

ANNUAL WATER QUALITY REPORT

Reporting Year 2022



Presented By
**Town of Burlington,
Department of Public Works**

PWS ID#: 3048000

Our Mission Continues

We are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2022. We have dedicated ourselves to producing drinking water that meets or exceeds all state and federal standards. We have worked diligently on projects to improve the quality of our drinking water, including the per- and polyfluoroalkyl substance (PFAS) filters at Mill Pond and the new 24-inch-diameter water main to connect to the Massachusetts Water Resources Authority (MWRA) and replace the Vine Brook treatment plant. We hope to have both completed by June 2023. Please remember that we are always available should you ever have any questions or concerns about your water.

Source Water Assessment

DEP has completed source water assessments for all drinking water sources across Massachusetts. The purpose of this Source Water Assessment Program (SWAP) was to determine the susceptibility of each drinking water source to potential contaminant sources. The relative susceptibility rating for all our wells was high. The susceptibility rating for the Shawsheen River was also rated as high, while the Mill Pond Reservoir was given a rating of moderate. It is important to understand that these susceptibility ratings do not imply poor water quality; rather, the system has a potential to become contaminated within the assessment area.

The complete SWAP report is available at the Burlington Department of Public Works and www.mass.gov/files/documents/2016/08/uc/3048000.pdf. For more information, call (781) 270-1648. The Town of Lexington's SWAP report can be found at <https://www.mass.gov/doc/northeast-region-source-water-assessment-protection-swap-program-reports/download>.

Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we 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 two 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 at (800) 426-4791 or at www.epa.gov/safewater/lead.

The Benefits of Fluoridation

Fluoride is a naturally occurring element in many water supplies in trace amounts. In our system the fluoride level is adjusted to an optimal level averaging 0.7 part per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. There are over 3.9 million people in 140 Massachusetts water systems and 184 million people in the U.S. who receive the benefits of fluoridation.



About Our Violation

We have been in violation of the PFAS maximum contaminant level (MCL) since April 2021. We are currently building filters that will remove PFAS; these filters will be operational in summer 2023.

Where Does My Water Come From?

The sources for our treatment facilities are the Shawsheen River and the Vine Brook aquifer. We produced about 624.36 million gallons of drinking water in 2022. The daily average was 2.72 million gallons, and the maximum day was just over 5 million gallons.

Groundwater Sources

We utilize four wells located in the Vine Brook aquifer.

Surface Water Source

The Mill Pond plant source water is the Mill Pond Reservoir. Our reservoir holds 513 million gallons. Water is pumped from the Shawsheen River to fill the reservoir when river flow is sufficient. We also purchased 367.68 million gallons of water from MWRA in 2022 through our connection with the Town of Lexington.

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>.

QUESTIONS?

For more information about this report, please contact Russell Makiej, Water Treatment Manager, at (781) 270-1648 or rmakiej@burlington.org.

Substances That Could Be in Water

To ensure that 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. The 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 stormwater 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 stormwater 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 stormwater 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.

What Are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals used worldwide since the 1950s to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. During production and use, PFAS can migrate into the soil, water, and air. Most PFAS do not break down; they remain in the environment, ultimately finding their way into drinking water. Because of their widespread use and their persistence in the environment, PFAS are found all over the world at low levels. Some PFAS can build up in people and animals with repeated exposure over time.



The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). PFOA and PFOS have been phased out of production and use in the United States, but other countries may still manufacture and use them.

Some products that may contain PFAS include:

- Some grease-resistant paper, fast food containers/wrappers, microwave popcorn bags, pizza boxes
- Nonstick cookware
- Stain-resistant coatings used on carpets, upholstery, and other fabrics
- Water-resistant clothing
- Personal care products (shampoo, dental floss) and cosmetics (nail polish, eye makeup)
- Cleaning products
- Paints, varnishes, and sealants

Even though recent efforts to remove PFAS have reduced the likelihood of exposure, some products may still contain them. If you have questions or concerns about products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772. For a more detailed discussion on PFAS, please visit <http://bit.ly/3Z5AMm8>.

Violation Information

In April 2021 we began sampling and analysis for PFAS compounds. These compounds were detected in the drinking water produced at both of our treatment plants. After our May 2021 analysis results were received and confirmed, we were issued a Notice of Non-compliance from DEP for exceeding the MCL for the sum of six PFAS compounds (PFAS6; 20 parts per trillion, or ppt) in drinking water. This MCL violation will continue until our new filters are online.

In an effort to provide our residents with PFAS-free drinking water, we began taking approximately one million gallons per day from our current connection to the MWRA through Lexington in mid-May 2021. We have begun construction of a new filter building to remove PFAS at our Mill Pond plant. We have also begun construction of a larger water main to connect to MWRA to provide us with a volume of drinking water large enough that we can permanently shut down the Vine Brook groundwater treatment plant. Both of these important projects are projected to be completed by the middle of 2023.

Some people who drink water containing these PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.

Test Results

Our drinking water is monitored for many substances on a very strict sampling schedule. The water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water in 2022. Remember that detecting a substance does not mean the water is unsafe to drink. Our goal is to keep all detections below their respective maximum allowed contaminant levels.

The state recommends monitoring 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.

Regulated Substances										
				Town of Burlington, Department of Public Works		MWRA				
Substance (Unit of Measure)	Year Sampled	MCL [MRDL]	MCLG [MRDLG]	Amount Detected	Range Low-High	Amount Detected	Range Low-High	Violation	Typical Source	
Barium (ppm)	2022	2	2	NA	NA	0.01	0.008–0.01	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	
Chloramines (ppm)	2022	[4]	[4]	2.75	1.95–2.75	3.5	0.05–3.5	No	Disinfectant used in the treatment process to inhibit bacteriological growth	
Chlorine (ppm)	2022	[4]	[4]	2.55	1.28–2.55	NA	NA	No	Disinfectant to control bacteriological growth	
Fluoride (ppm)	2022	4	4	0.93	0.01–0.93	0.828	0.385–0.828	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2022	60	NA	29	10–29	24.4	4.4–24.4	No	By-product of drinking water disinfection	
Nitrate (ppm)	2022	10	10	0.16	0.03–0.16	0.55	0.032–0.55	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	
Nitrite (ppm)	2022	1	1	NA	NA	0.007	ND–0.007	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	
PFAS6 (ppt)	2022	20	NA	52.1	35.4–52.1	NA	NA	Yes ¹	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 firefighting foams	
Total Organic Carbon (removal ratio)	2022	TT ²	NA	2.95	2.14–2.95	NA	NA	No	Naturally present in the environment	
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2022	80	NA	65	7.2–65	20.7	9.08–20.7	No	By-product of drinking water disinfection	
Turbidity ³ (NTU)	2022	TT	NA	0.136	0.019–0.136	NA	NA	No	Soil runoff	
Turbidity (lowest monthly percent of samples meeting limit)	2022	TT = 95% of samples meet the limit	NA	100	NA	NA	NA	No	Soil runoff	

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

				Town of Burlington, Department of Public Works		MWRA				
Substance (Unit of Measure)	Year Sampled	AL	MCLG	Amount Detected	Sites Above AL/Total Sites	Amount Detected	Sites Above AL/Total Sites	Violation	Typical Source	
Copper (ppm)	2022	1.3	1.3	0.037	0/33	NA	NA	No	Corrosion of household plumbing systems; Erosion of natural deposits	
Lead (ppb)	2022	15	0	1.5	0/33	NA	NA	No	Corrosion of household plumbing systems; Erosion of natural deposits	

SECONDARY SUBSTANCES

				Town of Burlington, Department of Public Works		MWRA				
SUBSTANCE (UNIT OF MEASURE)		YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)		2022	200	NA	13	13–13	NA	NA	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)		2022	250	NA	160	160–160	NA	NA	No	Runoff/leaching from natural deposits
Fluoride (ppm)		2022	2.0	NA	0.93	0.61–0.93	0.81 ⁴	0.24–0.81 ⁴	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Iron (ppb)		2022	300	NA	61	ND–61	NA	NA	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)		2022	50	NA	27	ND–27	NA	NA	No	Leaching from natural deposits
pH (ppm)		2022	6.5-8.5	NA	9.39	8.29–9.39	NA	NA	No	Naturally occurring; Adjusted by chemical addition
Sulfate (ppm)		2022	250	NA	12	12–12	NA	NA	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)		2022	500	NA	4,300	4,300–4,300	NA	NA	No	Runoff/leaching from natural deposits

UNREGULATED SUBSTANCES⁵

		Town of Burlington, Department of Public Works		MWRA			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE	
1,4 Dioxane (ppb)	2022	0.19 ⁶	0.12–0.19 ⁶	NA	NA	Stabilizers; Chlorinated solvents; Paint strippers	

¹This is a Town of Burlington violation only.

²The value reported under Amount Detected for TOC is the lowest ratio of percentage of TOC actually removed to percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

³Turbidity is a measure of particulates of the water. It is monitored because it is a good indicator of the effectiveness of the filtration systems.

⁴Sampled in 2021.

⁵Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

⁶This data comes from monthly analysis of Vine Brook finished water. The DEP MCL is 0.3 ppb.

Definitions

90th %ile: Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the Action Level to determine lead and copper compliance.

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.

NA: Not applicable.

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

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.

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): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

