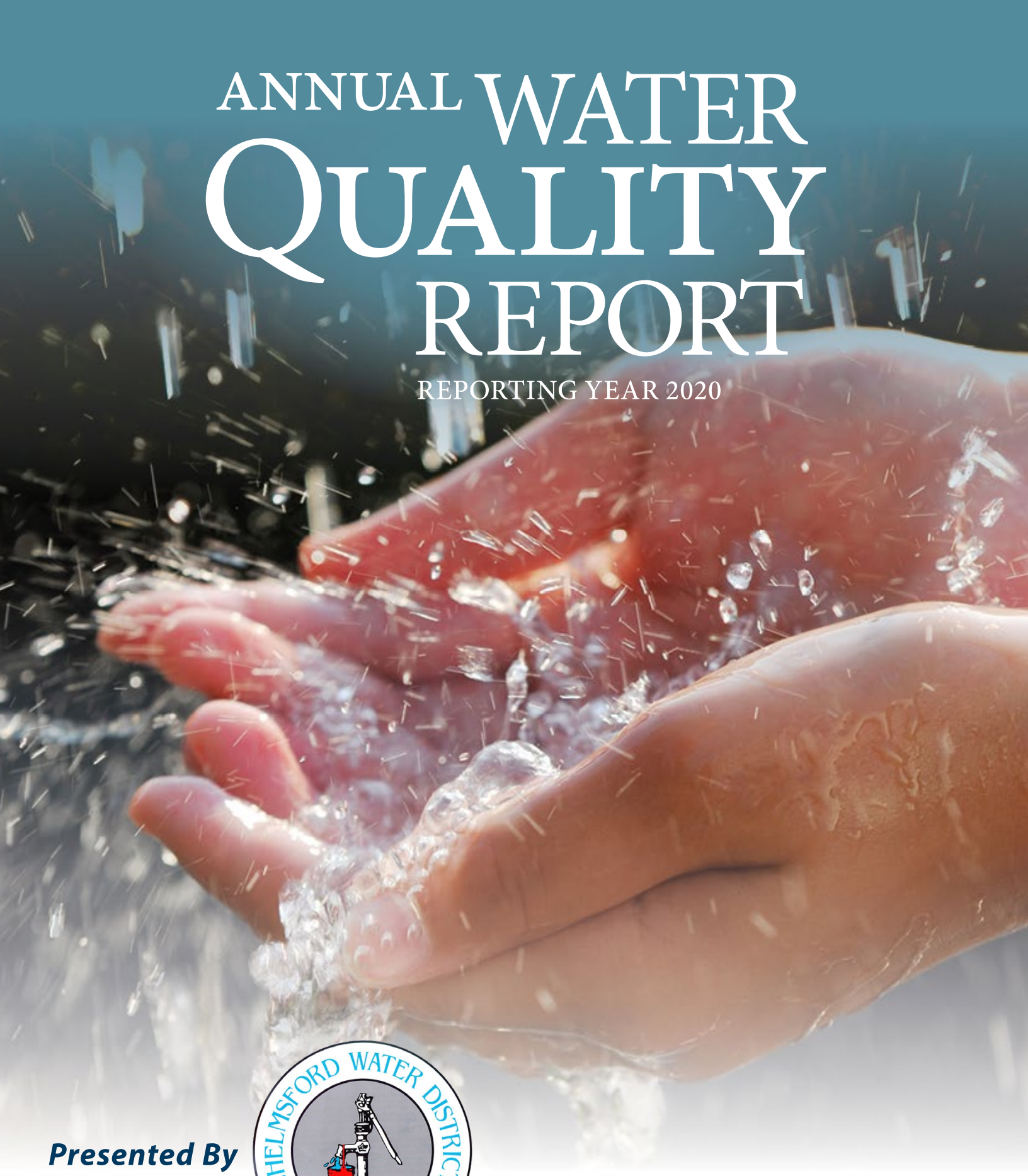
ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2020



Presented By

CHELMSFORD WATER DISTRICT
SINCE 1913

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Quality First

Once again, we are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2020. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, and community outreach and education while continuing to serve the needs of all our water users. Thank you for allowing us the opportunity to serve you and your family.

We encourage you to share your thoughts with us on the information contained in this report. After all, well-informed customers are our best allies.

Ground Water Sampling Update

On Mar 4th, Nov 4th, and Aug 5th of 2020, we were informed that at least one of our routine bacteria samples of our untreated source water samples that had been collected on Mar 3rd, Aug 3rd, and Nov 4th was positive for fecal contamination (*E. coli*). With the knowledge that the District's untreated source water is vulnerable to this type of contamination, and because of the enacting of the Ground Water Rule (GWR), the Chelmsford Water District has ensured that its treated water through disinfection practices is and remains safe by being 4-log certified by DEP as of February 24, 2010. The District maintains this certification on a day-to-day basis and reports this status to the state monthly. Because the District is in compliance with the GWR with respect to this certification, no other steps are required. The reporting of these positive results is for informational purposes only and is a regulatory requirement. At no time was the public's health at risk.

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

Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

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.

Where Does My Water Come From?

The Chelmsford Water District (District) customers are fortunate because we enjoy an adequate water supply from 20 sources. The Chelmsford Water District draws water from the Merrimack and Concord river basins. Our distribution reservoirs hold one of the state's largest capacities, 15.3 million gallons of water. Combined, our facilities provide roughly 1 billion gallons of clean drinking water each year. The Riverneck Road Treatment Plant, which was placed in service at the end of 2004, has the capability of treating up to 3 million gallons of water per day. The Crooked Spring Treatment Plant was placed in service in the spring of 2007 and has the capability of treating up to 4 million gallons a day. The Smith Street Treatment Plant was refurbished and put back into service in the fall of 2012. To learn more about our watershed, visit the U.S. EPA Web site at http://bit.ly/3vg4si5.

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.

QUESTIONS? For more information about this report, or any questions relating to your drinking water, please contact Todd Melanson; Environmental Compliance Manager, at (978) 256-2381 or visit our Web site at www.chelmsfordwater.com.

Water Stress

Water stress occurs when the demand for water exceeds the amount available during a certain period or when poor water quality restricts its use. Water stress causes deterioration of fresh water resources in terms of quantity (aquifer over-exploitation, dry rivers, etc.) and quality (eutrophication, organic matter pollution, saline intrusion, etc.).

Several states in the western half of the U.S. similarly experience high levels of water stress from overuse. Even in countries with low overall water stress, individual communities within a country may still be experiencing stressed conditions. For example, New England and Massachusetts have experienced recent periods of drought, in some instances extreme, with drought declarations being issued in 2020 for most of the state of MA. The District now proactively monitors local USGS stream gauges and groundwater monitoring stations, as well as our own resources. We believe investing in better management provides a brighter, more equitable future. We encourage residents to conserve water during dry and drought periods.

Substances That Could Be in Water

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

How Is My Water Treated and Purified?

The Crooked Spring Treatment Plant went online in the Spring of 2007. Nine of the District's wells are processed through this plant, including the four gravel-packed wells from the wellfield at Meadowbrook #3 pumping station that went on line in November of 2007. The raw water goes through an aeration tower, removing any potential volatile organic compounds. Then the water goes through a greensand filtration system, removing high levels of iron and manganese before the water enters the distribution system. This plant recycles the backwash discharged water to a lagoon which then re-enters the Earth and becomes part of the aquifer.

Raw water is drawn from the other nine wells in the eastern area of the District and sent through the greensand filtration system at the Riverneck Road Treatment Plant to remove elevated levels of iron and manganese from these wells. The pre-filtration process also incorporates an aeration tower to remove any potential volatile organic compounds from the raw water. The backwash water generated from the treatment process is stored in an on-site 100,000-gallon underground storage facility. The facility has the capability of pumping all of the backwash water to the nearby public sewer, or recycling the water to the treatment plant.

The Smith Street Treatment Plant and Wells, after being unused since 1999, were re-opened in the fall of 2012 with DEP approval. The District refurbished the two wells and retrofitted the treatment system. The raw water enters the Smith Street Treatment Plant which is serviced by an aeration and membrane filtration system to remove iron and manganese. This plant and wells allow for system relief during times of withdrawal stress and emergency back-up for both the Crooked Spring and Riverneck Road Treatment Plants.

All of Chelmsford Water District's water is processed and treated through state-of-the-art treatment to also include disinfection, Ground Water Certification, and pH control.

Faced with deteriorating water quality and increasing peak demands for water during daytime hours, the Board of Water Commissioners has made and kept the commitment to our customers to provide treatment for all the Districts wells.

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 drawn 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 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.

Source Water Assessment

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of public water supplies to potential contamination due to land uses and activity within the recharge areas. Established under the federal Safe Drinking Water Act, the program 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.

What Is My System's Ranking?

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by the Massachusetts Department of Environmental Protection (DEP).

Where Can I See the SWAP Report?

The complete SWAP report is available at the Chelmsford Water District, at the Chelmsford Board of Health, and online at https://www.mass.gov/files/documents/2019/02/22/swap-nero-with-inst.pdf. For more information, call the Environmental Compliance Manager, Todd Melanson, at (978) 256-2931.

Community Participation

You typically are invited to participate in our public forum and voice your concerns about your drinking water. We meet the second Wednesday of each month beginning at 1 p.m. at the Chelmsford Water District, 20 Watershed Lane, Chelmsford, MA. Please check our Web site for the official posting and agenda.

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.

We participated in the 4th stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are 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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Arsenic (ppb)	2018	10	0	1	0–1	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2018	2	2	0.046	0.027–0.046	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Haloacetic Acids [HAAs] (ppb)	2020	60	NA	33.4	0–33.4	No	By-product of drinking water disinfection
Nitrate (ppm)	2020	10	10	1.02	0.07–1.02	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
PFAS6 (ppt)	2020	20	NA	16.3	11.9–20.7	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 PFASs, such as fire-fighting foams
Perchlorate (ppb)	2020	2	NA	0.48	0.13–0.48	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
TTHMs [Total Trihalomethanes] (ppb)	2020	80	NA	72.5	32.3–72.5	No	By-product of drinking water disinfection

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)	2018	1.3	1.3	0.150	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	8	2/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

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.

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.

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.

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2020	250	NA	224	213–224	No	Runoff/leaching from natural deposits
Iron (ppb)	2019	300	NA	157	0–157	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)	2018	50	NA	38	0–38	No	Leaching from natural deposits
pH (Units)	2020	6.5–8.5	NA	8.0	7.3–8.0	No	Naturally occurring
Sulfate (ppm)	2020	250	NA	14.9	10.7–14.9	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 (ppb)	2020	11.5	5.0–11.5	Chlorination by-product
Bromoform (ppb)	2020	16.0	0–16.0	Chlorination by-product
Chlorodibromomethane (ppb)	2020	17.7	1.1–17.7	Chlorination by-product
Chloroform (ppb)	2020	21.2	1.3–21.2	Chlorination by-product
Nickel (ppb)	2018	0.008	0–8	Natural element of the Earth's crust so small amounts are found in food, water, soil, and air
Sodium (ppm)	2020	103	88.2–103	Naturally occurring

OTHER UNREGULATED SUBSTANCES [1]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromide[2] (ppb)	2018	91.3	0–91.3	By-product of drinking water disinfection
Hardness (ppm)	2020	96	74–96	Naturally occurring minerals
Manganese (ppb)	2019	9.4	0–9.4	Leaching from natural deposits
PFAS6 (ppt)	07/29/2020	23.3	0–23.3	Pre-regulatory sampling; MCL was not officially adopted until October 2020
Perfluorobutane sulfonic acid (PFBS) (ppt)	2020	3.5	2.4–4.6	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
Perfluorohexanioc acid (PFHxA) (ppt)	2020	3.6	3.1–4.5	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
Total Organic Carbon [TOC][2] (ppm)	2018	5.38	0–5.38	Naturally occurring

[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] UCMR4 Contaminant, Raw Water.