

# DRINKING WATER QUALITY REPORT

From Calendar Year 2022  
Brookfield Water Department  
6 Central St.  
Public Water Supply #2045000



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This Annual Water Quality Report provides information about the water supplied to our customers in 2022. This report is to inform you about the services we deliver to you every day. Our constant and continuous goal is to provide you with safe and quality drinking water. We want you to understand the commitment involved to continually maintain water quality and protect our water resources.

## Water Commissioners

Donald Taft *Chairman*  
Al Jones *Member*  
Robert Barnes *Member*

## Staff

Dennis Clarke  
Holly Chisholm

*Superintendent/ Primary operator*  
*Administrative Assistant*

Jeffrey Beauchamp *Secondary/ Back up operator*  
Jacob Allard *Secondary/ Back up operator*  
Bruce Clarke *Secondary/ Back up operator*

Monthly meetings are held on the second Wednesday of the month at 11:00 a.m. in the Brookfield Town Hall unless posted otherwise. Your input and participation is always welcome and valued.

## **Source of Water Wells and Protection**

Brookfield's water comes entirely from groundwater sources. The Water Department operates four gravel packed wells. Well 02G produces 300 gallons per minute, Well 03G produces 150 gallons per minute, Well 04G produces 70 gallons per minute and Well 05G produces 70 gallons per minute. Brookfield's source protection is provided through zoning with a bylaw entitled Wellhead Protection Overlay District and by the Town of East Brookfield in the form of Ground Water Protection District Zoning.

Our water system is interconnected to the West Brookfield water system for an emergency backup source.

## **Water Storage Facility**

A 500,000-gallon storage tank on Draper Street provides storage for our drinking water system and fire protection.

## **Water Treatment Facility**

Water from the four wells is pumped into a treatment facility approved by the MassDEP. The facility operates 24 hours a day with aid from automatic controls, alarms, and fail-safe shutdowns. A back up power supply is maintained to provide uninterrupted water during power failures. This facility reduces iron and manganese in water by injecting oxygen-enriched water in well 02G. Iron and manganese are both considered secondary contaminants, which means their effects are aesthetic (taste, color, and odor) rather than health based.

Manganese carries a health advisory at levels 0.3 mg/L (ppm) or greater.

Potassium hydroxide is used to adjust the acidity (pH) of the water for corrosion control. This minimizes the leaching of lead and copper from water pipes, joints, and household fixtures into the water.

Sodium Hypochlorite (chlorine) is used as a disinfectant, reducing the risk for harmful organisms in the water.

The facility and water quality are monitored 7 days a week, 365 days a year by our employees.

## **Distribution System**

The water system covers most areas in town north of the Quaboag River, roughly 9 miles of water mains. We flush the entire system twice each year to clean the pipes and maintain water quality. Maintenance is performed each year on our 82 fire hydrants. We have 487 service connections, each consisting of a short service line, curbstop valve and water meter.

We do not maintain the portion of each service line from the curbstop (usually near the property line) to the water meter, this is the responsibility of the homeowner.

## **Water Department Information**

We are a small, dedicated department that takes pride in customer service. We outsource as little as possible and perform most of our maintenance, repairs, fabrication and upgrades in house. Often you will see a joint effort between the highway and water departments during excavation projects. If you have any questions about the water department, or this report, please contact the Water Department Office in the Town Hall. Office hours are Monday and Wednesday. 10:00 a.m. - 2:00 p.m. or call and leave a message. (508) 867-2930 ext. 17. Your call will be returned ASAP.

## **Definitions**

*These definitions will give you a better understanding of the data provided in the water testing results.*

**MCL** = Maximum Contamination Level. The highest level of contaminant allowed in drinking water. **MCLs** are set as close to the **MCLGs** as feasible using the best available treatment technology.

**MCLG** = Maximum Contamination 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.

**AL** = Action Level. The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.

**PPM** = Parts Per Million, or Milligrams per liter (**mg/L**)

**PPB** = Parts Per Billion, or Micrograms per liter (**ug/L**)

**pCi/l** = Picocuries Per Liter (a measure of radiation)

**Unregulated Contaminants** = Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted. **ORSG** = Massachusetts Office of Research and Standards Guideline. This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

**SMCL** = Secondary Maximum Contaminant Level. These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

**Water Quality Data**

Your water department follows a MassDEP sampling schedule that includes monthly testing for bacteria and scheduled testing for other substances. The tables below show the results of our monitoring for the period of January 1 - December 31, 2021, unless otherwise noted. Only detected substances have been listed. Many other tests are performed.

**Educational Statement for Lead**

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. The Brookfield 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>.

**Lead and Copper**

Lead and Copper sampling is required annually. Tests are performed on selected/approved homes due to the use of lead in solder at the time of plumbing installation. Schools are also tested.

**Lead and Copper Compliance** is based on the 90<sup>th</sup> percentile value, which is the highest level found in 18 out of 20 homes sampled. Eighteen out of twenty homes sampled were below this level.

Residential	Collected Date	Percentile* 90th	Level (AL) Action	MCLG	sampled # of sites	above AL #of sites	AL Exceeded (Y/N)	Sources in Drinking Water
Lead	9/8/2022	.0087mg/L	.015mg/L	0	20	0	N	Corrosion of household plumbing
Copper	9/8/2022	1.21mg/L	1.3mg/L	1.3	20	0	N	Corrosion of household plumbing

Schools	Collected Date	Result	Level (AL) Action	MCLG	AL Exceeded (Y/N)	Sources in Drinking Water
Lead	9/8/2022	.0025mg/L	.015mg/L	0	N	Corrosion of household plumbing
Lead	9/8/2022	.0048mg/L	.015mg/L	0	N	Corrosion of household plumbing
Copper	9/8/2022	.381mg/L	1.3mg/L	1.3	N	Corrosion of household plumbing
Copper	9/8/2022	.898mg/L	1.3mg/L	1.3	N	Corrosion of household plumbing
Lead	9/8/2022	.0057mg/L	.015mg/L	0	N	Corrosion of household plumbing
Lead	9/8/2022	.0055mg/L	.015mg/L	0	N	Corrosion of household plumbing
Copper	9/8/2022	1.72mg/L	1.3mg/L	1.3	Y	Corrosion of household plumbing
Copper	9/8/2022	1.03mg/L	1.3mg/L	1.3	N	Corrosion of household plumbing
Lead	9/27/2022	.0019mg/L	.015mg/L	0	N	Corrosion of household plumbing
Copper	9/27/2022	.242mg/L	1.3mg/L	1.3	N	Corrosion of household plumbing

The highest free chlorine quarterly running annual average for 2022 was in the fourth quarter in the month of Dec at 0.4 mg/L. The range of daily residuals for the year was 0.1-0.5 mg/L free chlorine. The maximum residual disinfectant level for chlorine allowed by MassDEP is 4.0 mg/L.

**Total Trihalomethanes (TTHM)**

	Date Collected	Total Detected	MCL	Sources in Drinking Water
TTHM	8/22/2022	0 ug/L	80 ug/L	Bi-product from disinfection
TTHM	8/22/2022	1.63 ug/L	80 ug/L	Bi-product from disinfection

Radioactive Contaminants	Date Collected	Result	MCL	MCLG	Sources in Drinking Water
Radium 226, 228	5/11/2021	.903	5 pCi/l	0	Erosion of natural deposits

Unregulated and Secondary Contaminants	Date Collected	Results	SMCL	ORSG	Possible Sources
Iron (mg/L)	2/15/2022	.0681	.30	--	Erosion of natural deposits
Iron (mg/L)	6/14/2022	.129	.30	--	Erosion of natural deposits
Iron (mg/L)	7/19/2022	.163	.30	--	Erosion of natural deposits
Iron (mg/L)	11/1/2022	.0665	.30	--	Erosion of natural deposits
Manganese (mg/L)	2/15/2022	.0411	.05	0.3	Erosion of natural deposits
Manganese (mg/L)	6/14/2022	.0489	.05	0.3	Erosion of natural deposits
Manganese (mg/L)	7/19/2022	.068	.05	0.3	Erosion of natural deposits
Manganese (mg/L)	11/1/2022	.0377	.05	0.3	Erosion of natural deposits
Nickel (mg/L)	6/3/2021	.0017	--	100	Natural sources
Sodium (mg/L)	6/4/2021	3.79	--	20	Natural sources; Road Salt

Sodium-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of sodium levels in their drinking water where exposures are carefully controlled.

PFAS 6 (PPT)	Date Collected	Result	MCL	Violation
	1/21/22, 4/28/22, 7/19/22	0 PPT	20 PPT	NO

#### PFAS 6

Possible sources.

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.

Health effects.

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.

#### Manganese

Manganese is a naturally occurring mineral found in rocks, soil and groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The United States Environmental Protection Agency (EPA) and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of .05 mg/L (miligrams per liter), or 50 parts per billion. In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for manganese. **Drinking water may naturally have manganese and, when concentrations are greater than .05mg/L, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 0.3mg/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1.0 mg/L, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 0.3 mg/L, nor should formula for infants be made with that water for longer than 10 days.** The ORSG differs from the EPA's health advisory because it expands the age group to which a lower manganese concentration applies from children less than 6 months of age to children up to 1 year of age to address concerns about children's susceptibility to manganese toxicity. See: EPA Drinking Water Health Advisory for Manganese [https://www.epa.gov/sites/production/files/2014-09/documents/support\\_cc1\\_magnese\\_dwreport\\_0.pdf](https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_magnese_dwreport_0.pdf) and MassDEP Office of Research and Standards Guideline (ORSG) for Manganese <https://www.mass.gov/files/documents/2016/08/nr/mangorsg.pdf>.

#### Waivers

The MassDEP has reduced the Brookfield Water Department's monitoring requirements for inorganic compounds, volatile organic contaminants, and arsenic due to the location of the wells and prior sample results. These samples were found to meet all applicable EPA and DEP standards.

#### Source Water Assessment Program (S.W.A.P.)

The MassDEP has reviewed the area that could affect the quality of our water. This area known as zone II is protected by a Brookfield bylaw titled, "Wellhead Protection Overlay District" and protected by East Brookfield bylaws. The S.W.A.P. report noted that Brookfield is at high threat for possible contamination because our wells are close to a river. This river passes close to roads and the railroad, which in the event of a spill could carry contaminants. We are working very closely with our emergency services to provide protection in the occurrence of a spill. This report is available at the Brookfield Water Department by request.

#### Source Water Protection Committee

The Town of Brookfield has adopted a committee to review source water protection strategies. This committee has developed a protection plan to guide the town towards keeping our water supply safe.

#### Substances Found In Tap Water

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 EPA'S Safe Drinking Water Hotline at 1-800-426-4791.

## **Educational Information**

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

## **Testing For Contaminants**

Contaminants 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, and wildlife. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses. Inorganic contaminants such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can, come from gas stations, urban stormwater runoff and septic systems. Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

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. Contaminants 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, and wildlife. • Inorganic contaminants, such as salts and metals, which can be naturally occurring or 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 17 chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems. • Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Mass DEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

## **Compliance**

The Brookfield Water Department continues to remain in compliance with all state and federal requirements.

## **Cross Connection Control**

The Brookfield Water Department recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. Swimming pools must have a backflow prevention device in place. This is a great way for you to protect the water in your home as well and the water drinking system in town. For additional information, please refer to water department rules and regulations.

## **Chlorination**

### **Why do I smell chlorine in my water?**

To remain in compliance with MassDEP regulations, Brookfield adds sodium hypochlorite (chlorine) to the water at its treatment facility. Chlorine is used as a disinfectant, reducing the risk for harmful organisms in the water.

Our water system storage and piping must be kept safe from microbial contamination. Often, bacteria can develop on the interior of storage tanks and water pipes. Maintaining a chlorine residual in the water system is a measure of protection against harmful organisms the water may encounter after leaving the treatment facility. Flooding, broken water mains and even fire fighting present risks to our water system, the chlorine residual present ensures safe drinking water at all times.

### **How do I remove the chlorine from my drinking water?**

Simply fill a pitcher and put it in the refrigerator. After just a few hours, pour yourself a cold refreshing glass. The chlorine will have "gassed off." A slice of lemon or a few drops of lemon juice. The ascorbic acid in the lemon juice neutralizes the chlorine and leaves behind a pleasant taste. Activated carbon filters are available in many forms to remove chlorine. Some go under your kitchen sink, some thread on the faucet. They are also available within pitchers, and even for shower heads. Activated carbon is very effective at removing chlorine. Remember, chlorine is added to keep our water safe and free from harmful organisms.

The Brookfield Water Department is responsible for delivering a safe, clean and reliable source of drinking water to our community 24 hours a day 7 days a week. We appreciate the smell of chlorine in our water, a reminder of our efforts to put the safety and health of our residents first.

## **Rules and Regulations**

For up-to-date water department rules and regulations, please visit our website at <https://www.brookfieldma.us/water-department>

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