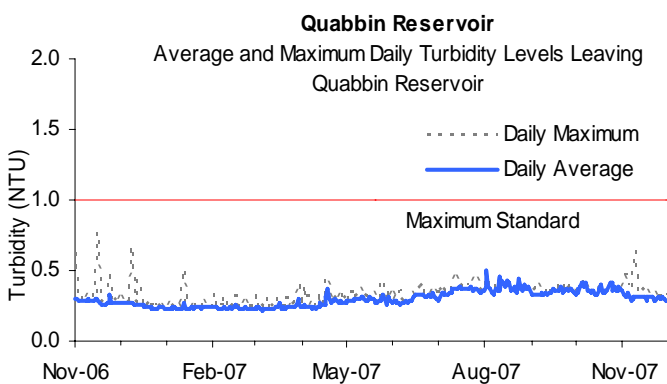


Source Water – Turbidity and Algae Results November 2007

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.

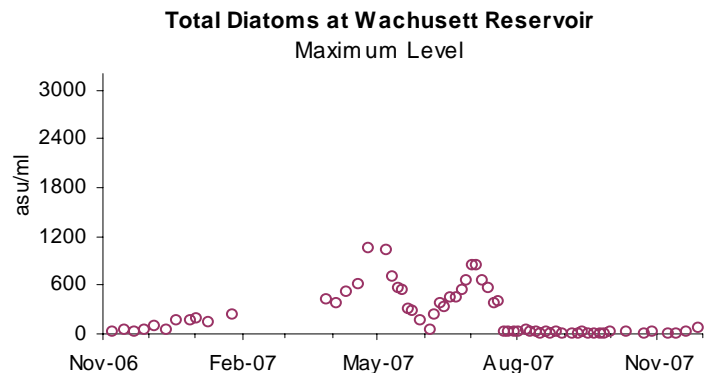
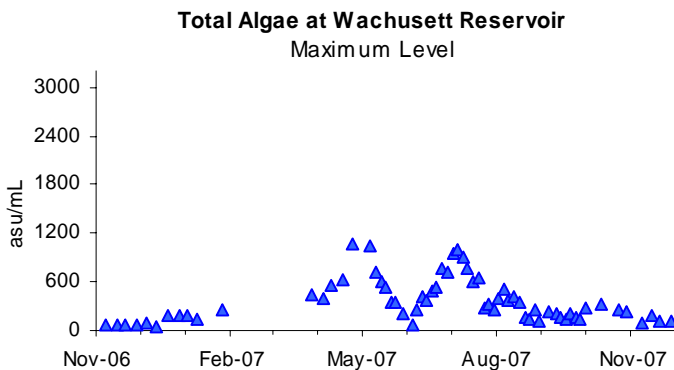
Turbidity of Quabbin Reservoir water is monitored continuously using on-line analyzers at the Ware Disinfection Facility before chlorination. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant inlet (raw water line) before treatment. The Massachusetts Department 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 Levels

Algal levels in Wachusett Reservoir are monitored by DCR and MWRA. These levels, along with taste and odor complaints, are used to make decisions on source water treatment for algae control. Taste and odor complaints at the tap may be 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 reservoir with copper sulfate, an algaecide.

Of the 5 water quality complaints received during November from local water departments, one concerned taste and odor that may be due to algae.



Treated Water – Disinfection Results

November 2007

Treated Water - Primary Disinfection

With the activation of the Carroll Water Treatment Plant, MWRA now reports on both regulatory required 99.9% inactivation for *Giardia*, and our voluntary operating goal of 99% inactivation for *Cryptosporidium*. The concentration (C) of the disinfectant over time (T) yields a measure of the effectiveness of disinfection. CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. The required CT for ozonated water varies with water temperature. MWRA calculates hourly CT inactivation rates and reports daily CT inactivation rates at maximum flow, as specified by EPA regulations.

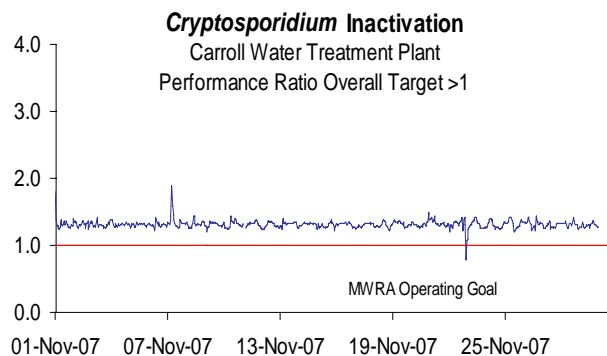
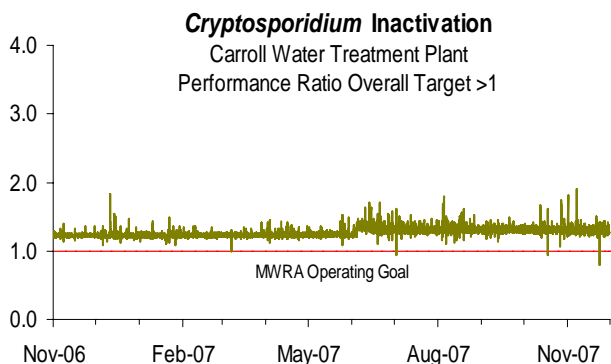
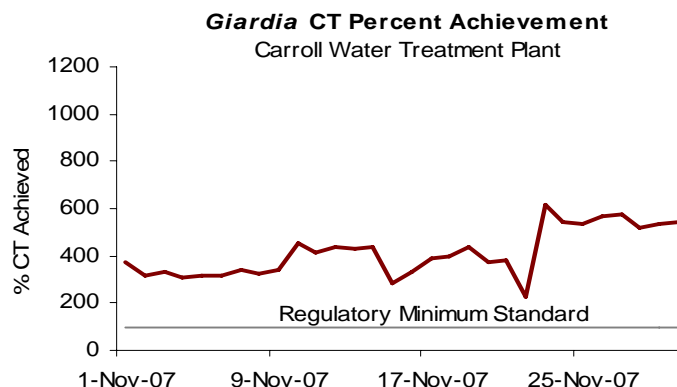
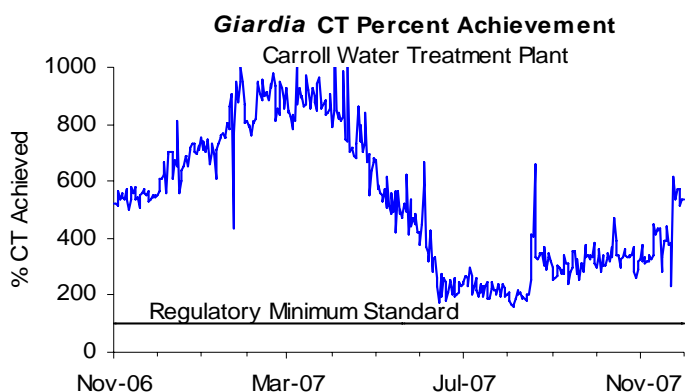
Wachusett Reservoir – MetroWest/MetroBoston Supply:

Cryptosporidium inactivation is reported as Performance Ratio (PR) to avoid confusion with the regulatory requirements. A PR of 1 demonstrates inactivation of 99% of *Cryptosporidium* based on site-specific data. CT calculation for *Giardia* is conservative; subsequently, more inactivation occurs than is being reported. Compliance with the *Giardia* standard is expressed as percent of required CT achieved; 100% is the minimum allowed.

On November 7, Train A was shut down, isolated, dechlorinated and drained to allow maintenance and other work to be completed. Train A is expected to be offline for approximately 12 weeks.

During half plant shutdown, temperature monitoring was moved from the CWTP inlet to Cosgrove Intake from November 7 through the 29th. When the temperature for calculating PR was switched from CWTP to Cosgrove, the PR dropped below 1 for about 1 hour on November 23 at about 3 PM.

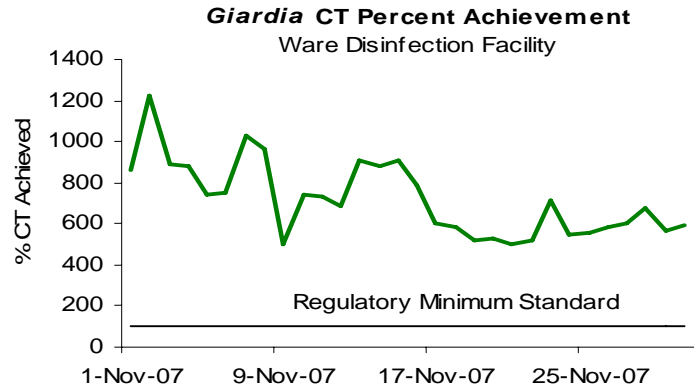
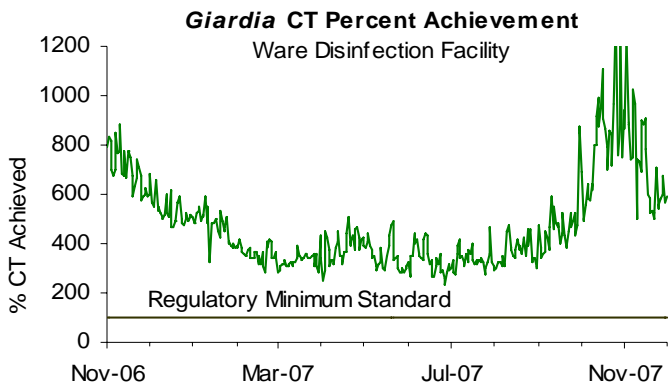
CT was met each day in November, as well as every day for the last year. Ozone dose at Carroll Water Treatment Plant (CWTP) varied between 1.5 to 2.3 mg/L for November.



Treated Water – Disinfection, pH and Alkalinity Results November 2007

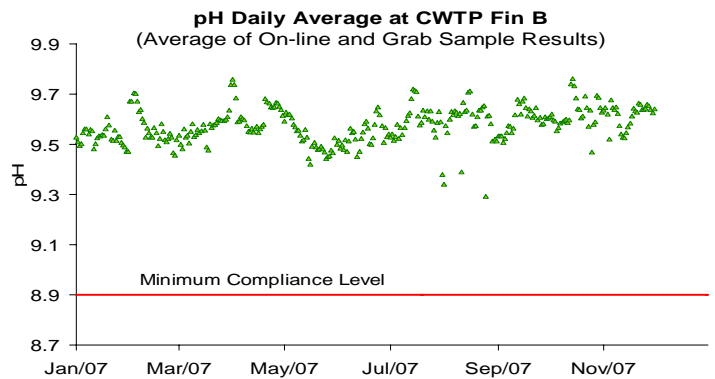
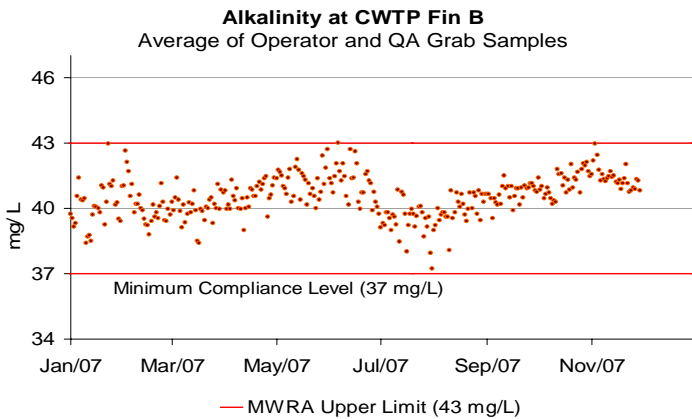
Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

Chlorine dose remained at 1.6 mg/L. CT was met each day in November, as well as every day for the last year.



pH and Alkalinity Compliance:

MWRA adjusts the alkalinity and pH of Wachusett water to reduce its corrosivity 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 9.3 and alkalinity is 40 mg/l. Per DEP requirements, daily samples from Carroll Water Treatment Plant (CWTP) Fin B site have a minimum compliance level of 8.9 for pH and 37 mg/L for alkalinity. In addition, quarterly samples from 27 distribution system taps have a minimum compliance level of 8.8 for pH and 37 mg/L for alkalinity. For no more than nine days in a six-month period may results be below these levels. Quality Assurance and operator staff test pH and alkalinity daily at CWTP Fin B. Distribution system samples are collected during March, June, September, and December. In November and over the past six-months, no sample results were below the target levels.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program November 2007

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 39 systems (including Deer Island and Westboro State Hospital) use MWRA's Laboratory for TCR compliance testing. These systems collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection. The other ten MWRA customer communities (including Lynn's GE plant) have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

There are 141 sampling locations for which MWRA is required to report TCR results. These locations include a subset of the community TCR locations, as well as sites along MWRA's transmission system, water storage tanks and pumping stations.

The Safe Drinking Water Act (SDWA) requires that no more than 5% of all samples June be total coliform positive in a month (or that no more than one 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

One of the 1,824 community samples (0.05%) system-wide tested positive for confirmed total coliform during the month of November. One of the 676 MWRA samples (0.15%) tested positive for confirmed total coliform. All 39 systems that submitted chlorine residual data maintained an average disinfectant residual of at least 0.2 mg/L. Only 2.4% of the system samples had a disinfectant residual lower than 0.2 mg/L.

TCR results by Community

Town	Samples Tested for Coliform (a)	Total Coliform # (%) Positive	<i>E.coli</i> % Positive	Public Notification Required?	November 2007 Minimum Chlorine Residual (mg/L)	November 2006 Minimum Chlorine Residual (mg/L)	November 2007 Average Chlorine Residual (mg/L)	November 2006 Average Chlorine Residual (mg/L)
ARLINGTON	69	0 (0%)	0.0%		0.65	0.18	2.26	1.70
BELMONT	32	0 (0%)	0.0%		0.23	0.16	2.38	1.42
BOSTON	238	0 (0%)	0.0%		1.62	0.45	2.50	2.16
BROOKLINE	68	0 (0%)	0.0%		1.41	1.37	2.39	2.11
CHELSEA	40	0 (0%)	0.0%		1.08	1.60	2.64	1.97
DEER ISLAND	16	0 (0%)	0.0%		1.4	1.65	1.65	2.05
EVERETT	40	0 (0%)	0.0%		0.86	0.50	1.05	0.80
FRAMINGHAM	72	0 (0%)	0.0%		0.31	0.24	2.51	1.65
LEXINGTON	36	0 (0%)	0.0%		1.9	1.16	2.66	2.15
LYNNFIELD	6	0 (0%)	0.0%		0.53	0.13	1.41	0.90
MALDEN	60	0 (0%)	0.0%		1.2	0.00	1.28	1.13
MARBLEHEAD	24	0 (0%)	0.0%		0.24	0.21	2.01	1.72
MARLBOROUGH (b)	54	0 (0%)	0.0%		0.89	0.09	2.25	1.82
MEDFORD	68	0 (0%)	0.0%		0.72	0.22	2.13	1.58
MELROSE	36	0 (0%)	0.0%		0.02	0.03	1.09	0.64
MILTON	32	0 (0%)	0.0%		1.28	0.86	1.80	1.42
NAHANT	10	0 (0%)	0.0%		0.09	0.02	1.59	1.43
NEEDHAM (b)	37	0 (0%)	0.0%		0.04	0.04	0.60	0.42
NEWTON	92	0 (0%)	0.0%		0.75	0.48	2.34	1.64
NORTHBOROUGH	16	0 (0%)	0.0%		0.1	0.08	1.40	1.00
NORWOOD	36	0 (0%)	0.0%		0.02	0.02	2.04	1.47
QUINCY	92	0 (0%)	0.0%		0.32	0.02	2.29	1.64
READING	40	0 (0%)	0.0%		0.64	0.22	2.26	1.70
REVERE	65	0 (0%)	0.0%		0.9	1.08	2.18	1.77
SAUGUS	40	0 (0%)	0.0%		2.07	1.62	2.40	1.80
SOMERVILLE	87	1 (1.15%)	0.0%	No	0.14	0.02	2.19	1.79
SOUTH HADLEY FD1 (c)	16	0 (0%)	0.0%		0.05	0.03	0.33	0.25
SOUTHBOROUGH	11	0 (0%)	0.0%		0.35	0.18	1.71	1.19
STONEHAM	35	0 (0%)	0.0%		1.8	0.66	2.58	1.84
SWAMPSCOTT	18	0 (0%)	0.0%		0.11	0.01	1.11	1.06
WAKEFIELD (b)	55	0 (0%)	0.0%		0.83	0.37	1.71	1.47
WALTHAM	72	0 (0%)	0.0%		0.05	0.02	2.05	1.35
WATERTOWN	50	0 (0%)	0.0%		0.27	0.04	1.96	1.39
WELLESLEY (b)	36	0 (0%)	0.0%		0.09	0.21	0.41	0.61
WESTBORO HOSPITAL	5	0 (0%)	0.0%		1.24	0.22	1.63	1.13
WESTON	16	0 (0%)	0.0%		1.08	0.08	2.51	1.60
WINCHESTER (b)	20	0 (0%)	0.0%		0.39	0.03	1.11	0.79
WINTHROP	24	0 (0%)	0.0%		0.13	0.20	1.66	1.75
WOBURN (b)	60	0 (0%)	0.0%		0.21	0.07	0.79	0.62
Total:	1824	1(0.05%)						
MASS. WATER RESOURCES AUTHORITY (d)	676	1 (0.15%)	0.0%		0.12	0.03	2.20	1.94

(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) Part of the Chicopee Valley Aqueduct System. Free chlorine system.

(d) MWRA sampling program includes a subset of community TCR sites as well as sites along the transmission system, tanks and pumping stations. Some MWRA TCR sites which are entry points to the community had low chlorine residuals due to various reasons.

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

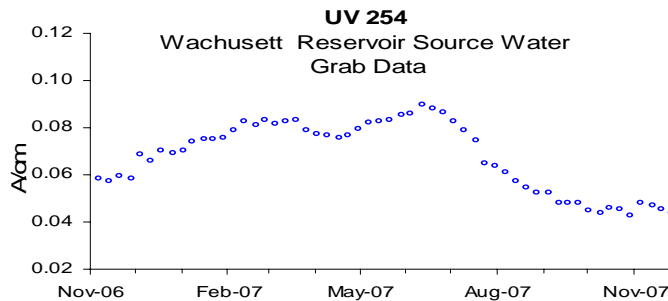
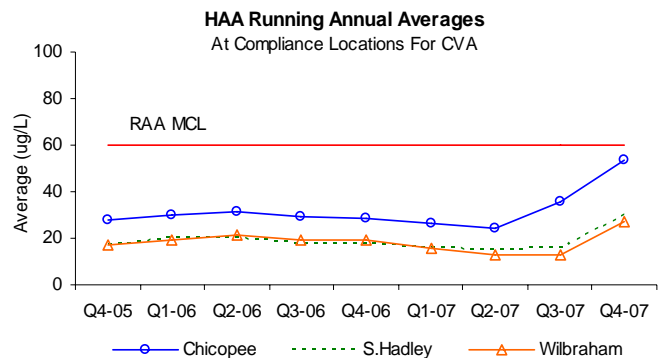
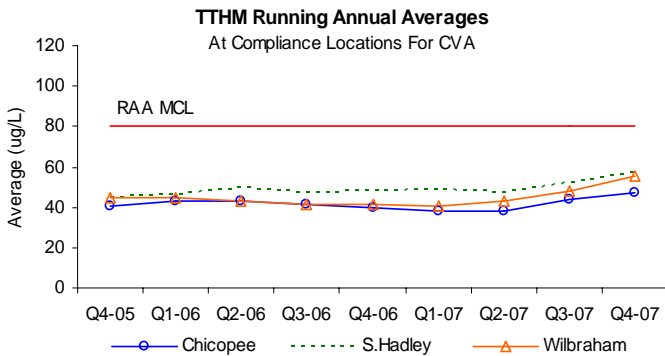
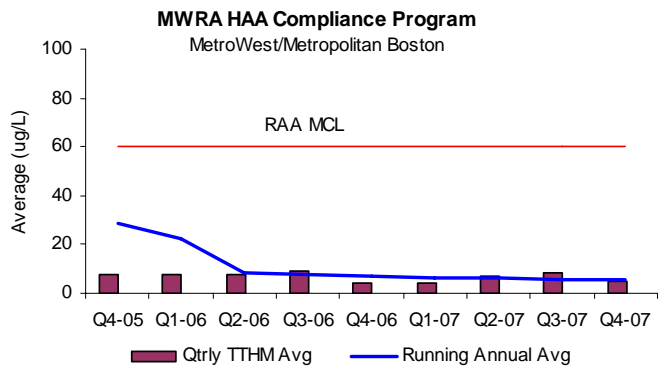
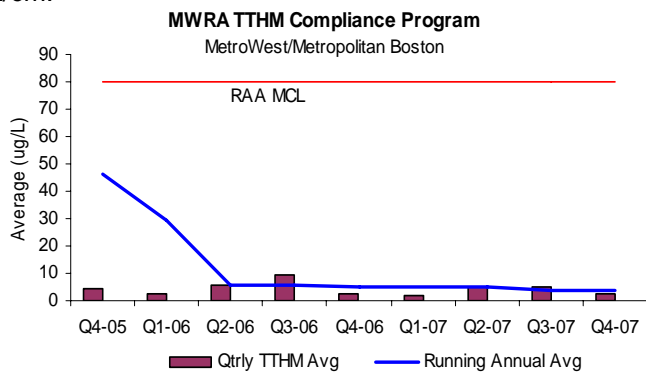
November 2007

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) 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 HAA5 levels. DBPs are of concern due to their potential adverse health effects at high levels. EPA's running annual average (RAA) standards are 80 ug/L for TTHMs and 60 ug/L for HAA5. DEP requires that compliance samples be collected quarterly. Partially served communities are responsible for their own compliance monitoring and reporting and must be contacted directly for their results.

Absorbance, measured as UV-254, is a surrogate measure of reactive organic matter. Regulated DBP levels have dropped to very low levels with Carroll Water Treatment Plant (CWTP) coming on-line. However, UV-254 levels remain useful for estimating ozone dosage and serving as a trigger for Quabbin transfer consideration.

Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA Maximum Contaminant Level (MCL) standard for bromate is 10 ug/L. The current RAA for Bromate = 0.0 ug/L.

The RAA for TTHMs and HAA5s at compliance locations (represented as the line in the top two graphs below) remained below current standards. HAA5 and TTHM levels at all sampling locations for MetroWest/Metropolitan Boston communities have declined dramatically since August 2005 following activation of the Carroll Water Treatment Plant which uses ozone, rather than chlorine for primary disinfection. The RAA for TTHMs = 3.6 ug/L; HAA5s = 5.9 ug/L. CVA's DBP levels continue to be below the standards. CVA's chlorine dose was increased this summer, resulting in THM and HAA levels above typical values. The dose has been lowered and averages will come down next quarter. UV-254 levels are currently around 0.04 A/cm.



MWRA Monthly Water Quality Analysis

November 2007

This page provides information on water quality at five locations in the MWRA transmission system. Results reflect a "snapshot" in time and may not represent typical conditions. Monitoring for parameters indicated in bold is quarterly as they either have minimal variability or are always below detection limits. The "Wachusett System" locations represent: raw water from the Wachusett Reservoir (CWTP inlet), finished water leaving the treatment plant (CWTP Finished water tap), and a location at an endpoint in the main transmission system (Shaft 9A, Malden).

Component	CVA System		Wachusett System			Standards	Units	Exceedance
	Quabbin Res. at Ware Disinfection Facility (Raw)	Ludlow Monitoring Station (Treated)	Carroll Water TP Inlet (Raw) ¹	Carroll Water TP Fin. Water Tap (Treated) ¹	Shaft 9A, Malden (Treated)			
Alkalinity	2.7	3.4	5.6	42.4	41.2		MG/L	
Aluminum	< 15.0	34.1	28.8	< 15.0	32.1	50-200 (e)	UG/L	NO
Ammonia-N	0.01	< 0.01	0.01	0.75	0.67		MG/L	
Antimony	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6 (a)	UG/L	NO
Arsenic	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	10 (a)	UG/L	NO
Barium	7.52	7.7	9.0	9.0	8.9	2000 (a)	UG/L	NO
Beryllium	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	4 (a)	UG/L	NO
Bromate	NS	NS	< 5.0	< 5.0	< 5.0	10 (a)	UG/L	NO
Bromide	8.94	< 5.0	13.9	15.2	14.8		UG/L	
Cadmium ⁽¹⁾	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5 (a)	UG/L	NO
Calcium	2140	2210	3850	4220	3970		UG/L	
Chloride	7.9	9.5	22.0	22.2	22.2	250 (e)	MG/L	NO
Chlorine, Free	NA	0.78	NA	0.02	0.10	4 (c)(d)	MG/L	NO
Chlorine, Total	NA	0.78	NA	3.0	2.8	4 (c)(d)	MG/L	NO
Chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	100 (a)	UG/L	NO
Coliform, Fecal, MF Method	0	NA	1	NA	NA	20 (b)	CFU/100 mL	NO
Coliform, Total, MF Method ^{(h)(3)}	0	0	900 (3)	0	0	100 (b) 0 (c)	CFU/100 mL	NO
Copper **	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	1300 (f) 1000 (g)	UG/L	NO
Cyanide	< 0.01	< 0.01	< 0.01	< 0.01	NS	0.2 (a)	MG/L	NO
Fluoride	< 0.02	< 0.02	0.01	0.98	0.93	4 (a)	MG/L	NO
Hardness ⁽²⁾	7.5	7.6	12.8	12.6	13.1		MG/L	
Iron **	10.3	8.4	28.3	24.7	22.5	300 (e)	UG/L	NO
Lead	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	15 (f)	UG/L	NO
Magnesium	517	514	784	874	781		UG/L	
Manganese	4.2	2.4	15.2	10.4	8.1	50 (e)	UG/L	NO
Mercury ⁽¹⁾	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	2 (a)	UG/L	NO
Nickel	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0		UG/L	
Nitrate-N	< 0.005	< 0.005	0.040	0.050	0.041	10 (a)	MG/L	NO
Nitrite	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1 (a)	MG/L	NO
Orthophosphate	0.003	0.003	0.005	0.009	0.007		MG/L	
pH	6.9	7.1	6.8	9.5	9.5		S.U.	
Potassium	552	539	714	758	758		UG/L	
Selenium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	50 (a)	UG/L	NO
Silica (SiO ₂)	1720	1510	2660	3160	3170		UG/L	
Silver	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	100 (e)	UG/L	NO
Sodium	5.0	6.3	9.4	26.5	27.3		MG/L	
Specific Conductance	49	55	104	188	187		UMHO/cm	
Standard Plate Count, HPC (48 Hrs @ 35C)	NA	NA	129	1	1	500 (c)	CFU/mL	NO
Sulfate (SO ₄)	4.9	4.8	6.6	7.2	7.1	250 (e)	MG/L	NO
Thallium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2 (a)	UG/L	NO
Total Dissolved Solids	45.0	35.0	66.0	102.0	114.0	500 (e)	MG/L	NO
Total Organic Carbon	1.8	2.0	2.1	2.0	2.0		MG/L	
Total Phosphorus	0.009	0.007	0.007	0.009	0.008		MG/L	
UV-254	0.024	0.023	0.044	0.035	0.033		A/cm	
Zinc **	1.6	6.5	< 1.5	< 1.5	< 1.5	5000 (e)	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) = Maximum Residual Disinfectant Level. DEP "Drinking Water Regulations", 310CMR 22.00.

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

(f) = Refers to 90th percentile Action Level

(g) = Refers to a single sample, secondary MCL

(h) = 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

NA = Not Applicable

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.

NS = No Sample

Bold Italics = Quarterly samples from October

Regular Font = Samples from November

Most results are based on single grab samples collected on November 5, 6, 13 and 20, 2007 and analyzed by MWRA and contract laboratories.

NOTES:

(1) 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.

(2) MWRA water is considered soft. Water is measured by hardness - which is the amount of dissolved minerals in the water. MWRA water has a hardness of about 15-20 mg/l or about 1 grain/gallon (1 grain/gallon = 17.1 mg/L). For comparison, hard water would have greater than 75 mg/l hardness.

(3) In reviewing the historical data record for Wachusett Reservoir, high total coliforms are a seasonal occurrence, generally occurring July-Oct. When measuring both total and fecal coliform, Surface Water Treatment Rule compliance is based on the fecal level.

Special Update on Lead and Copper Sampling for 2007

Continued Good News on Lead Levels

The most recent sampling round, once again, meets the Lead Action Level. Results from lead and copper samples collected in September 2007 show that 96.5% 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 percent value was 8.3 ppb. MWRA, as a system, has met eight straight rounds, and over the last seven years, eleven of the last thirteen sampling rounds.

Even though MWRA as a system met the Lead Action Level, some homes may still have elevated levels in stagnant water due to household plumbing. Concerned users should let their water run until after it is cold. For more information please visit www.mwra.com.

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 and chrome-plated 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. 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 1996, MWRA began to add sodium carbonate and carbon dioxide to the water to make it less corrosive. Lead levels dropped significantly after this change in treatment, but still did not consistently meet the standard. Since 2002, MWRA has adjusted the corrosion control process by fine-tuning the pH and alkalinity levels, with further optimization in 2006 after the ozone plant had come online. MWRA continues to work so that the service area will consistently be below the 15-ppb Action Level.

Current Results

The September 2007 data showed that 96.5% 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 8.3 ppb, meeting the 15-ppb standard. Figure 1 shows the over 80% reduction in lead levels since 1992. The 90th percentile for copper was 113 ppb, compared with the Action Level of 1,300 ppb.

