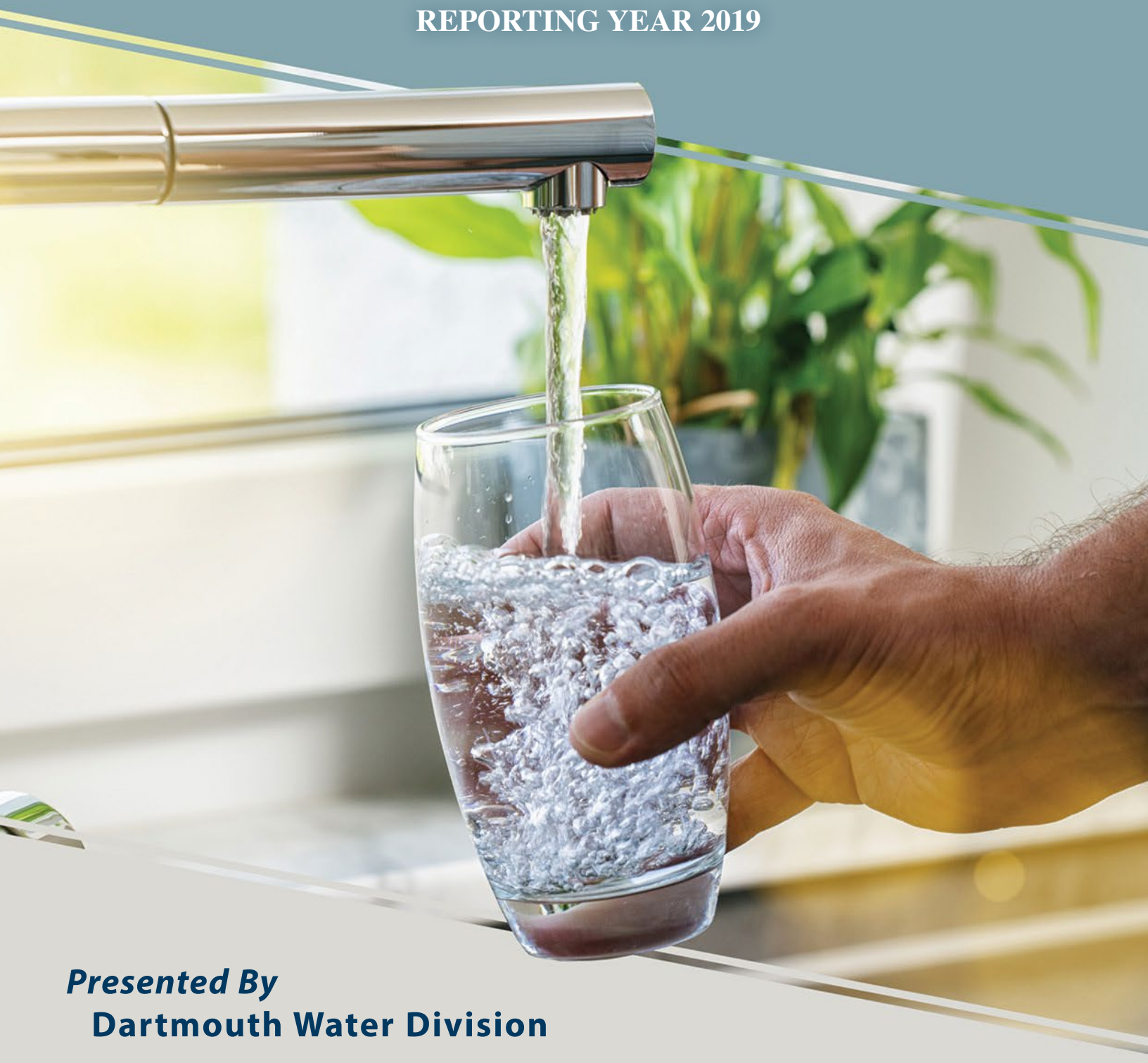
ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2019



Presented By

Dartmouth Water Division

PWS ID#: MA 4072000

Continuing Our Commitment

Once again we proudly present our annual water quality report. With a focus on customer service and efficient operations, we continue to strive for excellence through new water quality programs that will ensure reliable drinking water supplies for years to come. To maintain our commitment to you, we routinely collect and test water samples every step of the way, from the source waters right to your home or business, checking purity and identifying potential problems. We work with only state-certified laboratories that perform the required testing to maintain our quality assurance program. Staffed by highly trained scientists and technicians, these labs have the latest and most sophisticated instruments and can measure substances down to one part per trillion! We are committed to providing you with this information about your water supply because customers who are well informed are our best allies in supporting improvements necessary to maintain the highest drinking water standards.

This edition covers all testing completed from January through December 2019. We remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users. Please visit our annual open house, held at the beginning of May, when we celebrate National Drinking Water Week.

Dartmouth Water is a division of the Department of Public Works under DPW Director David T. Hickox. For more information about this report, or for any questions relating to your drinking water or this report, please call Steven M. Sullivan, Water and Sewer Superintendent, at (508) 999-0742.

What's a Cross-Connection?

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

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or 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.

Community Participation

The Board of Public Works meets monthly. If you are interested in discussing water department issues with the Board, please call the Department of Public Works at (508) 999-0740 and ask to be added to the agenda.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. 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.

Violation Information

During the Fall of 2019, Dartmouth failed to collect all required repeat total coliform samples in November. Additionally, we missed the deadline for reporting the Treatment Technique Trigger, completing an amended Level 2 Assessment. Finally, we missed sending out the deadline for providing a Tier 2 Public Notice by January 2, 2020. We have already taken the steps to ensure that adequate monitoring and reporting will be performed in the future so that these oversights will not be repeated.

We routinely monitor for the presence of drinking water contaminants. Testing results from August 2019 showed that our system exceeded the standard or maximum contaminant level (MCL), for HAA5. The standard for HAA5 is 60 parts per billion (ppb). It is determined by averaging all samples collected at each sampling location for the past 12 months. The level of HAA5 averaged at our system Reed Road location for August was 62 ppb. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

The Town has been working on a comprehensive plan to address HAA5 concerns for several years. Ongoing distribution improvements have been underway throughout the town. Currently, water mixing systems are being installed in two water storage tanks on Allen Street, and over the next several months the Town will be converting from chlorine to chloramines as a means of disinfecting our water. We anticipate that the Town's comprehensive plan will resolve ongoing water quality concerns over the next 12 months.

During recent routine monitoring in November 2019, our public water system (PWS) tested positive for total coliforms. Our PWS was notified on 11/6/19 verbally by our laboratory of two total coliform positive (*E. coli* absent) samples collected on 11/5/19. Repeat samples were collected on 11/7/19 as required; three out of six repeat samples were also total coliform positive (*E. coli* absent). These two total coliform positive detects (greater than 5% of its finished water samples) constituted a Revised Total Coliform Rule Treatment Technique Trigger (RTCR TTT). This RTCR TTT required a RTCR Level 2 Assessment be completed and submitted to the Massachusetts Department of Environmental Protection, Southeast Regional Office (MADEP SERO) by 12/4/19.

However, a third total coliform positive (*E. coli* absent) sample was collected on 11/5/19 that was not communicated to us by the laboratory at the time. Subsequently, repeat samples were not collected for this sample. Failure to collect the required repeat samples for the third total coliform positive (*E. coli* absent) detect collected on 11/5/19 was another RTCR TTT.

Coliforms are bacteria that are naturally present in the environment and 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.

Source Water Assessment Program

The Massachusetts Department of Environmental Protection (MADEP) has prepared a Source Water Assessment Program (SWAP) report for the water supply sources serving this water system. The SWAP Report recommends that Dartmouth establish a Wellhead Protection Committee and also commends Dartmouth for taking an active role in promoting source protection measures in the Water Supply Protection Areas. The SWAP report recommends that we continue to monitor Zone I and remove all non-water supply activities. The report also recommends that we educate residents on ways they can help in protecting drinking water sources, and work with emergency response teams to ensure they are aware of the stormwater drainage in Zone II. Residents can help protect sources by practicing good septic system maintenance, supporting water supply protection initiatives at town meetings, properly disposing of hazardous household chemicals during hazardous materials collection days, and limiting pesticide and fertilizer use. The complete SWAP report is available at the Water Division on Allen Street and online at www.mass.gov/doc/southeast-region-source-water-water-assessment-protection-swap-program-reports/download. For more information, call Steven Sullivan at (508) 999-0742.

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

New Bedford (purchased water)

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of Public Water Supplies to potential contamination by microbiological pathogens and chemicals. A susceptibility ranking of high was assigned to the New Bedford Water Division using the information collected during the assessment by the Massachusetts Department of Environmental Protection. It is important to understand that this susceptibility rating does not imply poor water quality, only the system's potential to become contaminated within the assessment area. Their complete SWAP report is available at the Water Division Office, 1105 Shawmut Avenue, New Bedford. For more information, contact Ymane Galotti at (508) 763-2231.

Substances That Could Be in Water

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

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.

Level 2 Assessment Update

Coliforms are bacteria that are naturally present in the environment and 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, two Level 2 assessments were required to be completed for our water system, which were completed. In addition, we were required to take no corrective actions, but we completed four corrective actions on our own, including system-wide water main flushing and spot flushing of affected areas. We also added safeguards with our testing contractor to eliminate future problems, with notification to this department.

Where Does My Water Come From?

Dartmouth's water is supplied from 14 groundwater, gravel-packed, or naturally developed wells, and one pumping station. Wells A, B, C, F-1, and F-2 have a combined capacity of 1,555 gallons per minute (gpm). These wells are located in the area of 299 Chase Road. Wells D, E-1, and E-2 have a combined capacity of 1,550 gpm. These wells are located in the area of 687 Chase Road. Wells V-1, V-2, V-3, Panelli-1, Panelli-2, Panelli -3 and Panelli Wellfield 4 have a combined capacity of 1,820 gpm. These wells are located in the area of 579 Old Westport Road The Route Six well is inactive. A copy of the map where the wells are located is available at the Water Division office at 751 Allen Street.

Purchased water from the City of New Bedford is treated at the Quittacas Water Treatment Plant; it comes from a surface supply comprising five ponds. The principal storage area is the Little Quittacas Pond, located in the Town of Rochester. The other ponds are Great Quittacas, Pocksha, Assawompset, and Long Pond, situated in the towns of Freetown, Lakeville, and Middleborough. Treatment consists of conventional filtration, disinfection, corrosion control, and fluoridation. Dartmouth pumps the water into our system for a facility located on Faunce Corner Road with a maximum rate of 4,000 gallons per minute.

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

				Dartmouth Water Division		New Bedford Water			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2019	2	2	NA	NA	0.008	NA–0.008	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2019	[4]	[4]	1.02	0.81–1.53	1.76[1]	0.71–3.06[1]	No	Water additive used to control microbes
Combined Radium (pCi/L)	2016	5	0	0.95	0.82–1.13	1.2[2]	NA–1.2[2]	No	Erosion of natural deposits
Fluoride (ppm)	2019	4	4	0.10	ND–0.10	0.7	0.5–0.8	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs][3] (ppb)	2019	60	NA	62 [Site ID 10376: 62]	5.3–75 [Site ID 10376: 46–75]	46.8	29.9–82.0	Yes	By-product of drinking water disinfection
Nitrate (ppm)	2019	10	10	0.53	ND–0.53	0.106	NA–0.106	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes][3] (ppb)	2019	80	NA	75	42–104	42.5	29.9–56.0	No	By-product of drinking water disinfection
Total Coliform Bacteria (Positive samples)	2019	TT	NA	10	NA	0[4]	NA	Yes	Naturally present in the environment
Total Organic Carbon[5] (ppm)	2019	TT	NA	NA	NA	0.263	0.239–0.310	No	Naturally present in the environment
Turbidity[6] (NTU)	2019	TT	NA	NA	NA	0.21	0.05–0.21	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2019	TT = 95% of samples meet the limit	NA	NA	NA	100	NA	No	Soil runoff

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

				Dartmouth Water Division		New Bedford Water			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2019	1.3	1.3	NA	NA	0.02	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2019	15	0	NA	NA	6.5	1/30	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	Dartmouth Water Division AMOUNT DETECTED	Dartmouth Water Division RANGE LOW-HIGH	New Bedford Water AMOUNT DETECTED	New Bedford Water RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2019	200	NA	NA	NA	200	131–468	No	Erosion of natural deposits; Residual from some surface water treatment processes
Iron (ppb)	2019	300	NA	480	ND–480	NA	NA	No	Leaching from natural deposits; Industrial wastes
Manganese[7] (ppb)	2019	50	NA	NA	NA	16	NA–16	No	Leaching from natural deposits

UNREGULATED AND OTHER SUBSTANCES[8]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	Dartmouth Water Division AMOUNT DETECTED	Dartmouth Water Division RANGE LOW-HIGH	New Bedford Water AMOUNT DETECTED	New Bedford Water RANGE LOW-HIGH	TYPICAL SOURCE
Bromochloroacetic Acid (ppb)	2019	1.32	0.606–2.05	2.74	2.46–2.87	By-product of drinking water chlorination
Bromodichloroacetic Acid (ppb)	2019	3.44	ND–5.90	2.02	1.26–2.27	By-product of drinking water chlorination
Bromodichloromethane (ppb)	2019	2.95	1.1–4.8	2.7	NA–2.7	By-product of drinking water disinfection
Chlorate (ppb)	2016	NA	NA	110	71–150	By-product of drinking water chlorination
Chlorodibromoacetic Acid (ppb)	2019	0.497	ND–0.839	0.04	ND–0.31	By-product of drinking water chlorination
Chloroform (ppb)	2019	11.5	3.1–19.9	14.1	NA–14.1	By-product of drinking water disinfection
Dibromoacetic Acid (ppb)	2019	NA	NA	0.04	ND–0.31	By-product of drinking water chlorination
Dichloroacetic Acid (ppb)	2019	5.96	2.20–12.0	23.8	15.9–29.0	By-product of drinking water chlorination
Manganese (ppb)	2019	26	0.74–45.8	14.4	8.0–25.9	Erosion of natural sources
Monobromoacetic Acid (ppb)	2019	NA	NA	0.23	ND–1.82	By-product of drinking water chlorination
Monochloroacetic Acid (ppb)	2019	NA	NA	1.25	ND–2.85	By-product of drinking water disinfection
Perfluorobutanesulfonic Acid (PFBS) (ppt)	2019	2.7	ND–2.7	NA	NA	Man-made chemicals; Used as surfactants to make products stain or water resistant; Used in fire fighting foam, for industrial purposes, and as a pesticide; Used in fluoropolymers (such as teflon), cosmetics, greases and lubricants, paints, adhesives, and photographic film. U.S. manufacturing phased out in 2002; May still be genterated incidentially or in imported products.
Perfluorooctanoic Acid (PFOA) (ppt)	2019	2.5	ND–2.5	NA	NA	Man-made chemicals; Used as surfactants to make products stain or water resistant; Used in fire fighting foam, for industrial purposes, and as a pesticide; Used in fluoropolymers (such as teflon), cosmetics, greases and lubricants, paints, adhesives, and photographic film. U.S. manufacturing phased out in 2002; May still be genterated incidentially or in imported products.
Piperonyl Butoxide[9] (ppb)	2019	NA	NA	0.01	0.009–0.02	Deposition and runoff from pesticide application for mosquitoes
Sodium[10] (ppm)	2019	41.6	ND–41.6	23.3	NA–23.3	Natural sources; Runoff from use as salt on roadways; By-product of corrosion control
Trichloroacetic Acid (ppb)	2019	17.7	3.59–37	13.4	12.2–13.9	By-product of drinking water chlorination

[1] The MCL and the average results are based on the highest Running Annual Average; the range detected represents individual sample results. The DPI commenced treatment of its filtered water with combined chlorine (chlorine and ammonia) as of November 4, 2002. This is measured in terms of total chlorine.

[2] Sampled 2015

[3] The MCL and the average results are based on the highest Running Annual Average, the range detected represents individual sample results. Some people who drink water containing trihalomethanes or haloacetic acids 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.

[4] Of 109 samples collected per month, all percentage of samples meeting the limit was 100%.

[5] The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

[6] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

[7] U.S. EPA and MADEP have established public health advisory levels for manganese to protect against concerns of potential neurological effects and a one-day and 10-day health advisory of 100 ppb for acute exposure.

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

[9] U.S. EPA Office of Pesticide Programs' Human Health Benchmark for Pesticides is 992 ppb. Consumption of Piperonyl Butoxide in drinking water for many years at very high concentrations could result in effects on the liver and may possibly increase the risk of cancer.

[10] MADEP maintains a guideline of 20 ppm for sodium.

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.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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.