



# MASSACHUSETTS WATER RESOURCES AUTHORITY

## WATER QUALITY UPDATE

### An Analysis of December 2001 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](http://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.

#### December 2001 Highlights

- **Bird harassment and observation at Wachusett Reservoir continued.** MDC staff continued activities that included weekend shifts, weekend harassment about 2 hours before sunset, and observation and harassment Monday through Friday from 8 AM to 3:30 PM. Boat-based harassment has been effective in keeping waterfowl away from Cosgrove Intake. The smaller waterbodies in the area are now ice-covered due to the lower temperatures, thus, the number of birds in the area has increased. Fecal coliform numbers at Cosgrove have been low. See Page 3 for details.
- **Construction of a small pilot plant for use in studying water treatment with ozone and UV disinfection is on schedule.** The facility will help MWRA staff to understand potential effects of these treatment technologies on distribution system pipes. In addition, the facility will be used to simulate and test operating conditions for the Walnut Hill Treatment Plant, and to train operators in working with this treatment approach. The plant is scheduled to be on-line in early 2002.
- **MWRA achieved CT disinfection requirements for the month** at both Ware Disinfection Facility (WDF) and Cosgrove Disinfection Facility (CDF). Chlorine dose at CDF remained at 1.6 mg/L. Levels of disinfection by-products (DBPs) were comparable to those in November. No town violated the Total Coliform Rule criteria. CT results appear on Page 5. DBP results appear on Page 7. TCR results are on Page 6.
- **Pipe break in Boston.** During preparation for the removal of an old blow off on Morton Street in Dorchester and the installation of a new blow off, a 2-3' section of pipe burst. This resulted in severe road damage and prompted the immediate isolation of Section 20. There was no service or water quality impact to the Boston area that it supplies. The road was shut down in both directions for several hours. Repairs were completed during the weekend of December 1st.
- **Water Quality Analysis parameters will be reduced to quarterly analysis** if they are at low levels. See Page 8 for details.

*For more information, please contact MWRA at (617) 242-5323, or visit [www.mwra.com](http://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.*

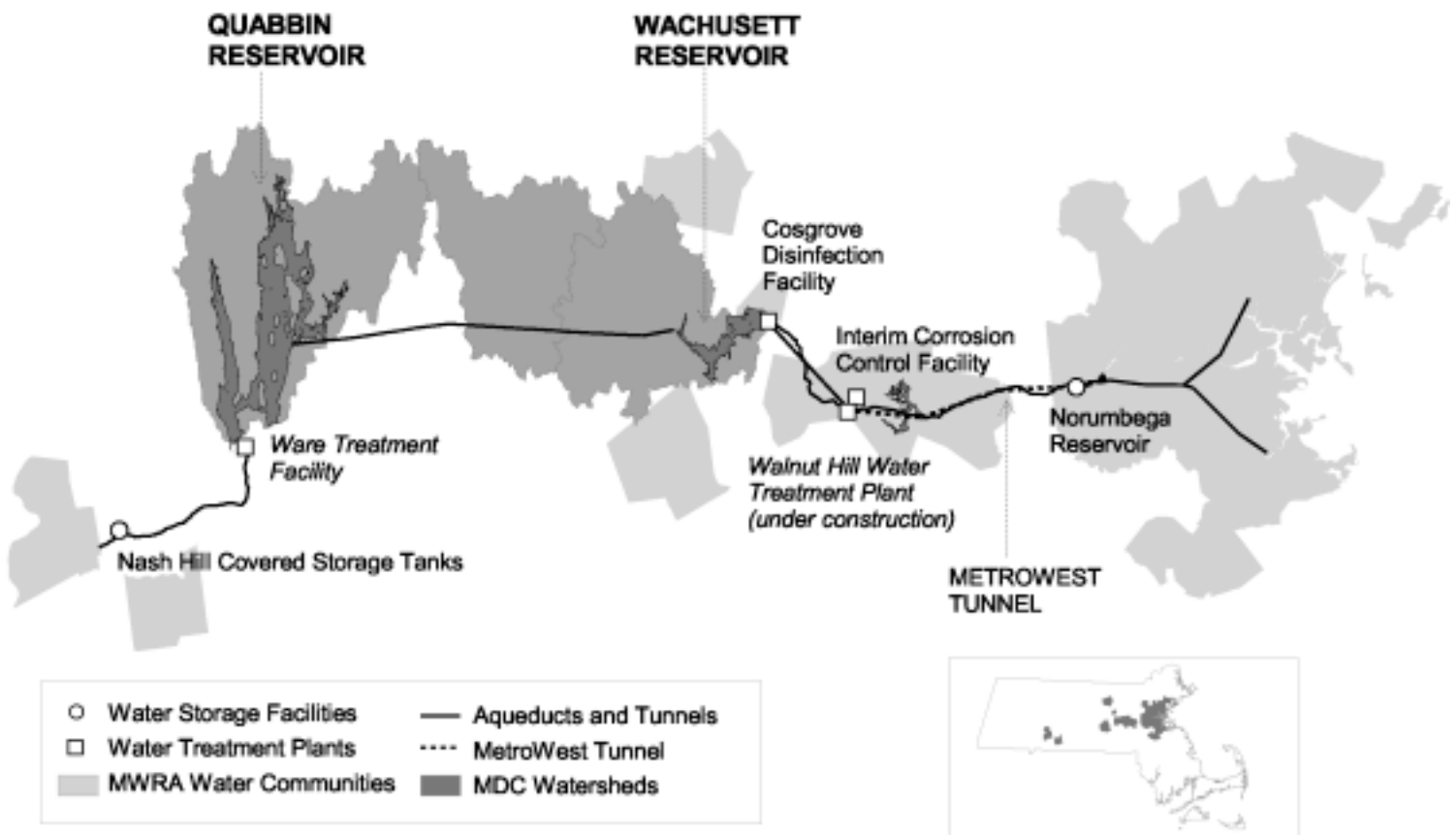
**Release Date: January 20 2002**

## 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

## December 2001

### 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.

12 of 31 samples were positive during December. MWRA met the six-month running average standard for fecal coliform continuously at this location over the last year.

#### Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled at Cosgrove Intake before entering the MetroWest and Metropolitan Boston systems. Fecal coliform levels tend to increase during the winter, when water bodies near Wachusett ice over and waterfowl seek open water. Many roost at Wachusett, which tends to freeze later in the year than smaller ponds nearby.

8 of 21 samples were positive for fecal coliform, but colony counts were low. MWRA also performs a screening test for total coliform which includes fecal and other environmental coliform. This test is rapid and simple, but the results are unconfirmed, or "presumptive". Additional testing is required to confirm that total coliform are present in the sample. Results from these tests trended up beginning in April, but most have not confirmed positive. MWRA staff are analyzing historical data, including results from 2001, to find a likely cause for the trend.

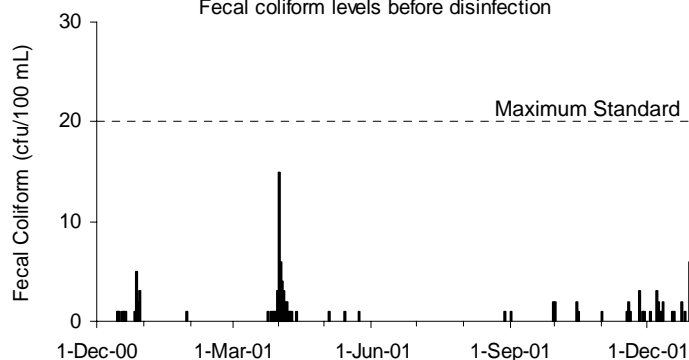
#### Sample Site: Norumbega Reservoir

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.

3 of 31 samples from water taken along the shore were positive for fecal coliform during December.

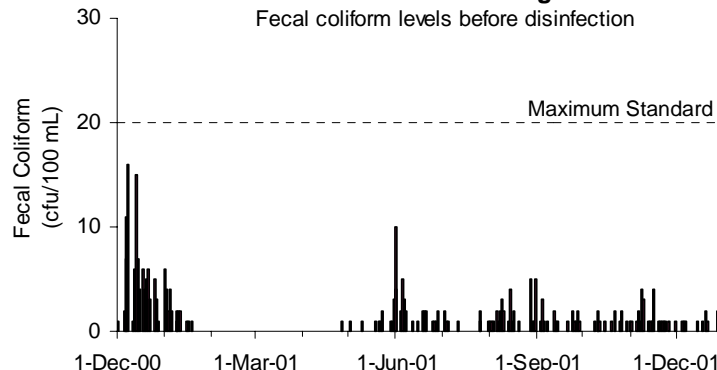
#### Quabbin Reservoir at Winsor Power Station

Fecal coliform levels before disinfection



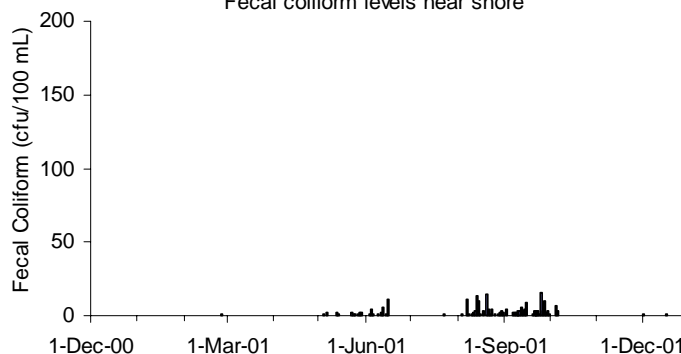
#### Wachusett Reservoir at Cosgrove Intake

Fecal coliform levels before disinfection



#### Norumbega Reservoir

Fecal coliform levels near shore



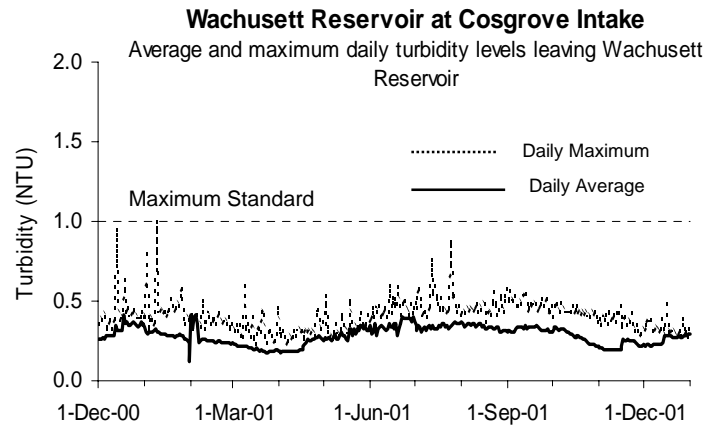
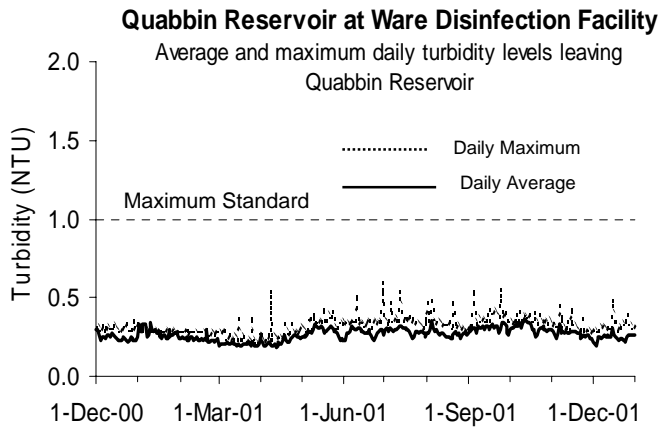
# Source Water – Turbidity and Algae Results

## December 2001

### 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.

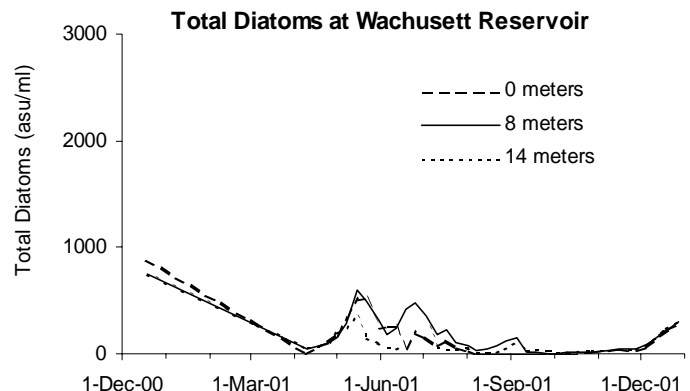
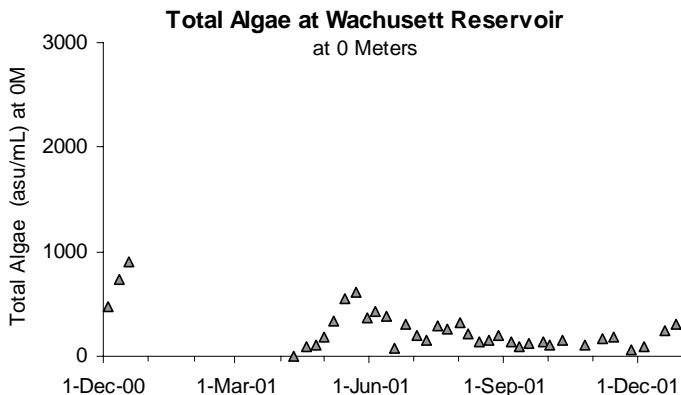
Samples for turbidity from Quabbin Reservoir are collected at the Ware Disinfection Facility before chlorination. These samples represent reservoir water entering the CVA system. Samples are also taken at Cosgrove Intake, representing water quality before chlorination for source water serving the MetroWest 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 Quabbin Reservoir and at Wachusett Reservoir were within DEP standards for the month.



### 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 alga blooms, MWRA treats the reservoirs with copper sulfate, an algacide. Of 44 complaints received during December from local water departments, 1 concerned taste and odor that may be due to algae.



# Treated Water – Disinfection and pH Results

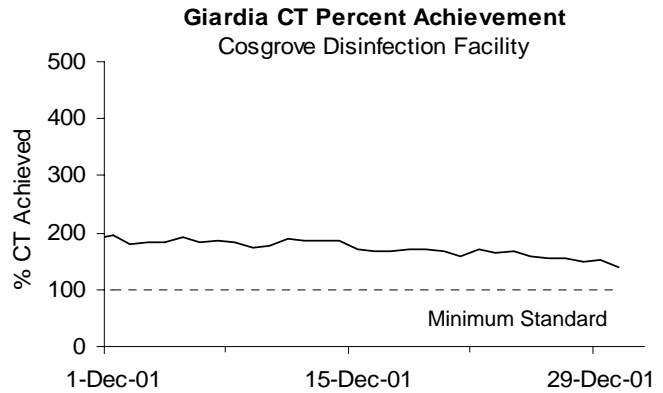
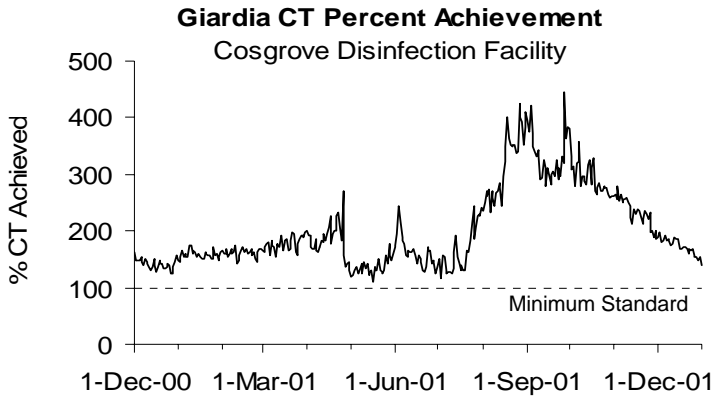
## December 2001

### Treated Water - Primary Disinfection

#### Wachusett Reservoir at Cosgrove Disinfection Facility (MetroBoston Supply):

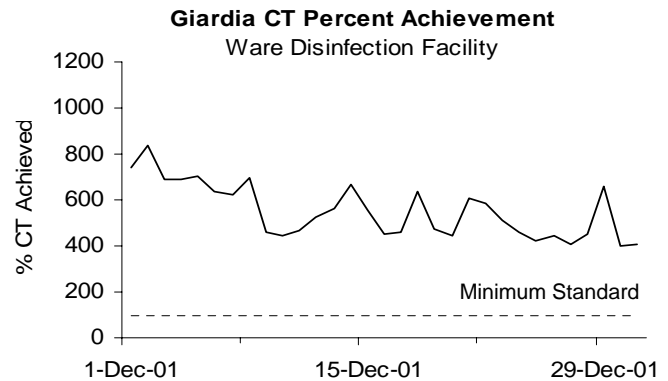
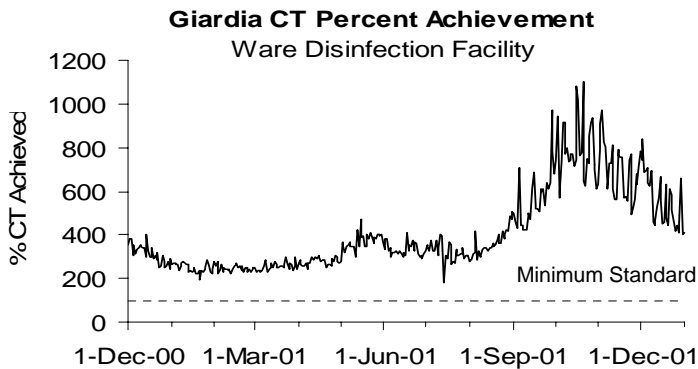
MWRA provides disinfection adequate to achieve EPA's requirement of 99.9% inactivation of *Giardia* cysts and 99.99% inactivation of viruses in drinking water using a calculation based on three sample points that DEP approved in June, 1999. CT achievement for *Giardia* assures CT achievement for viruses, 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 remained at 1.6 mg/L. CT was met each day in December, as well as every day for the last year.



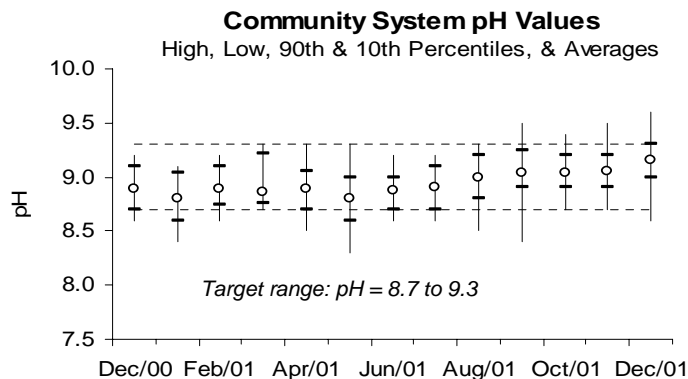
#### Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

CT was met each day in December, as well as every day since reporting began in August, 2000.



### 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 targets distribution system pH levels between 8.7 and 9.3 to minimize leaching of lead. In order to maintain these levels this summer, the target pH at Shaft 4 increased from 9.3 to 9.4 on 6/1 to counter a seasonal downward drift of pH levels in the distribution system. MWRA staff collects and analyzes samples for pH from 26 community locations on a biweekly schedule to measure pH levels. In December, about 98% of the samples were within the target range.



# Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

## December 2001

### Background

While all communities collect bacteria samples for the TCR, 36 cities and towns (including Westboro State Hospital) use the MWRA Laboratory for Total Coliform Rule compliance testing. These communities collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection. Cambridge conducts their own monitoring. The other 9 MWRA customer communities have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

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

None of the 1685 samples (0.0% system-wide) tested positive for confirmed total coliform during the month of December. No samples tested positive for *E. coli*. No town failed the TCR rule for the month.

**TCR results by Community**

Town	Samples Tested for Coliform (a)	Total Coliform # (%) Positive	E.coli % Positive	Public Notification Required?	December 2001 Minimum Chlorine Residual (mg/L)	December 2000 Minimum Chlorine Residual (mg/L)	December 2001 Average Chlorine Residual (mg/L)	December 2000 Average Chlorine Residual (mg/L)
ARLINGTON	56	0 (0%)	0.0%		0.07	0.10	1.15	1.18
BELMONT	32	0 (0%)	0.0%		0.30	0.20	0.85	0.98
BOSTON	238	0 (0%)	0.0%		0.04	0.23	1.48	1.77
BROOKLINE	68	0 (0%)	0.0%		1.00	1.10	1.47	1.82
CHELSEA	32	0 (0%)	0.0%		0.80	0.69	1.49	1.54
EVERETT	40	0 (0%)	0.0%		1.30	0.80	1.60	1.47
FRAMINGHAM (c)	63	0 (0%)	0.0%		0.17	0.26	1.44	1.47
LEXINGTON	45	0 (0%)	0.0%		1.00	1.26	1.57	1.60
LYNNFIELD	6	0 (0%)	0.0%		0.29	0.38	0.87	1.01
MALDEN	75	0 (0%)	0.0%		0.06	0.04	1.08	1.16
MARBLEHEAD	24	0 (0%)	0.0%		0.25	0.31	1.31	1.46
MARLBOROUGH (b)(c)	56	0 (0%)	0.0%		0.70	0.79	1.35	1.09
MEDFORD	68	0 (0%)	0.0%		0.40	0.10	1.16	1.16
MELROSE	45	0 (0%)	0.0%		0.10	0.10	1.34	1.20
MILTON	32	0 (0%)	0.0%		0.01	0.86	1.25	1.37
NAHANT	10	0 (0%)	0.0%		0.01	0.10	0.82	1.03
NEEDHAM (b)	41	0 (0%)	0.0%		0.11	0.01	1.15	0.30
NEWTON	88	0 (0%)	0.0%		0.43	0.99	1.40	1.46
NORTHBOROUGH	14	0 (0%)	0.0%		0.96		1.66	
NORWOOD	40	0 (0%)	0.0%		0.05	0.05	0.75	0.79
QUINCY	92	0 (0%)	0.0%		0.20	0.20	1.53	1.49
REVERE	52	0 (0%)	0.0%		0.99	1.12	1.48	1.68
SAUGUS	32	0 (0%)	0.0%		1.40	1.50	1.49	1.67
SOMERVILLE	80	0 (0%)	0.0%		0.30	0.20	1.19	1.37
SOUTHBOROUGH (c)	11	0 (0%)	0.0%		0.40	0.30	1.09	0.87
STONEHAM	28	0 (0%)	0.0%		0.36	1.23	1.59	1.61
SWAMPSCOTT	18	0 (0%)	0.0%		0.59	0.77	1.12	1.55
WAKEFIELD (b)	44	0 (0%)	0.0%		0.44	0.48	1.25	1.35
WALTHAM	68	0 (0%)	0.0%		0.10	0.20	1.45	1.53
WATERTOWN	40	0 (0%)	0.0%		0.30	1.00	1.27	1.44
WELLESLEY (b)	27	0 (0%)	0.0%		0.15	0.20	0.40	0.40
WESTBORO HOSPITAL	4	0 (0%)	0.0%					
WESTON (c)	12	0 (0%)	0.0%		0.23	0.54	0.73	1.37
WINCHESTER (b)	20	0 (0%)	0.0%		0.06	0.07	0.59	0.54
WINTHROP	24	0 (0%)	0.0%		0.40	0.50	1.35	1.49
WOBURN (b)	60	0 (0%)	0.0%		0.02	0.01	0.51	0.61
<b>Total:</b>	<b>1685</b>	<b>0 (0%)</b>						

(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 chloraminate

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

## December 2001

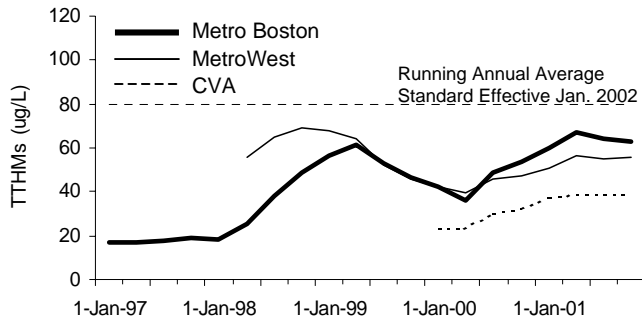
Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAAs) are by-products of disinfection treatment with chlorine. Chlorination levels, the presence of organic precursors, pH levels, the contact time of water with chlorine used for disinfection, and temperature all affect TTHM and HAA levels. DBPs are of concern due to their potential adverse health effects at high levels. EPA recently established new running annual average standards of 80 ug/L for TTHMs and 60 ug/L for HAA 5 that take effect January 2002. 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 all regions. The running annual average for TTHMs at compliance locations, represented in the graphs at the top of the page, remained below both current and future standards.

### TOTAL TRIHALOMETHANES

#### TTHM Running Annual Averages

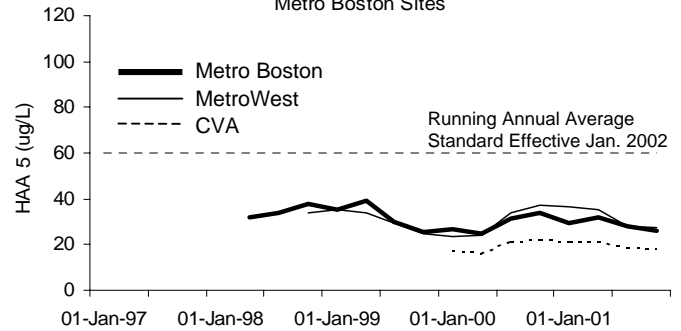
At Compliance Locations For CVA, MetroWest, and Metro Boston Sites



### HALOACETIC ACIDS

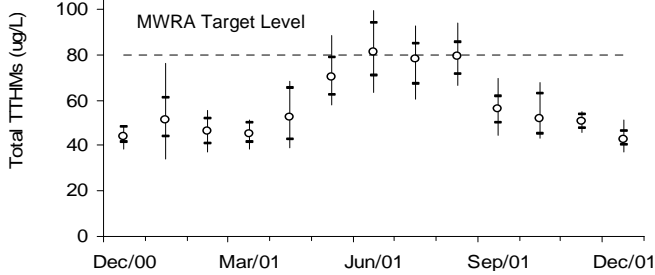
#### HAA Running Annual Averages

At Compliance Locations For CVA, MetroWest, and Metro Boston Sites



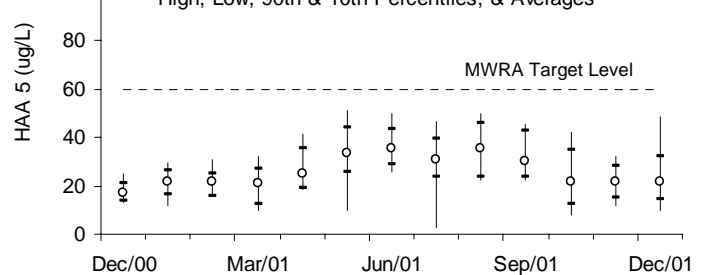
#### Metropolitan Boston

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages



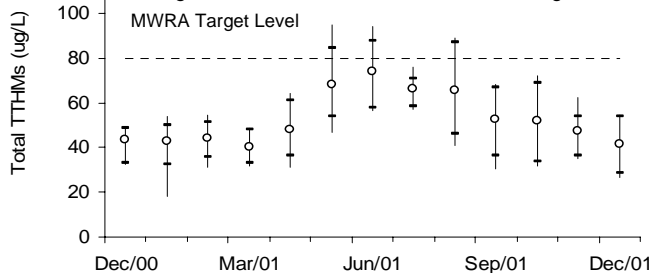
#### Metropolitan Boston

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages



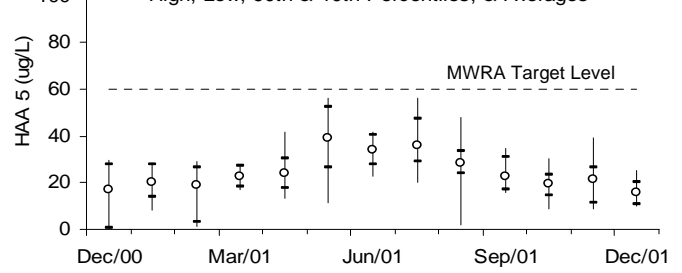
#### MetroWest Communities

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages



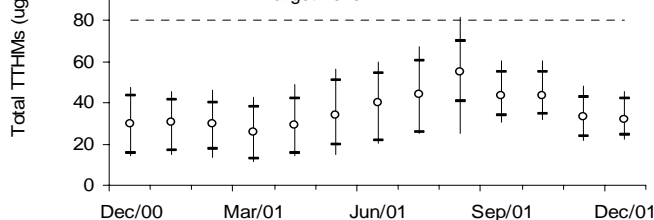
#### MetroWest Communities

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages



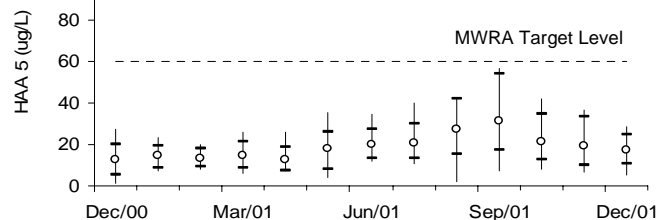
#### Chicopee Valley Aqueduct (CVA)

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages  
MWRA Target Level



#### Chicopee Valley Aqueduct (CVA)

At Process Control & Compliance Locations  
High, Low, 90th & 10th Percentiles, & Averages  
MWRA Target Level



# MWRA Monthly Water Quality Analysis

## December 2001

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	3.8	Quarterly	5.4	29	29	28.5		MG/L	
Aluminum	Quarterly	Quarterly	< 15	< 15	< 15	< 15	50-200 (a)	UG/L	NO
Ammonia-N	0.008	Quarterly	0.0135	< .005	0.362	0.370		MG/L	
Antimony	Quarterly	Quarterly	< .9	< .9	< .9	< .9		UG/L	
Arsenic	Quarterly	Quarterly	< .8	< .8	< .8	< .8	50 (b)	UG/L	NO
Barium	Quarterly	Quarterly	8.22	7.93	8.22	8.62	2000 (b)	UG/L	NO
Beryllium	Quarterly	Quarterly	< .1	< .1	< .1	< .1	4 (b)	UG/L	NO
Bromate	< 2.5	Quarterly	< 2.5	< 2.5	< 2.5	< 2.5	10	UG/L	NO
Bromide	10.0	Quarterly	13.5	6.03	4.8	5.4		UG/L	
Cadmium	Quarterly	Quarterly	< .2	< .2	< .2	< .2	5 (b)	UG/L	NO
Calcium	Quarterly	Quarterly	3680	3720	3710	3810		UG/L	
Chloride	Quarterly	Quarterly	16.6	18	18.6	17.3	250 (a)	MG/L	NO
Chlorine, Free	-	0.54	-	0.85	-	-		MG/L	
Chlorine, Total	-	-	-	-	1.93	1.81		MG/L	
Chromium	Quarterly	Quarterly	< .6	< .6	< .6	< .6	100 (b)	UG/L	NO
Coliform, Fecal, MF Method	1	-	0	-	-	-	20 (c)	CFU/100 mL	NO
Coliform, Total, MF Method (e)	3	0	0	0	0	0	100 (c) 0 (d)	CFU/100 mL	NO
Color	4	2	7	4	4	4	15 (a)	C.U.	NO
Copper **	< 1	Quarterly	9.6	3.2	6.4	4.8	1300 (b)	UG/L	NO
Cyanide	Quarterly	Quarterly	< .01	< .01	< .01	< .01	0.2 (b)	MG/L	NO
Fluoride	Quarterly	Quarterly	0.11	0.99	1.07	0.97	4 (b)	MG/L	NO
Hardness	Quarterly	Quarterly	12.3	12.4	12.3	12.8		MG/L	
Iron **	Quarterly	Quarterly	14.8	10.6	17.8	30.8	300 (a)	UG/L	NO
Lead	Quarterly	Quarterly	< 1.2	< 1.2	< 1.2	< 1.2	15 (b)	UG/L	NO
Magnesium	Quarterly	Quarterly	748	750	738	792		UG/L	
Manganese	Quarterly	Quarterly	11.8	4.3	14.8	24.0	50 (a)	UG/L	NO
Mercury	Quarterly	Quarterly	< .01	< .01	< .01	< .01	2 (b)	UG/L	NO
Nickel	Quarterly	Quarterly	< 1	< 1	< 1	< 1		UG/L	
Nitrate-N	0.015	Quarterly	0.073	0.076	0.077	0.075	10 (b)	MG/L	NO
Nitrite	< .005	Quarterly	< .005	< .005	< .005	< .005		MG/L	
Orthophosphate	0.006	Quarterly	0.009	0.014	0.014	0.014		MG/L	
pH	6.5	6.9	7.0	9.3	8.9	9.2		S.U.	
Potassium	Quarterly	Quarterly	852	850	869	896		UG/L	
Selenium	Quarterly	Quarterly	< .9	< .9	< .9	< .9	50 (b)	UG/L	NO
Silica (SiO2)	Quarterly	Quarterly	1950	2440	2400	2420		UG/L	
Silver	Quarterly	Quarterly	< .4	< .4	< .4	< .4	100 (a)	UG/L	NO
Sodium	Quarterly	Quarterly	10.3	23.9	23.7	24.2		MG/L	
Specific Conductance	42	48	85.7	136	140	139		UMHO/C	
Standard Plate Count, HPC (48 Hrs @ 35C)	48	61	79	52	16	43	500 (d)	CFU/mL	NO
Sulfate (SO4)	Quarterly	Quarterly	6.3	6.1	6.1	6.2		MG/L	
Thallium	Quarterly	Quarterly	< 1	< 1	< 1	< 1		UG/L	
Total Dissolved Solids	< 25	Quarterly	54	79	109	77		MG/L	
Total Organic Carbon	1.82	Quarterly	2.09	1.97	2.24	2.29		MG/L	
Total Phosphorus	< .005	Quarterly	< .005	< .005	0.008	< .005		MG/L	
Turbidity	0.40	0.43	0.35	0.41	0.65	0.58	1 (c)	NTU	NO
UV-254	0.02	Quarterly	0.04	0.03	0.04	0.04		A	
Zinc **	Quarterly	Quarterly	3.090	0.922	2.230	4.41	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.

HPC = Heterotrophic Plate Count

umhos = ohms/1000

Inv Res = Invalid sample result

Most results are based on single grab samples collected on December 10 & 11, 2001 and analyzed by MWRA and contract laboratories.