2023 Annual Water Quality Report

Methuen Water Department

PWS ID #3181000

METHUEN WATER DEPARTMENT

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INSIDE THIS ISSUE

TO OUR RESIDENTS

Once again we are proud to present our annual water quality report covering the period between January 1 and December 31, 2023. This report will summarize the departments water quality tests for calendar year 2023, and provides information on the source of your drinking water, how it is treated, and other useful information. In 2023, we met every federal and state drinking water standard. Lead in drinking water is still a focus. This summer (2024) we will be conducting our lead and copper testing with results to be released in October. The water department has been continuing to find and replace any remaining lead goosenecks within the system. We have been working closely with our partners at the Massachusetts Departments of Environmental Protection and Public Health to make every effort to reduce the risk of lead at the tap to protect the health of the children in our city. More information on lead can be found in this report. Also in the spotlight this year is polyfluoroalkyl substances or more commonly known as PFAS. Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. For more information about this please see the section in this report on PFAS. The Water Department is dedicated to protecting public health and upholding the public's trust in their drinking water every day. Please contact us if you have any questions or concerns about your water quality. If you would like a printed copy, or if you have any questions or comments regarding our report, please email Megan Wintour at **mwintour@ci.methuen.ma.us**

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the **Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/ drink/hotline**

WHERE DOES MY WATER COME FROM?

The Methuen Water Department is committed to providing high quality drinking water that meets or surpasses State and Federal standards for quality and safety. We monitor both our source and distribution systems very closely. The standards we operate under were enacted by the U.S. Congress as the Safe Drinking Water Act in 1974 and were amended in 1986 and 1996. The City of Methuen water system consists of three storage tanks, one raw intake station, one filtration and treatment facility, two booster pump stations and approximately 200 miles of water main. Our intake station is directly alongside the river. The treatment plant pumps on average 4.6million gallons per day (MGD), with our high average in the summer months of 6 MGD and approximately 1.7 billion gallons of drinking water per year. This dramatic increased stress on our water supply is mostly caused by non-essential water use such as lawn irrigation. Methuen retains 10.6 million gallons of water storage in the distribution system. This storage helps maintain consistent water pressure throughout the 200miles of underground pipes that deliver drinking water to homes and businesses.

In order to ensure tap water is safe to drink, the Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

- **Microbial Contaminants,** such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations or wildlife;
- **Inorganic Contaminants,** such as salts and metals, which can be naturally occurring or may result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- **Pesticides and Herbicides,** which may come from a variety of sources, such as agriculture, urban storm water runoff and
- residential uses;
- **Organic Chemical Contaminants,** including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and which may also come from gas stations, urban storm water runoff and septic systems;
- **Radioactive Contaminants,** which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the
U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

THE TREATMENT PROCESS

The Water Treatment Plant is a conventional filtration plant, which includes **pre-disinfection**, **coagulation**, **flocculation**, and **sedimentation**. The treatment process consists of a series of physical and chemical steps designed to produce a safe and consistent quality product.

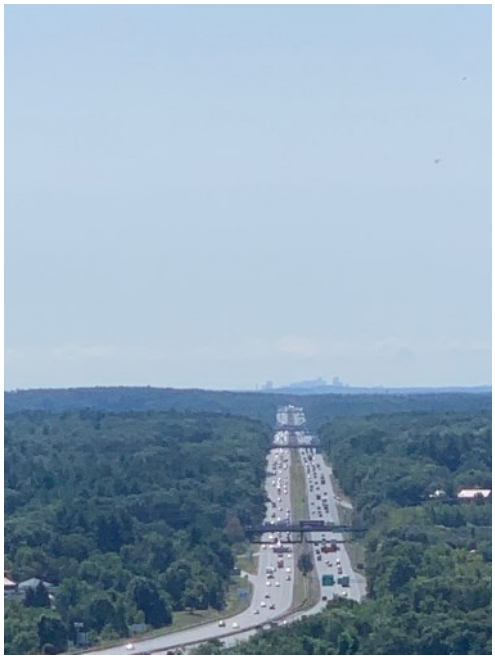
- **Pre-disinfection** —Chlorine dioxide is generated on-site. This chemical oxidizes, disinfects and breaks down organic matter making the water more efficiently filtered. Chlorine dioxide is an effective disinfectant for the parasites giardia and cryptosporidium.
- **Coagulation & Flocculation**—using alum to make tiny particles in the water stick together to form larger particles, which can become large enough to settle out during the next process.
- **Sedimentation**—where gravity causes the floc to settle to the bottom. Large particles settle more rapidly than small particles. The clarified water, with most of the particles removed, moves on to the filtration step where the finer particles are removed.
- **Filtration**—This removes particles from the water using carbon filters.
- **pH Adjustment and Corrosion Control**— Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0). The water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For the reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is done by adding any one, or a combinations of several, approved chemicals. The Methuen Water Department adds sodium hydroxide to its water. This adjusts the water to a non-corrosive pH. A blended phosphate corrosion inhibitor is also added to make the water less corrosive. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.
- **Disinfection**— All source water and some ground water sources contain numerous microorganisms some of which can cause people to become ill. To eliminate disease carrying organisms it is necessary to disinfect the water. Disinfection does not sterilize the water, but it does destroy harmful organisms. Sterilization kills all microorganisms, even though most are not harmful. However, it is too costly to use on a routine basis. Methuen uses sodium hypochlorite (chlorine) as its primary disinfectant. Chlorine destroys organisms by penetrating cell walls and reacting with enzymes. Disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **US EPA's Safe Drinking Water Hotline 1-800-426-4791** or your local water supplier. We have confidence in the quality of our drinking water and you can too. The treatment plant monitors the water system at all times. In addition to watching water flows and pressure, our state-of-the-art Supervisory Control and Data Acquisition (SCADA) system monitors several water quality parameters and security alarms. If the system identifies anything out of the ordinary, alarms alert the certified operator on duty.

SWAP (Source Water Assessment and Protection)

The Source Water Assessment and Protection (SWAP) Program, established under federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.



The MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the Methuen Water Department. The report assesses the susceptibility of public water supplies to contamination and makes recommendations.

A susceptibility ranking of **high** was assigned to our water source, the Merrimack River.

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area. A sources susceptibility to contamination does *not* imply poor water quality.

This report is available from the Methuen Water Department, the Board of Health and also at the MassDEP website: http://www.mass.gov/doc/methuen-water-department-swap-report/download

If you have any questions, please contact the Methuen Water Department at (978) 983-8845.

2023 SAMPLING RESULTS

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

2023 Water Quality Data from the Methuen Water Department and Distribution System

Parameter (UNIT S)	Year Sampled	MCLG	MCL	Amount Detected	Range Low-High	Violation (Y/N)	Typical Source
REGULATED SUBSTANCES							
Barium (ppm)	2023	2	2	0.012	0.012	N	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beryllium (ppb)	2022	4	4	1.3	1.3	N	Discharge from electrical, aerospace, and defense industries; erosion of natural deposits
Chlorine (ppm)	2023	4	4	0.81	1.0-2.5	N	Water additive used to control microbes
Chlorite (ppm)	2023	1	0.8	0.230	ND - 0.230	N	By-product of drinking water disinfection
Haloacetic acids [HAA] (ppb)	2023	N/A	60	22	5.7-20	N	Byproduct of drinking water disinfection
Nitrate (ppm)	2023	10	10	0.34	0.25-0.34	N	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate	2023	N/A	2	0.25	0.25	N	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
PFAS6 (ppt)	2023	0	20	2.51	2.00-2.98	N	Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture and oil resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing these PFAS, such as fire-fighting foams.
Total Coliform	2023	0	>5%	0	———	N	Naturally present in the environment
Total Organic Carbon (% removal)	2023	N/A	TT=35-45% removal	1.94	1.5-2.7	N	Naturally present in the environment
Total Trihalomethanes [TTHMs] (ppb)	2023	N/A	80	56	21-83	N	Byproduct of drinking water disinfection

Turbidity	TT	Lowest Monthly % of Samples	Highest Daily Value	Violation (Y/N)	Typical Source
Daily Compliance (NTU)	5	—	0.268	N	Soil runoff
Monthly Compliance	At least 95%	100%	———	N	

Parameter (UNITS)	Year	AL	MCLG	Amount Detected (90th %tile)	Sites Above AL/ Total Sites	Violation	Typical Source
Copper (ppm)	2023	1.3	1.3	0.066	0	N	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppm)	2023	0.015	0	0	0	N	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGUALTED or SECONDARY CONTAMINANTS (MCL has not yet been established)				
Parameter (UNITS)	**Year**	**Result or range**	**SMCL**	**Typical Source**
Aluminum (ppb)	2022	95	200	Erosion of natural deposits; Residual from some surface water treatment processes
Perfluorobutanesulfonic Acid-PFBS (ppt)	2023	1.00-2.28	—	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorohexanoic Acid-PFHXA (ppt)	2023	1.62-2.79	—	Manmade chemical; used in products to make them stain, grease, heat and water resistant
pH	2023	6.9-8.0	6.5—8.5	N/A
Sodium (ppm)	2023	42	20	Naturally present in the environment and road salt
Sulfate (ppm)	2022	18	250	Runoff/leaching from natural deposits
Total Alkalinity	2023	7.7-23.3	—	Alkalinity is a measure of water's ability to neutralize acids or resist changes that cause acidity, maintaining a stable pH
Total Dissolved Solids (ppm)	2022	68	500	Erosion from natural deposits
Zinc (ppm)	2022	0.104	5	Runoff/leaching from natural deposits; Industrial Waste

Other Organic Contaminants - when detected at treatment plant as VOC residuals, not TTHM compliance					
Parameter (UNITS)	**Year**	**ORSG**	**Highest Result**	**Range of Detection**	**Possible Source**
Bromodichloromethane (ppb)	2023	§	7.0	1.6 – 7.0	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2023	§	1.6	ND – 1.6	By-product of drinking water disinfection
Chloroform (ppb)	2023	70	10.8	4.3 – 10.8	By-product of drinking water disinfection
Chloromethane (ppb)	2023	2.69 - 269	10.2	ND – 10.2	By-product of drinking water disinfection

WATER QUALITY DEFINITIONS

- **§** There is no ORSG or other health value for these contaminants
- **90th Percentile**: Out of every 10 homes sampled, 9 were at or below this level.
- **AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements
- which a water system must follow.
- **MCL (Maximum Contaminant Level):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MRDL (Maximum Residual Disinfectant Level):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **N/A:** Not applicable.
- **NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **ORSG** Massachusetts Offices of Research and Standards Guideline
- **ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).
- **ppm (parts per million):** One part substance per million parts water (or milligrams per liter).
- **ppt (parts per trillion):** One part substance per trillion parts water (or nanograms per liter).
- **SMCL** Secondary Maximum Contaminant Level
- **TT (Treatment Technique):** A required process intended to reduce the level of a contaminant in drinking water.

STORM WATER—NPDES

Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating "point sources" that discharge pollutants into waters of the United States.

Point sources are often discrete conveyances such as pipes or man-made ditches or drains (catch basins) that direct "storm water" to a surface source. Storm water runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces (paved streets, parking lots, and building rooftops), and does not percolate into the ground. As the runoff flows over the land and impervious surfaces it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated into our river or tributaries.

Federal and state laws and regulations require municipalities with a storm drain system to manage and control all storm water discharges in their city and they, along with everyone who wants to discharge any type of water with pollutants, must first obtain an NPDES permit to do so.

If you see a suspicious discharge to a body of water or storm drain (catch basin, slotted manhole, etc.), please contact **Methuen's Engineering Department at (978) 983-8550.**

STORM WATER TIPS

1. Don't dump anything into storm drains.
2. Dispose of hazardous waste through Methuen's ongoing waste oil collection program and bi-annual hazardous waste collection days.
3. When watering your lawn, don't over water.
4. Water that runs off sidewalks and roadways carries contaminants (oil, grease, and metals) into our storm drain system.
5. Divert runoff from pavement to grassy, planted, or wooded areas of your property.
6. Reduce fertilizer and pesticide use.
7. Sweep up salt and sand on your walkways after snowmelt. Don't hose down driveways or sidewalks.
8. Inspect your vehicles and equipment for leaking and damaged parts.

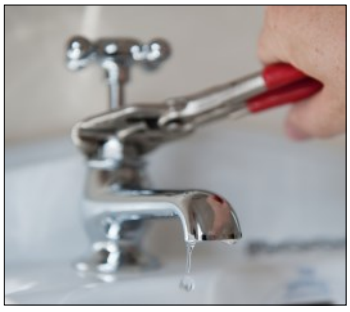
WATER CONSERVATION

INDOOR TIPS

- Fix that leaky toilet. You'll save 50 gallons a day or more.
- Never use your toilet as a wastebasket. You'll save 1 to 2 gallons per flush (and you'll save your pipes)
- Install low-flow aerators on your faucets. You'll save 1 to 5 gallons per minute.
- Fix that leaky faucet. Worn-out washers can waste hundreds of gallons per week.
- Replace your washing machine with a high-efficiency model. You'll use 30 to 50% less water.

OUTDOOR TIPS

- Aerate your soil in the spring and fall. This will aid water absorption and retention.
- Use mulch in your flower beds. Mulch will keep roots cool and moist and reduce weeds.
- Water your lawn overnight or before 5 am. Mid-day watering will result in evaporation.
- One inch of water a week is plenty. After heavy rains, you may not need to water for 10 to 14 days.
- Raise the mower blade to 2 or 3 inches or more. Longer grass retains moisture and competes better against weeds.

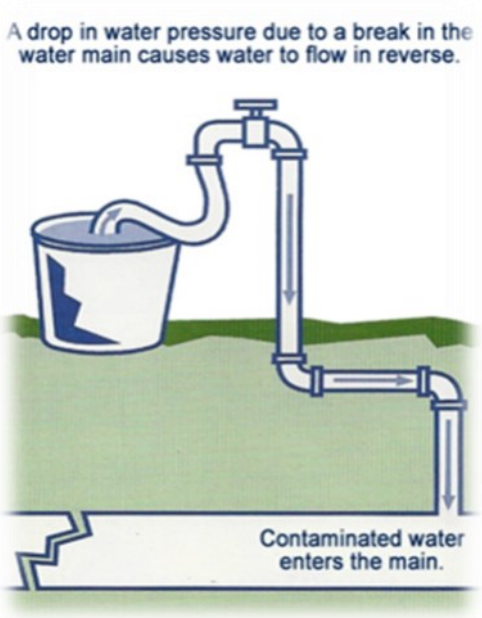


CROSS CONNECTIONS & BACKFLOWS

Hose Bibb Vacuum Breaker (HBVB)

What is a cross connection?

A cross connection is any actual or potential connection between the drinking water lines and potential sources of pollution or contamination such as a piping arrangement or equipment that allows the drinking water to come in contact with non-potable liquids, solids, or gases hazardous to humans in event of a backflow.



What is a backflow?

Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of the water can occur when the pressure created by equipment or system such as a boiler or air conditioning system is higher than the water pressure inside the water distribution line (back pressure), or when the pressure in the distribution lines drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of, a problem that each and every water customer has a responsibility to help prevent.

Simple steps to prevent cross connection hazards:

- Never submerge a watering hose into a pool, tubs, sink, bucket of soapy water, pet watering containers, drains, or chemicals.
- Always leave an air gap between the hose and the object being filled.
- Install a hose bib vacuum breaker (HBVB) on every threaded water fixture. These can be found at most hardware stores and are easy to install.

For more information, review the Cross-connection Control Manual from the U.S. EPA's Web site at:
http://water.epa.gov/nfrastructure/drinkingwater/pws/crossconnectioncontrol/index.cfm

WHAT ARE PFAS AND WHY ARE THEY A PROBLEM?

PFAS in drinking water is an important emerging issue nationwide. Because PFAS are water soluble, over time PFAS from some firefighting foam, manufacturing sites, landfills, spills, air deposition from factories and other releases can seep into surface soils. From there, PFAS can leach into groundwater or surface water, and can contaminate drinking water. PFAS have also been found in rivers, lakes, fish, and wildlife.

Exposure can occur when someone uses certain products that contain PFAS, eats PFAS-contaminated food, or drinks PFAS-contaminated water. When ingested, some PFAS can build up in the body and, over time, these PFAS may increase to a level where health effects could occur.

In October 2020, MassDEP published its PFAS public drinking water standard, called a Massachusetts Maximum Contamination Level (MMCL), of 20 nanograms per liter (ng/L) (or parts per trillion (ppt)) – individually or for the sum of the concentrations of six specific PFAS. These PFAS are perfluorooctane sulfonic acid (PFOS); perfluorooctanoic acid (PFOA); perfluorohexane sulfonic acid (PFHxS); perfluorononanoic acid (PFNA); perfluoroheptanoic acid (PFHpA); and perfluorodecanoic acid (PFDA). MassDEP abbreviates this set of six PFAS as "PFAS6." This drinking water standard is set to be protective against adverse health effects for all people consuming the water.

In April 2024, EPA published its first regulations. The new regulations limit PFOA and PFOS to four parts per trillion, while limiting PFHxS, PFNA and GenX to 10 parts per trillion.

The Methuen Water Treatment Laboratory has tested for PFAS during the Unregulated Contaminant Monitoring Rule 3 and Unregulated Contaminant Monitoring Rule 5 as well as quarterly as part of our sampling schedule– All results were below the new MCLs. If you have any questions regarding PFAS please visit the links below or for more specific information regarding Methuen and PFAS contact our chemist **mwintour@ci.methuen.ma.us**

https://www.epa.gov/pfas/basic-information-pfas

https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas

LEAD AND DRINKING WATER

About Lead Service Lines:
The service line is the pipe that connects your house to the water main in the street. Some service lines that run from older homes (usually those built before 1940) to the utility water main are lead. Many of these older service lines have been replaced, but your home could still have one. To determine if your home has a lead service line you or your plumber need to inspect the service line. Lead service lines are generally a dull gray color and are very soft. You can identify them by carefully scratching with a key. On a lead pipe, the area you've scratched will turn a bright silver color. Do not use a knife or other sharp instrument, and take care not to puncture a hole in the pipe.

Lead can get into tap water if:

-You have lead pipes in your home.

-You have lead solder on pipes or brass fixtures in your home.

Lead solder was banned in 1989. Homes built before then will likely contain lead soldered pipes. Corrosion or wearing-away of lead-based materials can add lead to tap water, especially if water sits in the pipes for a long time before use.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Methuen Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking.

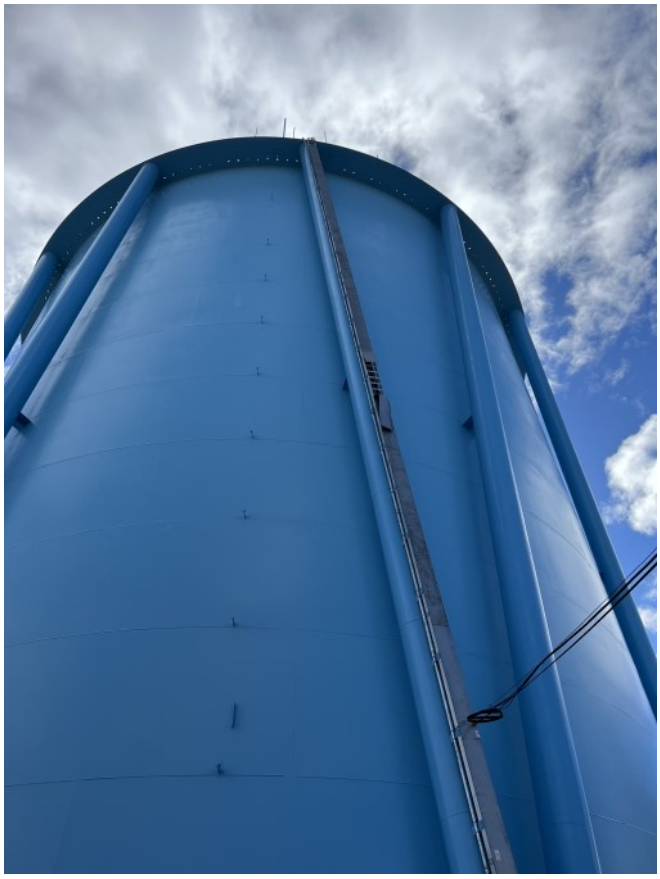
If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

**** THE CITY WILL BE PERFORMING OUR SCHEDULED LEAD AND COPPER TESTING SUMMER 2024. ****
Results will be available to the public in October 2024

Forest Street Tank

100 feet tall and over 80 feet wide, this massive structure holds just under 4 million gallons of the city's drinking water. The Forest Street Steel standpipe was built in the early 1970's by Chicago Bridge & Iron Corporation. This tank is a major component of the City's Water Distribution System.

A complete refurbish of the inside and out was finished during 2023. This work included replacing valves, hatches, ladders, installing a new corral for communication equipment, relining the inside coating and painting the outside. This work was necessary for the longevity of this critical water storage and for the highest quality drinking water.



INFORMATION ON THE INTERNET

The U.S. EPA Office of Water (**https://www.epa.gov/aboutepa/about-office-water**) and the Centers for Disease Control and Prevention (**www.cdc.gov**) websites provide a substantial amount of information on many issues relating to water resources, water conservation, and public health. Also, the MassDEP has a website (**www.mass.gov/dep**) that provides complete and current information on water issues in Massachusetts, including valuable information about our watershed.

NEED ANSWERS?

We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions about this report or relating to your drinking water please call the water treatment plant at **(978) 983-8845** If you have questions regarding your water bills, please call the water department at **(978) 983-8555.**