



# ANNUAL WATER QUALITY REPORT

Reporting Year 2023



*Presented By*  
**Haverhill Water  
Department**



## Our Commitment

We are pleased to present to you this year's annual water quality report. This report is a snapshot of last year's water quality covering all testing performed between January 1 and December 31, 2023. Included are details about your sources of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and providing you with this information because informed customers are our best allies.

## Water Treatment Process

Our drinking water comes from combined water sources, all of which are surface water. Surface water means water from aboveground supplies, not wells. Our sources are lakes, ponds, and a human-made reservoir. Water is pumped, as needed, from Millvale Reservoir and Crystal Lake into Kenoza Lake, where the Haverhill Water Treatment Plant is located. Water from Round Pond and Winnekenni Basin overflows into Kenoza Lake and is part of our drinking water system. These combined waters are then pumped from Kenoza Lake into the water treatment plant. The distribution system is made up of three storage tanks with a capacity of 17 million gallons, 13 pumping stations, and approximately 300 miles of water main.



## The Benefits of Fluoridation

Fluoride is naturally occurring 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 and prevent tooth decay. At this level, it is safe, odorless, colorless, and tasteless. There are over 4 million people in Massachusetts water systems and 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

## 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. Environmental Protection Agency (U.S. EPA)/Centers for Disease Control and Prevention (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 at (800) 426-4791 or [water.epa.gov/drink/hotline](http://water.epa.gov/drink/hotline).



## Lead in Home Plumbing

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 and removing lead pipes, but we cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, or doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute-accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact Mary D'Aoust at the Haverhill Water Treatment Plant, (978) 374-2385. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at [epa.gov/safewater/lead](http://epa.gov/safewater/lead).

## Treatment Train Description

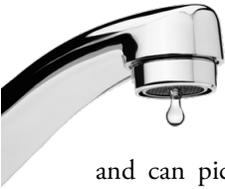
The Haverhill Water Treatment Plant is a conventional filtration plant, which includes coagulation, flocculation, clarification, filtration, and disinfection. The clarified, treated water goes through a two-stage (sand, then granular activated carbon) filtration process. After filtration it is fluoridated, then disinfected with sodium hypochlorite before it is pumped into the distribution system. Last year, the treatment plant processed 2.1 billion gallons of water.

## QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please contact Mary D'Aoust, Water Treatment Plant Chemist, at (978) 374-2385 or [mdaoust@HaverhillMA.gov](mailto:mdaoust@HaverhillMA.gov).

## 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. 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.

## Source Water Assessment

A source water assessment plan (SWAP) is available at the water treatment plant. If you would like to view this report, please contact the water treatment plant at (978) 374-2385. The SWAP is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.

This report assesses activities on our watershed and identifies potential pollution hazards. These potential hazards, if handled properly, would not pose a threat to our water supplies. They fall in the following categories: fertilizer storage, livestock operations, manure storage/spreading, nurseries, pesticide storage/use, auto repair and body shops, bus and truck terminals, cemeteries, golf courses, junk/salvage yards, nursing homes, repair shops, sand and gravel mining/washing, fuel oil storage, lawn care/gardening, septic systems, aquatic wildlife, combined sewer overflows, composting facilities, fishing/boating, land application of sewage sludge, schools, colleges/universities, snow dumps, stormwater drains/retention basins, and underground storage tanks. One or more of these hazards can be found near all of Haverhill's water sources. A water department employee checks these areas weekly to identify any violations.



## Tip Top Tap

The most common signs that your faucet or sink is affecting the quality of your drinking water are discolored water, sink or faucet stains, a buildup of particles, unusual odors or tastes, and a reduced flow of water. The solutions to these problems may be in your hands.

### Kitchen Sink and Drain

Handwashing, soap scum buildup, and the handling of raw meats and vegetables can contaminate your sink. Clogged drains can lead to unclean sinks and backed-up water in which bacteria (i.e., pink or black slime growth) can grow and contaminate the sink area and faucet, causing a rotten egg odor. Disinfect and clean the sink and drain area regularly and flush with hot water.

### Faucets, Screens, and Aerators

Chemicals and bacteria can splash and accumulate on the faucet screen and aerator, which are located on the tip of faucets and can collect particles like sediment and minerals, resulting in a decreased flow from the faucet. Clean and disinfect the aerators or screens on a regular basis.

Check with your plumber if you find particles in the faucet screen, as they could be pieces of plastic from the hot water heater dip tube. Faucet gaskets can break down and cause black, oily slime. If you find this slime, replace the faucet gasket with a higher-quality product. White scaling or hard deposits on faucets and showerheads may be caused by water with high levels of calcium carbonate. Clean these fixtures with vinegar or use water softening to reduce the calcium carbonate levels for the hot water system.

### Water Filtration/Treatment Devices

A smell of rotten eggs can be a sign of bacteria on the filters or in the treatment system. The system can also become clogged over time, so regular filter replacement is important. (Remember to replace your refrigerator filter!)

## Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed 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 is included, along with the year in which the sample was taken.

We participated in the fifth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR5) program by performing additional tests on our drinking water. UCMR5 sampling benefits the environment and public health by providing the U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water to determine if it needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data is available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

UCMR5 monitoring included 30 contaminants in 2023. None of these contaminants exceeded the minimum reporting limit set by U.S. EPA in this program.

### REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2023	2	2	0.011	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2023	[4]	[4]	1.20	0.80–1.76	No	Water additive used to control microbes
Fluoride (ppm)	2023	4	4	0.72	0.09–0.99	No	Water additive which promotes strong teeth
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2023	60	NA	19.5	5.1–31	No	By-product of drinking water disinfection
PFAS6 (ppt)	2023	20	NA	2.15	ND–4.3	No	Discharges and emissions from industrial and manufacturing sources associated with the production or use of moisture- and oil-resistant coatings on fabrics and other materials; Use and disposal of products containing these PFAS, such as firefighting foams
Total Organic Carbon [TOC] (ppm)	2023	TT <sup>1</sup>	NA	1.35	1.01–1.71	No	Naturally present in the environment
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2023	80	NA	51.6	33–71	No	By-product of drinking water disinfection
Turbidity <sup>2</sup> (NTU)	2023	TT	NA	0.24	NA	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2023	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

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

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2023	1.3	1.3	0.018	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2023	15	0	ND	0/30	No	Lead service lines; Corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits

### SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Manganese (ppb)	2023	50	NA	22	NA	No	Leaching from natural deposits
pH (units)	2023	6.5-8.5	NA	7.64	6.91–8.23	No	Naturally occurring
Sulfate (ppm)	2023	250	NA	20.9	NA	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2023	500	NA	188	NA	No	Runoff/leaching from natural deposits
Zinc (ppm)	2023	5	NA	0.884	NA	No	Runoff/leaching from natural deposits; Industrial wastes

## UNREGULATED SUBSTANCES<sup>3</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Alkalinity (ppm)	2023	41	NA	NA

<sup>1</sup>The value reported under Amount Detected for TOC is the lowest ratio between percentage of TOC actually removed and 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.

<sup>2</sup>Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

<sup>3</sup>Unregulated 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.

## 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.

## What's a Cross-Connection?

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air-conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand), causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed industrial, commercial, and institutional facilities in the service area to make sure that potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test backflow preventers to make sure that they provide maximum protection. For more information on backflow prevention, contact the Safe Drinking Water Hotline at (800) 426-4791.

## Year in Review

The Haverhill Water Department completed capital improvement projects along segments of Primrose Street, Coffin Avenue, River Street and the Smiley Avenue area. A total of 2.3 miles of new main was installed in those areas. New gate valves and fire hydrants were also installed. The project's goal is to improve service reliability and water quality.

The city continues to work on the development of the next generation of Haverhill's water supply. The project to develop a high-yielding radial collector well along the Merrimack River is in the permitting phase. Final approval of the well is expected in 2024.

The Haverhill Water Department entered into an agreement with the consulting engineering firm Woodard and Curran to develop a program to perform a comprehensive water service line inventory. The water service line inventory will verify the material type of all water service lines, including lead. Based on department records, there are thought to be less than 200 full or partial lead water services left in the Haverhill water distribution system. The regulatory deadline to complete this inventory project is October 16, 2024. Access to customer residences to verify types of water service materials may be required in some circumstances. We ask for the cooperation of all our customers if you are contacted by the water department or the water department's authorized contractor during the inventory phase of the project.

Backflow/Cross Connections	978-374-2375
Water Billing	978-374-2370
Water Maintenance	978-374-2368
Water Meters	978-373-8487
Water Treatment	978-374-2385

Low-flow showerheads and faucet aerators are available while supplies last at the Water Billing office, Rm 300 in City Hall.