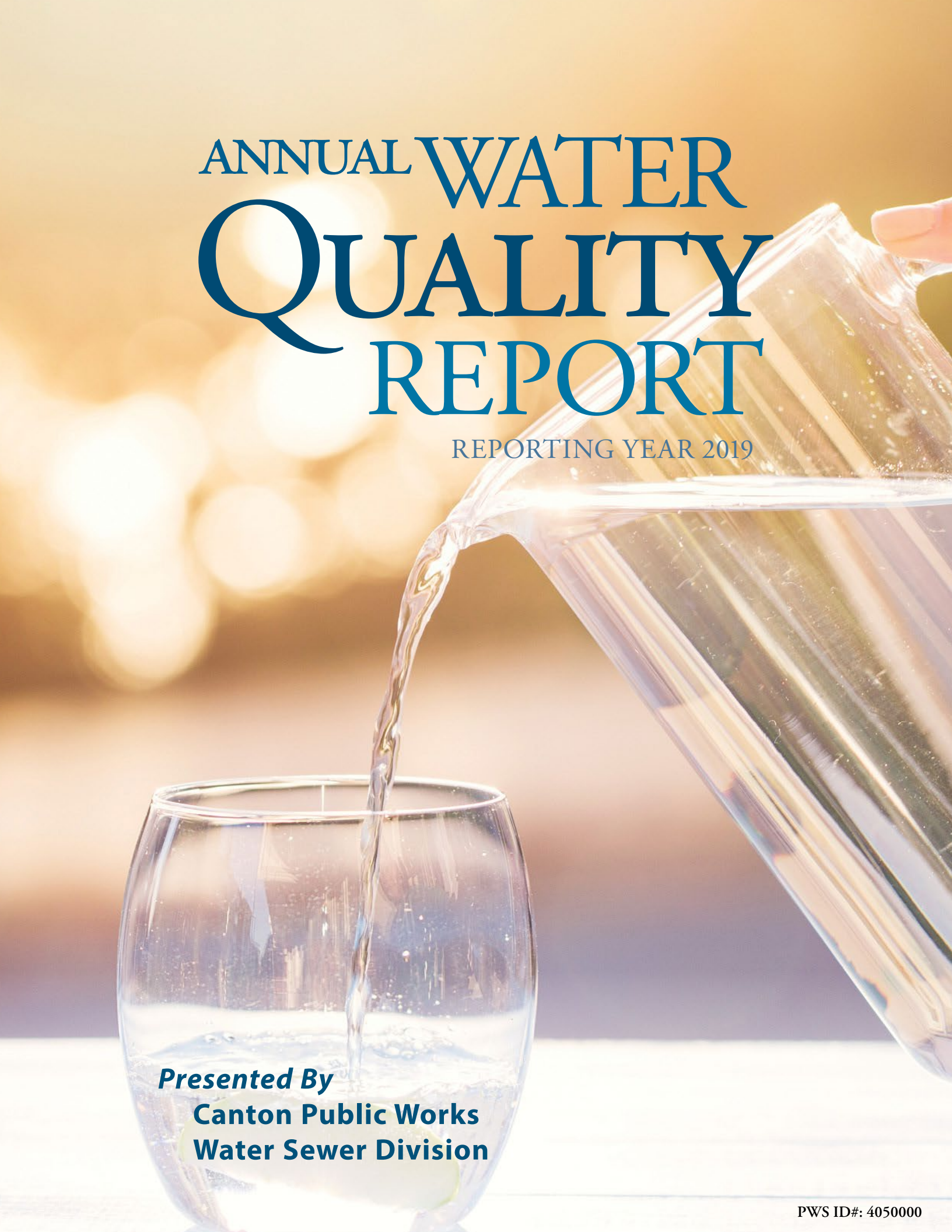

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2019

Presented By

Canton Public Works
Water Sewer Division

PWS ID#: 4050000

Our Mission Continues

We are once again pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2019. Over the years, we have dedicated ourselves to producing drinking water that meets all State and Federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available should you ever have any questions or concerns about your water.

Source Water Assessment

Canton Water & Sewer Division worked with MA DEP to prepare the Source Water Assessment Program (SWAP) Report for water supply sources serving Canton. The purpose of the assessment is to determine the susceptibility of each drinking water source to potential contaminant sources. A susceptibility ranking of high was assigned to our system. It is important to understand that a susceptibility rating is not a measure of water quality, only the potential for source contamination in the assessment area. The SWAP commends the Town on existing source protection measures.

The complete SWAP is available on line at the Town's Web page, www.town.canton.ma.us, under Department of Public Works Water & Sewer Division or at https://www.mass.gov/service-details/the-source-water-assessment-protection-swap-program.

Consumers can help protect sources by: practicing good septic system maintenance, taking hazardous household chemicals to hazardous collection days, and limiting pesticide and fertilizer use.

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.

The Benefits of Fluoridation

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

QUESTIONS?

For any questions about the quantity or quality of Canton's drinking water, please contact:

Christopher Sykes
Water Sewer Supervisor
781-821-5017

Renee Ruane
Water Treatment Plant Foreman
781-828-4930

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.

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).

> "We remain vigilant in delivering the best-quality drinking water"

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 when 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.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the State Department of Environmental Protection (MA DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water 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 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 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.

Safeguard Your Drinking Water

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

• Eliminate excess use of lawn and garden fertilizers and pesticides – They contain hazardous chemicals that can reach your drinking water source.

• Pick up after your pets.

• If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.

• Dispose of chemicals properly; take used motor oil to a recycling center.

• Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use the U.S. EPA's Adopt Your Watershed to locate groups in your community.

• Organize a storm drain stenciling project with others in your neighborhood. Stencil a message next to the street drain reminding people "Dump No Waste – Drains to River" or "Protect Your Water". Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not themselves pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen and disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at such times. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use, and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

Count on Us

Delivering high-quality drinking water to our customers involves far more than just pushing water through pipes. Water treatment is a complex, time-consuming process. Because tap water is highly regulated by State and Federal laws, water treatment plant and system operators must be licensed and are required to commit to long-term, on-the-job training before becoming fully qualified. Our licensed water professionals have a basic understanding of a wide range of subjects, including mathematics, biology, chemistry, and physics. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water;
- Monitoring and inspecting machinery, meters, gauges, and operating conditions;
- Conducting tests and inspections on water and evaluating the results;
- Maintaining optimal water chemistry;
- Applying data to formulas that determine treatment requirements, flow levels, and concentration levels;
- Documenting and reporting test results and system operations to regulatory agencies; and
- Serving our community through customer support, education, and outreach.

So, the next time you turn on your faucet, think of the skilled professionals who stand behind each drop.

Community Participation

The Canton Board of Selectmen (BOS) meets as the Water Commissioners at one of their meetings in April and/or May of each year to determine water sewer rates and review water system operations. Agenda notices are posted in Memorial Hall or online at www.town.canton.ma.us.

Public Works submits the Water Sewer Division capital requests to the BOS, Capital Planning Committee, and Finance Committee, along with its operating budget request to the BOS and Finance Committee, in December for review and discussion. Both the capital requests and the operating budget are discussed and voted on at the Annual Town Meeting.

BY THE NUMBERS

The number of gallons of water produced daily by public water systems in the U.S. **34 BILLION**

1 MILLION The number of miles of drinking water distribution mains in the U.S.

The amount of money spent annually on maintaining the public water infrastructure in the U.S. **135 BILLION**

300 MILLION The number of Americans who receive water from a public water system.

The age in years of the world's oldest water found in a mine at a depth of nearly two miles. **2 BILLION**

151 THOUSAND The number of active public water systems in the U.S.

The number of highly trained and licensed water professionals serving in the U.S. **199 THOUSAND**

Water Treatment

Canton Water & Sewer Division makes every effort to provide safe and pure drinking water. To improve the quality of the water delivered: we aerate and filter the water to remove contaminants, use chloramination as a disinfectant to protect against microbial contaminants, adjust pH to reduce lead and copper levels, add coagulant and filter to reduce iron and manganese levels, and add fluoride to aid dental health and hygiene. All components of the water treatment process are monitored by State-certified operators through a computerized Supervisory Control and Data Acquisition System (SCADA).

Where Does My Water Come From?

Canton draws its drinking water from two sources, our own local ground water wells and the Massachusetts Water Resource Authority (MWRA). The MA Department of Environmental Protection (DEP) limits the amount of water the Town can use to 2.67 million gallons a day. Canton used an average of 2.27 million gallons per day in 2019, 45% supplied by the MWRA, 55% from our own seven ground water wells.

Our ground water sources include:

GROUND WATER SOURCE	WELL ID NUMBER	WELLS TREATED AT	PLANT ID NUMBER
Well 7	4050000-9G	Sullivan WTP (Neponset St.)	4050000-011T
Well 9	4050000-15G	Sullivan WTP (Neponset St.)	4050000-011T
Well 13	4050000-13G	Sullivan WTP (Neponset St.)	4050000-011T
Well 16	4050000-16G	Sullivan WTP (Neponset St.)	4050000-011T
Well 11	4050000-11G	Moran WTP (Pecunit St.)	4050000-06T
Well 12	4050000-12G	Moran WTP (Pecunit St.)	4050000-06T
Well 14	4050000-14G	Moran WTP (Pecunit St.)	4050000-06T

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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2014	15	0	1.6	1.6–1.6	No	Erosion of natural deposits
Chlorine (ppm)	2019	[4]	[4]	2.50	0.02–2.50	No	Water additive used to control microbes
Chlorite (ppm)	2019	1	0.8	0.081	0.01–0.081	No	By-product of drinking water disinfection
Combined Radium (pCi/L)	2017	5	0	0.84	0.84–0.84	No	Erosion of natural deposits
Fluoride (ppm)	2019	4	4	0.73	0.53–0.73	No	Water additive that promotes strong teeth
Haloacetic Acids (HAAs) (ppb)	2019	60	NA	14	2.6 - 20	No	By-product of drinking water disinfection
Nitrate (ppm)	2019	10	10	2.13	0.64–2.13	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2019	2	NA	0.28	0.13–0.28	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
TTHMs [Total Trihalomethanes] (ppb)	2019	80	NA	17	6.8–17	No	By-product of drinking water disinfection
Total Coliform Bacteria (Positive samples)	2019	TT	NA	1	NA	No	Naturally present in the environment

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)	2017	1.3	1.3	0.11	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2017	15	0	2	0/32	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	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2019	200	NA	30	0–30	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2019	250	NA	152	133–152	No	Runoff/leaching from natural deposits
Copper (ppm)	2019	1.0	NA	0.02	0–0.02	No	Corrosion of household plumbing systems; Erosion of natural deposits
Iron (ppb)	2019	300	NA	100	100–100	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)	2018	50	NA	26	0–26	No	Leaching from natural deposits
pH (Units)	2019	6.5–8.5	NA	8.9	8.8–8.9	No	Naturally occurring
Sulfate (ppm)	2019	250	NA	13.6	12.2–13.6	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2019	500	NA	340	300–340	No	Runoff/leaching from natural deposits
Zinc (ppm)	2019	5	NA	0.12	0.005–0.12	No	Runoff/leaching from natural deposits; Industrial wastes

UNREGULATED SUBSTANCES [1]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppm)	2019	5.2	0–5.2	By-product of drinking water chlorination
Bromoform (ppm)	2019	2.7	0–2.7	By-product of drinking water chlorination
Chlorodibromomethane (ppm)	2019	4.9	0–4.9	By-product of drinking water Chlorination
Chloroform (ppm)	2019	4.5	0–4.5	By-product of drinking water chlorination
Sodium (ppm)	2019	65.8	0–65.8	Natural resources; Runoff from use as salt on roadways; By-product of treatment process

OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Calcium (ppm)	2019	18.1	17.4–18.1	Erosion of natural deposits
Magnesium (ppm)	2019	7.09	6.16–7.09	Erosion of natural deposits
Perfluorobutanesulfonic Acid (PFBS) (ppt)	2019	2.33	2.2–2.33	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Perfluoroheptanoic Acid (PFHpA) (ppt)	2019	2.19	2.19–2.19	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Perfluorohexanesulfonic Acid (PFHxS) (ppt)	2019	4.4	3.1–4.4	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Perfluorohexanoic Acid (PFHxA) (ppt)	2019	3.16	2.05–3.16	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Perfluorooctanoic Acid (PFOA) (ppt)	2019	5.45	2.46–5.45	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Perfluorooctanesulfonate Acid (PFOS) (ppt)	2019	3.79	2.9–3.79	A large group of human-made chemicals that are found in non-stick pans,cleaning products,paints, food packaging, firefighting foam and other products that have been used in industry and consumer products worldwide since the 1950s.
Potassium (ppm)	2019	40.1	4.24–40.1	NA
Total Alkalinity (ppm)	2019	71.0	46.0–71.0	Erosion of natural deposits
Total Hardness (ppm)	2019	73.2	68.4–73.2	Erosion of natural deposits

[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.

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.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

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

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.

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

Table Talk

Get the most out of the Testing Results data tables with this simple suggestion. In less than a minute, you will know all there is to know about your water:

- For each substance listed, compare the value in the Amount Detected column against the value in the MCL (or AL, SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.

Other Table Information Worth Noting

- Verify that there were no violations of the State and/or Federal standards in the Violation column. If there was a violation, you will see a detailed description of the event in this report.
- If there is an ND or a less-than symbol (<), that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).
- The Range column displays the lowest and highest sample readings. If there is an NA showing, that means only a single sample was taken to test for the substance (assuming there is a reported value in the Amount Detected column).
- If there is sufficient evidence to indicate from where the substance originates, it will be listed under Typical Source.

Protecting Your Water

Bacteria are a natural and important part of our world. There are around 40 trillion bacteria living in each of us; without them, we would not be able to live healthy lives. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern, however, because it indicates that the water may be contaminated with other organisms that can cause disease.

In 2016, the U.S. EPA passed a regulation called the Revised Total Coliform Rule, which requires additional steps that water systems must take in order to ensure the integrity of the drinking water distribution system by monitoring for the presence of bacteria like total coliform and E. coli. The rule requires more stringent standards than the previous regulation, and it requires water systems that may be vulnerable to contamination to have in place procedures that will minimize the incidence of contamination. Water systems that exceed a specified frequency of total coliform occurrences are required to conduct an assessment of their system and correct any problems quickly. The U.S. EPA anticipates greater public health protection under this regulation due to its more preventive approach to identifying and fixing problems that may affect public health.

Though we have been fortunate to have the highest-quality drinking water, our goal is to eliminate all potential pathways of contamination into our distribution system, and this requirement helps us to accomplish that goal.

FOG (Fats, Oils, and Grease)

You may not be aware of it, but every time you pour fat, oil, or grease (FOG) down your sink (e.g., bacon grease), you are contributing to a costly problem in the sewer collection system. FOG coats the inner walls of the plumbing in your house as well as the walls of underground piping throughout the community. Over time, these greasy materials build up and form blockages in pipes, which can lead to wastewater backing up into parks, yards, streets, and storm drains. These backups allow FOG to contaminate local waters, including drinking water. Exposure to untreated wastewater is a public health hazard. FOG discharged into septic systems and drain fields can also cause malfunctions, resulting in more frequent tank pump-outs and other expenses.

Communities spend billions of dollars every year to unplug or replace grease-blocked pipes, repair pump stations, and clean up costly and illegal wastewater spills. Here are some tips that you and your family can follow to help maintain a well-run system now and in the future:

NEVER:

- Pour fats, oil, or grease down the house or storm drains.
- Dispose of food scraps by flushing them.
- Use the toilet as a waste basket.

ALWAYS:

- Scrape and collect fat, oil, and grease into a waste container such as an empty coffee can, and dispose of it with your garbage.
- Place food scraps in waste containers or garbage bags for disposal with solid wastes.
- Place a wastebasket in each bathroom for solid wastes like disposable diapers, creams and lotions, and personal hygiene products including nonbiodegradable wipes.