ANNUAL WATER QUALITY REPORT

Reporting Year 2021

Presented By

Town of Norton Water & Sewer Department

PWS ID#: 4218000

We've Come a Long Way

Once again, we are proud to present our annual water quality report covering the period between January 1 and December 31, 2021. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at all hours—to deliver the highest-quality drinking water without interruption. Although challenges still lie ahead, we feel that by relentlessly investing in customer outreach and education, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family. As a department, we would like to thank our recently retired employees for their dedication and hard work throughout the years.

How Is My Water Treated and Disinfected?

Primary Disinfection with Chlorine

Some groundwater sources contain numerous microorganisms, some of which can cause people to be sick. 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, and is too costly to use on a routine basis. The Norton Water Department uses 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.

Corrosion Control through pH Adjustment

Many drinking water sources in New England are naturally corrosive (i.e., they have a pH of less than 7.0). Low pH in water has a tendency to corrode and dissolve the metal piping it flows through. This action not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason, it is beneficial to add chemicals that make the water neutral or slightly alkaline.

The Norton Water Department adds potassium hydroxide to its water. This chemical adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations. In December of 2016, MassDEP instructed Norton Water to increase its pH level to aid in the prevention of lead and copper build-up levels.

Filtration of Iron and Manganese

Iron and manganese are minerals found in groundwater. At certain levels, they can discolor the water or cause it to take on unpleasant odors or taste. Even though the water may still be safe to drink, treatment is often desirable. Our Green Sand Filtration treatment facility will remove the iron and manganese from three of our largest wells, which in the past have had the highest concentration of these natural minerals.

Additional treatment consists of adding Aqua Mag, a blended poly phosphate, to the water. This results in a chemical reaction, known as sequestration, which prevents the iron and manganese from forming nuisance particles.

Where Does My Water Come From?

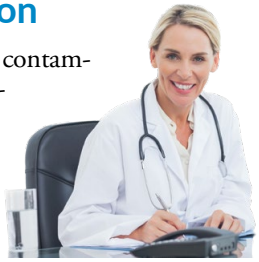
The Town of Norton's drinking water supply is groundwater, which comes from the Canoe River Aquifer, located within the Taunton River Basin. The groundwater is the highest quality water available for human consumption. Demand for water is high; we provided approximately 1.2 million gallons of water each day during 2021.

Our distribution system consists of five gravel-packed wells and four storage facilities that store a combined amount of 5.85 million gallons of water. (State regulations require a one day minimum of water storage supply.) We have approximately 150 miles of water main. The wells are located within our Water Resource Protection District, an essential tool for protecting our water source. The Town established and accepted our district and our by-laws in 1980; they have since been incorporated into the Town's Zoning By-Laws. Please remember: Connecting any irrigation system or any automatic sprinkler to the municipal water system in Norton is STRICTLY PROHIBITED.

Community Participation

Dates and times for Board meetings are posted on the Town and Water Department Web sites.

Important Health Information



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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, please call Francis J. Fournier III, Superintendent, at (508) 285-0282.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) 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 that 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 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.

Level 2 Assessment Update

Coliforms are bacteria that are naturally present in the environment. They are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

During the past year, three Level 2 assessments were required to be completed for our water system, which were completed. In addition, we were required to take three corrective actions, and we completed all of these actions.

Source Water Assessment and Protection

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to inventory land uses within the recharge areas of all public water supply sources; to assess the susceptibility of drinking water sources to contamination from these land uses; and to publicize the results to provide support for improved protection.

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by MassDEP. The complete SWAP report is available at the Norton Water & Sewer Department or online at www.mass.gov/eea/docs/dep/water/drinking/swap/sero/swap-sero.pdf.

For more information, contact Francis J. Fournier III at (508) 285-0282.

Manganese

Manganese is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but it can have undesirable effects on certain sensitive populations at elevated concentrations. The U.S. EPA and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 µg/L (micrograms per liter), or 50 parts per billion (ppb). 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 contain manganese and, when concentrations are greater than 50 µg/L, the water maybe discolored and taste bad. Over a lifetime, the EPA recommends that people limit their consumption of water with levels over 1,000 µg/L, primarily due to concerns about the possible neurological effects. Children up to one year of age should not be given water with manganese concentrations over 300 µg/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 six months of age to children up to one year of age to address concerns about children's susceptibility to manganese toxicity.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show only 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 often 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.

An individual TTHMs sample exceeded the MCL on 11/23/21 at our sampling site at the end of Richardson Avenue. High TTHMs are usually the result of higher chlorine residuals, which was the case here. Chlorine was higher than average because it was needed to maintain a satisfactory disinfection residual. There will be increased water main flushing in the area to help address this issue. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their livers, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2021	[4]	[4]	0.70	0.08–1.50	No	Water additive used to control microbes
Combined Radium (pCi/L)	2021	5	0	1.04	ND–1.04	No	Erosion of natural deposits
Gross Alpha (pCi/L)	2021	15	NA	1.8	0.3–1.8	No	Erosion of natural deposits
Haloacetic Acids [HAAs]–Stage 1 (ppb)	2021	60	NA	25	ND–37	No	By-product of drinking water disinfection
Nitrate (ppm)	2021	10	10	1.14	0.71–1.14	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2021	2	NA	0.14	0.1–0.14	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
PFAS6 (ppt)	2021	20	NA	18.5	ND–20.5	No	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
Radium 226 & Radium 228 (pCi/L)	2021	5	NA	1.04	0.3–1.04	No	Decay of natural and man-made deposits
TTHMs [Total Trihalomethanes]–Stage 1 (ppb)	2021	80	NA	82	25–99	Yes	By-product of drinking water disinfection

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 that, if exceeded, triggers treatment or other requirements that a water system must follow.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

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.

pCi/L (picocuries per liter): A measure of radioactivity.

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.

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)	2021	1.3	1.3	0.27	0/33	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2021	15	0	2	1/33	No	Lead services 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	EXCEEDANCE	TYPICAL SOURCE
Manganese (ppb)	2021	50	NA	546	ND–546	Yes	Leaching from natural deposits

UNREGULATED SUBSTANCES [1]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromochloroacetic Acid (ppb)	2020	5.00	0.527–5.00	By-product of drinking water disinfection
Bromodichloroacetic Acid (ppb)	2020	5.41	0.654–5.41	By-product of drinking water disinfection
Chlorodibromoacetic Acid (ppb)	2020	0.969	0.345–0.969	By-product of drinking water disinfection
Bromodichloromethane (ppb)	2021	20.8	ND–20.8	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2021	1.9	ND–1.9	By-product of drinking water disinfection
Chloroform (ppb)	2021	72.7	ND–72.7	By-product of drinking water disinfection
Sodium[2] (ppm)	2021	68.3	16–68.3	By-product of drinking water disinfection

OTHER SUBSTANCES [1]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Dibromoacetic Acid (ppb)	2021	1.1	ND–1.1	By-product of drinking water disinfection
Dichloroacetic Acid (ppb)	2021	16.7	1.3–16.7	By-product of drinking water disinfection
Monochloroacetic Acid (ppb)	2021	4.2	ND–4.2	By-product of drinking water disinfection
Perfluorobutanesulfonic Acid (PFBS) (ppt)	2021	3.4	1.6–4.1	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 fire-fighting foams
Perfluorohexanoic Acid (ppt)	2021	3	2.8–3.4	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
Trichloroacetic Acid (ppb)	2021	19.4	ND–19.4	By-product of drinking water disinfection

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

[2] The Massachusetts Department of Environmental Protection maintains a guideline level of 20 ppm for sodium.

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 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 at (800) 426-4791 or at www.epa.gov/safewater/lead.