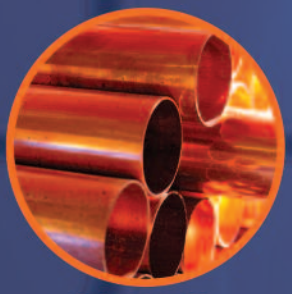
GROTON UTILITIES

2022

Annual Water Quality Report

GET THE LEAD OUT!



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@grotonutilities

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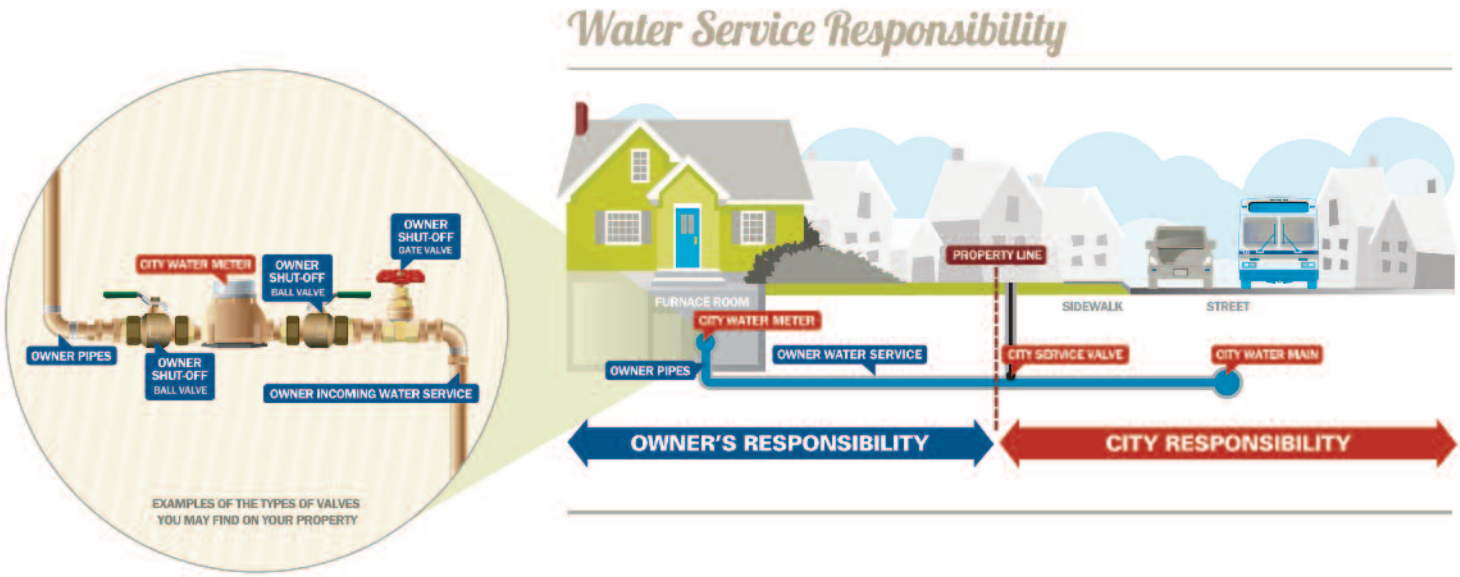
GROTON UTILITIES
At Your Service



Important Information About Your Drinking Water

Groton Utilities is proud to report that the water we supply **meets all established Federal and State drinking water standards.** During 2022 we received **NO** violations for water quality from our regulators. This **25th Annual Water Quality Report** contains important information about the source and treatment of your water, lists the results of our 2022 testing, and includes some of the improvements we are making to enhance the quality of your drinking water. The report also contains important information about what you can do to conserve and protect your valuable water supply.

This year's theme is lead service lines and identifying all the types of water service lines in our service area. It is part of an initiative from the EPA and CT Department of Public Health, Drinking Water Section (CT DPH, DWS) for each of Connecticut's water utilities to identify the plumbing materials used for all the service lines in their service areas. All water utilities are required to complete this task by October of 2024. Groton Utilities has very extensive records of the water services in Groton where we provide our water, but it is necessary that we provide additional verification beyond just our written records, and that is where we are looking for your help!

Please read further to learn more about service lines, and how you can reach out to us and provide information on your service line, at the point where it enters your home and connects to your water meter.

Please read our report to stay informed on our latest activities to continue to improve Groton drinking water. Further on in this water quality report, we also provide information on how to contact us. For more information about your drinking water, please visit the Groton Utilities website at www.grotonutilities.com > Our Company > Water Operations. We also provide more information on our social media platforms: Facebook: @grotonutilities and Instagram: @grotonutilities.

Thank you for taking the time to read this report and learn more about your drinking water, and the dedicated efforts Groton Utilities employees make each and every day to make Groton drinking water clean and safe.

Your Friends at the Groton Utilities Water Division

The graphic design for this Water Quality Report was done by Jesse Carbone – Carbone Graphics.

What is a service line?

Before we can talk about identifying the plumbing materials used for water service lines, we have to answer the question "What is a service line?" The first part of the service line is the underground piping coming from the water main in the street to a "curb stop," which is the shutoff valve usually located in the front lawn or sidewalk in front of a home. The second portion of the service line goes from the curb stop to the house, going through the foundation wall in the basement (if you have a basement) and connects to your water meter. Beyond the water meter is your household plumbing, of course.

When a new house is built (or was built, back in the day), the water utility installs the first portion of the service line, from the main to the curb stop (also installed by the water utility). The home builder has a plumber install the second portion of the service line, from the curb stop to inside the house. The water utility installs their water meter at the end of this service line, and then the plumber can run the household plumbing from the meter to the rest of the house.

The first portion, installed by the utility, is referred to as the "utility side" of the service line; the second portion, installed by a plumber, is referred to as the "customer side." If a service line breaks (a rare occurrence), the responsibility to repair it depends on which portion has broken. If it breaks on the utility side, it is the responsibility of the water utility to repair it; if it breaks on the customer side, it is the responsibility of the customer to have it repaired. Please see the picture on the previous page for a visual representation of this description.

What plumbing materials are used for service lines, and why do we need to identify them?

There are a variety of materials that have been used for service lines over the past 100 years, starting with lead. Lead was used for service lines a long time ago because it didn't rust when buried in the ground, and was fairly flexible. Other types of plumbing materials used for service lines were brass pipe, galvanized pipe, black pipe, copper tubing, and, more recently, plastic tubing.

In appearance, lead is dull gray and usually has a bulbous appearance right before it connects to the water meter, and is a soft metal that can easily be scratched with a key or other sharp object. Galvanized pipe is a little brighter gray because of the zinc coating and is not easily scratched with a key; also it is not a soft metal, it is made of steel. Black pipe is also made of steel, but has a black coating. Copper tubing has a typical copper color, and over the years develops a brownish-coppery color; it is not uncommon to see greenish deposits on the outside of copper pipe or tubing. Polyethylene plastic tubing is typically blue (or sometimes black) plastic.

The reason we need to identify all the service lines in Groton is because we need to be sure that we have identified any remaining lead service lines, and once we have done that, we will set forth a plan to remove them all. The reason we have to identify the materials for all the other service lines is because if we don't know what they are made of, we are required to treat them as if they were lead lines (even if it is unlikely that they are). Once this identification process is complete, we will have this information available for our customers, in accordance with the requirements of the CT Department of Public Health (CT DPH).

How can I help with the verification process?

You can help us by taking a photo of the water pipe where it enters your home; we will be setting up a web address for you to upload your plumbing photo, along with your name and address, and checking a box to note the type of plumbing material your service line is made of. We will announce a web address to do this soon—keep an eye on the "Notices" section of your bill for more information. This will provide us with a secondary means of verification, in addition to our service cards, which will give us the proof we need in order to provide sufficient documentation to the CT DPH. If your home was built after 1980 you do not need to submit this information; by that time copper tubing (or sometimes plastic tubing) was in standard use for service lines.

Per- and Polyfluoroalkyl Substances (PFAS)

As concern about PFAS in source water and drinking water around Connecticut has increased, Groton Utilities has proactively begun sampling in our terminal reservoir (Poquonnock Reservoir), at our Point of Entry (the treated water leaving the water plant to go to our customers), and within our watershed. Even though there is no currently established Maximum Contaminant Level (MCL), the EPA has proposed an MCL for PFOA and PFOS (two of the most common PFAS compounds) of 4 parts per trillion, and would use a ratio to evaluate the presence of four other PFAS compounds. This proposal is currently undergoing review, and is expected to become law in 2024. Currently, the Connecticut Department of Public Health has established Action Levels for four PFAS compounds, not to exceed varying levels (between 10 – 49 parts per trillion, depending on the compound) in drinking water. We do quarterly testing at our Point of Entry for 14 PFAS compounds, and the results for 2022 (for all 14 compounds) have been less than 2 parts per trillion, which is below the current Action Levels, as well as being below the proposed MCLs and ratios mentioned earlier. For more on PFAS, check Groton Utilities' website and on-line platforms for further information.

Example of a water service line coming into a home, leading to the water meter.

Disinfection By-Products

Chemical compounds formed by the reaction of chlorine in contact with natural organic matter were discovered by EPA scientists in the 1970s and were subsequently regulated by the EPA beginning in 1979; they are referred to as Disinfection By-Products (DBPs). The two types of these compounds are known as Trihalomethanes (THMs) and Haloacetic acids (HAA5s) However, their presence, despite dedicated efforts by water companies to minimize their occurrence, does not outweigh the benefits of chlorine as noted above. A report on chlorination of drinking water by the International Programme on Chemical Safety (as quoted in a document on chlorination posted by the Water Quality and Health Council, https://waterandhealth.org/safe-drinking-water/wp/) states the following:

The health risks from these byproducts at the levels at which they occur in drinking water are extremely small in comparison with the risks associated with inadequate disinfection. Thus, it is important that disinfection not be compromised in attempting to control such byproducts.

To be clear, there are potential risks to drinking water containing Disinfection by-products at levels consistently above the Maximum Contaminant Level (MCL) for many years. The EPA, echoed by the CT Department of Public Health, states the following:

Some people who drink trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

This is always the challenge in all attempts to produce safe drinking water—we always work to improve drinking water quality (such as using chlorine to disinfect the drinking water), while working at the same time to minimize any unintended consequences.

We here at Groton Utilities take seriously our commitment to provide our customers with the best drinking water possible; that is why we recently built the new water treatment plant with improvements such as Dissolved Air Flotation and deep-bed Granular Activated Carbon (a filter media that provides added benefits compared to the rapid sand media we previously used).

In addition, last summer, we found that by blending several of our water sources (reservoirs and wells) together before sending the water through the Water Treatment Plant, we were able to reduce the levels of organic matter coming into the water plant, and thereby reduce the level of organic matter leaving the water plant. This action reduced the levels of trihalomethanes even further than in previous years. We will continue to use source water blending to improve the overall water quality. Please note that Groton drinking water has always met the standards for trihalomethanes and haloacetic acids.

Sodium in Drinking Water

Sodium is an element that is naturally occurring and is essential for life. It is naturally present in Groton's reservoirs, and in some reservoirs it is at a higher level than others, possibly due to stormwater runoff from the roads. Groton sometimes blends water from one reservoir into their main reservoir to improve certain aspects of the water quality. In 2022, we did not exceed the Sodium Notification level of 100 mg/L. For most of our customers, sodium will not be an issue, but for customers who have been put on a very restrictive diet (less than 500 mg of sodium per day) this may be something they will want to discuss with their doctor. To put things in perspective, 29 mg/L of sodium (our highest level in 2022) is equal to 6.9 mg of sodium in an 8 ounce glass of water; in comparison, an 8 ounce glass of 1 % milk contains 104 mg of sodium. So if you have any concerns about sodium in drinking water we suggest you consult your physician, but for most people on a normal (i.e., non-sodium restricted) diet it would not be of concern.

Corrosion Control in Drinking Water

As one of the many things we do to provide you with the best drinking water quality possible, we add a corrosion inhibitor to the drinking water. The purpose is to keep lead and copper in one's household plumbing from dissolving into the tap water when water is not in use (overnight, or during other extended periods of non-use). We use a blended phosphate (an ortho phosphate and a polyphosphate); the ortho phosphate keeps the lead and copper from coming into solution in household piping, and the polyphosphate acts to bind with minerals such as iron and manganese that may be in the water, to prevent discolored water. To be clear, there is no lead or copper in the water coming from our reservoirs, the purpose of the corrosion inhibitor is just to restrict the natural tendency of water (known as the "universal solvent") to dissolve metal plumbing materials into the tap water. As with all the treatment in use at our water treatment plant, this blended phosphate is approved specifically for use in potable water, in a dosage approved by the Connecticut Department of Public Health, Drinking Water Section.

Important Information about Lead and Copper in Drinking Water

Due to watershed protection measures and an active program to control corrosion in water pipes, our water system has remained in compliance with drinking water regulations for lead and copper, using this multi-barrier approach. However, it is possible that lead or copper levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water containing lead in excess of the action level over many years could develop kidney problems or high blood pressure.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

Lead and copper in drinking water is primarily from materials and components associated with service lines and home plumbing. Groton Utilities is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components

Following are steps that can be taken to minimize potential exposure to lead:

✓ **If the water has sat unused in your pipes for more than several hours, flush your cold water tap for 30 seconds to 2 minutes (or until it gets cold) before using for drinking, cooking or making baby formula.**

✓ **Use cold water (not water from the hot water tap) for drinking, cooking, making formula, hot cocoa, tea, instant foods, etc.**

✓ **Periodically remove and clean the aerator or screen from the end of each faucet and rinse to remove any debris.**

✓ **Ensure that any updates to household plumbing are done with lead-free solder and fixtures.**

If you are concerned about lead or copper 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 (800-426-4791) or at https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water.

Source Water

One of the best ways to protect our customers from Contaminants of Emerging Concern (CECs) is to be vigilant in monitoring the water sources within our watershed. Groton Utilities' water is supplied by surface water from a series of five interconnected reservoirs covering a watershed of 15.6 miles, and also includes three wells. Four reservoirs – Morgan, Ledyard, Poheganut, and Smith Lake flow into Poquonnock, our terminal reservoir. When full, all five reservoirs have a combined capacity of 2.5 billion gallons of water. Planning for the future, we invested funds in 2014 to secure water rights from Haley's Brook in Groton, and have advised local and state agencies to ensure that the immediate watershed area should receive protection status. Our staff includes watershed surveillance staff who, with local and state police, maintain a high level of security, monitor the watershed for potential sources of contamination, and routinely collect water samples for laboratory analysis. We also have a spill response team and trailer to assist emergency responders with any threat of contamination that could impact our water supply. Maintaining the security of our water supply is everyone's responsibility. Please advise us of any suspicious activity by calling us at (860) 446-4000.

Source Water Assessment

The State of Connecticut Department of Public Health has performed an assessment of our drinking water sources. It was found that Groton Utilities' drinking water sources have an overall low susceptibility to potential sources of contamination. The completed report is available for access on the Drinking Water Division's website: https://portal.ct.gov/dph. Click on Topics A-Z, Drinking Water, Drinking Water Topics A-Z, and then Source Water Assessment Program.

Forestry

Watershed land owned by GU surrounding the reservoirs is made up of forests and wetlands. Forests are one of the first and best defense mechanisms to achieve high water quality filtering and purifying the water. These areas improve water quality through leaf screens, water filtration, reduction of stormwater run-off, and natural removal of contaminants. Healthy diverse forests provide important water treatment services even before the water reaches the water treatment plant. To ensure the continued production of clean water, GU worked with a Certified Connecticut Forester to develop a long term Forestry Management Plan in 2019. Having diverse and healthy stands of trees makes the forest more resilient and better able to continue acting as a filter for our reservoirs. Properly managing forests for water quality also helps prevent damage from insect pests, invasive species and limits vulnerability to fire and other disturbances. Please take note of our fire safety signs in Groton and Ledyard watershed areas.

Land Protection

Groton Utilities works with local and state environmental and conservation groups in support of their efforts of watershed land and aquifer protection with the aim of protecting water quality, preserving forest land and wildlife habitat, and allowing for open space activities.

In 2019, Groton Utilities partnered with Avalonia Land Conservancy in the group's protection and purchase of watershed land in Ledyard. Avalonia's recently acquired property, Atkinson-Dirlam Preserve on Long Cove Road, protects critical watershed land and wetlands that provide water treatment services. Additionally, Groton Utilities is working in partnership with Avalonia to provide watershed access and education through hikes on this newly acquired watershed property.

Watershed Protection

Watershed and reservoir security is a key element of the Groton Utilities goal to provide clean potable water to customers and the region. The sources of our water include runoff, streams, ponds, springs, wells and of course our reservoirs. There are many key elements for this goal including flow control, inspections, sampling, surveillance, and patrol. To maintain this protection program, our employees and vehicles – clearly marked "Groton Utilities" – can be

seen in all areas of the watershed.

Emergency Response

Groton Utilities maintains an emergency response trailer stocked with absorbent materials and spill containment equipment. A team of employees have been recently re-certified to respond in case of emergency to assist first responders. Protocol and mutual aid agreements are in place with local fire and emergency services and a collaborative of Connecticut's Water/Wastewater Agency Response Network – CtWARN. Groton Utilities maintains an oil boom and turbidity curtains in key locations in reservoirs as part of water quality control for turbidity and spill protection.

How You Can Help to Protect Your Source Water Quality

- Don't flush medications or over-the-counter products down the toilet or sink. Put them in the trash (and not in the recycling bin). For information on safely disposing them in the trash, visit the CT DEEP's website at www.ct.gov/deep. Under Environmental Quality, click on Pollution Prevention; and then Proper Medication Disposal.

- Go Green – Seek alternatives to caustic household cleaners, pesticides, paint removers, and other products containing toxic chemicals. Go to the CT DEEP's website at www.ct.gov/deep. Under Environmental Quality, click on Pollution Prevention; and then Reducing Toxic Products in the Home. Alternative "recipes" (as well as other helpful tips) are given for many toxic products commonly used in the house and garden.

- Properly dispose of paints, motor oil, pesticides and other hazardous household waste by bringing it to a household hazardous waste collection site. Visit http://scrrra.org and scroll down to "Household Hazardous Waste" for a complete list of Household Hazardous Waste collection days in 2023.

Water Treatment

Our certified water treatment plant operators are responsible for producing water that meets all State and Federal drinking water requirements. In addition to routine plant operations, they also maintain and repair the numerous pumps and valves in the plant and the five pumping stations located in the distribution system. Performing routine maintenance throughout the Water Treatment Plant, and maintaining on-line monitoring equipment and the operational readiness of the emergency generators, are just a few examples of duties routinely performed.

Our original water treatment plant was constructed in 1939 and had been periodically upgraded to meet regulatory requirements. The water was treated through a process termed "conventional treatment," which consists of coagulation, flocculation, sedimentation and filtration. Chlorine dioxide was sometimes added during the summer months to help remove iron and manganese. In the new WTP, which was put in service in November 2020, our conventional treatment now consists of coagulation, flocculation, Dissolved Air Flotation, and filtration through deep-bed Granular Activated Carbon (GAC) filter media. Just completed in 2022, there is now one last stage of treatment — Manganese Contactors. These Contactors look similar to our GAC filters, but they contain specially coated anthracite media, which attracts the dissolved manganese remaining in the filtered water onto the surface of the media and retains it there. Clear water exits the contactors and continues on to our Clearwells and then to our storage tanks, before being pumped out into the distribution system. Caustic soda and phosphate are added to inhibit corrosion of plumbing. Chlorine is added for disinfection and to maintain the quality of water as it travels throughout the piping network to your home. Fluoride is added to reduce the formation of cavities, as required by State of Connecticut Public Health regulations. In 2022, the water treatment plant produced drinking water at an average of 5.1 million gallons a day and delivered water to approximately 44,000 customers in the City and Town of Groton, Noank, Groton Long Point, and parts of Ledyard, Montville, and Mystic.

Distribution Operations

Our certified water distribution operators are responsible for maintaining and servicing over 100 miles of water mains in Groton. One of their duties is fire hydrant maintenance, which ensures an adequate supply of water in the event of a fire. They also exercise valves, repair and replace mains to ensure an adequate supply of water to your home or business, and flush hydrants. Hydrants are flushed in the spring to maintain water quality and remove any rust or sediments which have accumulated throughout the year. **If discoloration occurs, run the cold water for 15 or 20 minutes until it clears. If it persists, call us at (860) 446-4000.**

Did you know that?

All of our operators have the highest grade of certification possible, as required by the CT Department of Public Health. They are also required to take continuing education courses to maintain their certification.

Project Management

Our project managers' responsibilities include overseeing new main construction and repair, as well as water treatment plant modifications. They also maintain all records digitally, pertaining to the location, type, and age of all pipes, valves, and equipment in the distribution system. This data is used to update the Groton Utilities asset management plan; Call Before You Dig is also an important function of Project Management.

Did you know that you should Call Before You Dig (811 or 1-800-922-4455) at least two full working days prior to any home improvement project requiring digging? You will get your underground utilities marked out for free, avoiding possible physical harm, fines, and repair costs for any damaged utility line. Visit their website at https://www.cbyd.com for more information.

Customer Service

Our customer service representatives are dedicated to provide you with personalized customer service. Call them at (860) 446-4000 or stop in at the office, located at 295 Meridian Street. Whether by telephone or in person, they will assist you with your service needs, answer questions, and respond to problems or concerns that you may have. Walk-in office hours, open to the public, are: Monday through Thursday from 8:00 AM to 4:00 PM (closed Friday); The main office is available for phone calls: Monday – Friday, 8:00 am – 4:30 pm, and Saturday 8:00 am – 12 noon. The office is closed on holidays. Emergency or after hour calls are also answered at (860) 446-4000.

Water Quality / System Improvements

As noted earlier, after years of planning and preparation we have upgraded our water treatment plant. We also continue to work to improve the water quality and reliability of our water supply prior to treatment and after the water enters the distribution system. This includes water main replacement where needed, and upgrades to our standpipes and standpipe operations to maintain the freshness of our water, as well as doing annual hydrant flushing and other routine maintenance operations.

Regional Water

Groton Utilities continues to improve its services to ensure the best water quality and required quantity of water be delivered to our customers in Groton, Mystic, Ledyard, Noank, Groton Long Point, Montville, Mohegan Tribe, and have water available on an emergency basis for other regional interconnected customers — New London, East Lyme, Waterford, and Norwich.

Community Involvement

Groton Utilities conducts water plant tours to educate students and the public about our operations, water conservation, and source water protection. Additionally, classroom presentations, mentoring, job shadowing, and internship opportunities are made available. We also conduct escorted tours in the watershed for various groups for educational, environmental and other supervised activities. These groups include, but are not limited to Ledyard and Groton residents, Senior Centers, the

Audubon Society for its annual bird count, Denison Pequotsepos Nature Center, GOSA and local schools for research purposes. Groton Utilities is also a member of the Greater Mystic Chamber of Commerce and the Eastern Connecticut Chamber of Commerce.

Water Quality Testing

Groton Utilities maintains a State-certified laboratory (CT License #PH-0409) where the majority of our water analyses are conducted. During the year, samples are collected from the source water before treatment, during the various stages in the treatment process, and throughout the distribution system. Tests for bacteria, physical qualities, various organic and inorganic compounds, and pesticides and herbicides are conducted.

To ensure that tap water is safe to drink, EPA prescribes limits on the amounts of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

The table on the last page of this report lists only the contaminants that were found in our drinking water in 2022. All levels found were less than the maximum level allowed by the EPA and CT Department of Public Health. The table does not list the more than 60 contaminants that were tested for, but were not present in our water. You will also note that some of the results, though representative, were from samples collected prior to 2022. That is because the CT Department of Public Health allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Any water quality concerns, questions or requests for more information can submitted via e-mail to waterquality@grotonutilities.com or can be phoned in directly to our lab at (860) 446-4135 during normal business hours (Monday – Friday, 7:00 am – 3:00 pm). *For emergency or after hour calls for assistance, please call (860) 446-4000.*

Sources of Drinking Water Contaminants

The sources of drinking water (both tap 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 radioactive material, and can pick

up substances resulting from the presence of animals or from human activity. Listed below are some examples of such contaminants:

- Microbiological contaminants such as viruses and bacteria, which may come from septic systems, sewage treatment plants, agriculture and livestock operations, and wildlife;
- Inorganic contaminants, such as salts and metals which can be naturally occurring or 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 chemicals, including synthetic and volatile organic compounds which are byproducts of industrial processes and petroleum production, and can come from gas stations, urban storm water runoff, and septic systems;
- Radioactive contaminants that 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, EPA prescribes regulations which limit the amount of certain contaminants in the water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for human health.

Health Effects Information

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 (800) 426-4791.

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 under-gone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These peo-ple 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.

Water Conservation Tips

- Fix leaky faucets, showerheads and toilets.
- Consider replacing older toilets with a WaterSense labeled high efficiency toilet. These must pass rig-orous performance criteria and can't use more than 1.28 gallons per flush in order to earn the WaterSense label. (Older toilets can use up to four times more water than WaterSense toilets).
- Install aerators on your faucets. They reduce the flow and use air to maintain good water pressure. (and remember to periodically remove and clean faucet aerators because they can trap debris).
- Take shorter showers. High efficiency WaterSense showerheads automatically use less water without compromising the quality of your shower.
- Consider replacing your old washing machine with a high-efficiency Energy Star labeled model, which uses up to 50% less water and electricity.
- Run the dishwasher and washing machine only when full.
- Don't over-water your lawn or garden - use a timer, and water early in the morning or at night to avoid excess evaporation.
- Clean your sidewalk or driveway with a broom instead of a hose.

There is a strong commitment by Groton Utilities, the local community, state regulators, and public health pro-fessionals to protect Connecticut's drinking water sup-plies and inform consumers about water quality issues.

For more information, call us at (860) 446-4000. We pro-vide 24 hour a day service and emergency response.

The Utility Commission, our policy making body, meets reg-ularly at 10:00 AM on the 3rd Wednesday of each month in Council Chambers at 295 Meridian Street, Groton.

Learn more about the Groton Utilities water system at:
www.grotonutilities.com

How we measure contaminants (parts per million, parts per billion, parts per trillion, Oh My!)

Because the annual data table on the back page uses various units of measure, we hope this explanation of the ways we describe or measure the quantity of contami-nants present in a water sample will be helpful to you. When we measure the amount of something in water, we describe it in terms of parts per million, or smaller meas-urements of parts per billion, and even smaller measure-ments of parts per trillion. What do parts per million, parts per billion, and parts per trillion even mean?

Let's use the example of lottery winnings, and let's say you picked the correct numbers for an extremely large jackpot, and your lump-sum payout ended up being $100,000,000 after taxes and everything else!

- 1 part per million (ppm) of $100,000,000 is $100,
- 1 part per billion (ppb) of that payout is 10 cents,
- 1 part per trillion (ppt) of that payout is 0.01 cents –

another way to picture that would be to take one penny, chop it up into 100 equal-sized bits, and hold one of those tiny bits in your hand. You would be holding 1 part per trillion of $100,000,000.

Here is one more way to picture these very small measurements: Let's say you eat right every day, exercise every day, and have good genes—good enough that you will live to be exactly 100 years old—what would ppm, ppb, and ppt look like in that circumstance?

- 1 part per million of a 100-year-life would be 52.6 minutes,
- 1 part per billion (ppb) of 100 years would be 3.2 seconds,
- 1 part per trillion (ppt) of 100 years would be 0.0032 seconds (3.2 milliseconds!)

Another way to think of that is that the average eye-blink takes 0.1 – 0.3 seconds (100 – 300 milliseconds); let's say 0.2 seconds to be cautious about it—so a single eye-blink would be 63 ppt of a 100-year life.

Scientists are measuring PFAS compounds down to a level of 2 parts per trillion (ppt)!

To use another example, an Olympic-sized swimming pool holds about one trillion drops of water; if only one drop of water splashed out of the pool, that's also one part per trillion.

Just as there are different words we can use that mean the same thing, in water science different words can mean the same thing.

- One part per million (1ppm) means the same thing as one milligram per liter (1 mg/L),
- One part per billion means the same thing as one microgram per liter (1 ug/L),
- One part per trillion (1 ppt) means the same thing as one nanogram per liter (1 ng/L)

So if we say there are 29 mg/L of sodium in the water, that means the same thing as if we said there are 29 ppm of sodium in the water; it's the same exact thing, just two different ways of saying it. Now that we have discussed how we measure very small quantities of things, please take a look at our data table for Groton Water in 2022, which lists data using the measurements we just explained, and compares them to the maximum amount allowed in drinking water (the Maximum Contaminant Level, or MCL).

GROTON UTILITIES 2022 ANNUAL WATER QUALITY DATA

Regulated Contaminants **Highest Level Allowed** **Groton Water**

Parameter	Units	MCL	MCLG	Highest Detected Level	Range **(a)**	Major Source	Meets Standards?
Barium	ppm	2	2	0.01	————	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	YES
Chloride	ppm	250	N/A	56	29 - 56	Stormwater runoff containing road salt, erosion of natural deposits	YES
Fluoride	ppm	4	4	0.80	0.59 - 0.80	Erosion of natural deposits; water additive which promotes strong teeth	YES
Nitrate	ppm	10	10	0.07	0.02 - 0.07	Runoff from fertilizer use, leachate from septic tanks; sewage, erosion of natural deposits	YES
Total Coliform Bacteria	P/A	Presence not to exceed 5% of monthly samples	0%	0.00%	0.0%	Naturally present in the environment	YES
Parameter	Units	TT	MCLG	Lowest RAA	Range	Major Source	
Total Organic Carbon	N/A	Removal ratio must be >=1.00	N/A	1.5	1.3 - 1.7	Naturally present in the environment	YES
Parameter	Units	TT	MCLG	Highest Detected Level	Lowest % of samples meeting limit	Major Source	
Turbidity (NTU)	**(b)**	95% of samples must be <=0.3 NTU	N/A	0.19	100%	Soil runoff	YES
Parameter	Units	Action Level	MCLG	90th percentile **(c)**	# of sites above AL	Major Source	
Lead	ppb	15	0	6.6	2 of 121	Corrosion of household plumbing systems; erosion of natural deposits	YES
Copper	ppm	1.3	1.3	0.06	0 of 121	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	YES
Parameter	Units	MCL	MCLG	Highest LRAA **(d)**	Range	Major Source	
Haloacetic Acids	ppb	60	N/A	36.4	13.5 - 42.1	By-product of drinking water disinfection	YES
Total Trihalomethanes	ppb	80	N/A	67.2	25.7 - 84.2	By-product of drinking water disinfection	YES
Parameter	Units	MRDL	MRDLG	Highest RAA	Range	Major Source	
Chlorine	ppm	4	4	1.29	0.09 - 2.20	Water additive used to control microbes	YES

Unregulated Contaminants **(e)**

Parameter	Units	MCL	MCLG	Average	Range	Major Source	Meets Standards?
Sodium	ppm	Notification level = 100	None	21	14 - 29	Stormwater runoff containing road salt, erosion of natural deposits	N/A
Sulfate	ppm	None	None	5	4 - 6	Naturally occurring	N/A

Notes

Only detected contaminants are listed in this table. Analyses were performed in 2022 unless noted otherwise.

(**a**) A range of values is not presented for those parameters which were measured only once in 2022.

(**b**) Turbidity is a measure of the cloudiness of water and is a good indicator of the effectiveness of our filtration system. Turbidity cannot exceed 1 NTU.

(**c**) Of the 121 homes tested in 2022, 90% had lead levels below 6.6 ppb, and 90% had copper below 0.05 ppm; since these values are below their respective Action Levels, our system is in compliance. Next analysis is due in 2023.

(**d**) Highest Locational Running Annual Average (LRAA) of samples taken in the distribution system. Values in the range are individual sample results.

(**e**) EPA has not established drinking water standards for unregulated contaminants. We are required to monitor for them to assist the EPA in determining their occurrence and whether future regulation is warranted.

Key to Table

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.

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. (MCLs are set as close to the MCLGs as feasible using best available technology.)

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 contamination.

N/A = Not Applicable

ND = Not Detected

NTU = Nephelometric Turbidity Units

< = Less than

> = Greater than

ppm = parts per million

ppb = parts per billion

pCi/L = picoCuries per liter

P/A = presence / absence

RAA = Running Annual Average

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