

ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2017



Presented By



BRUNSWICK & TOPSHAM
WATER DISTRICT

Quality First

Once again we are pleased to present our annual water quality report. 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 of our water users. Thank you for allowing us the opportunity to serve you and your family.

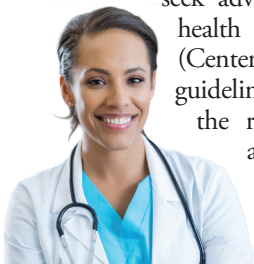
We encourage you to share your thoughts with us on the information contained in this report. After all, well-informed customers are our best allies.

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 or at www.epa.gov/lead.

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>.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration 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, in some cases, radioactive material, and 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.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

QUESTIONS?

If you have any questions or comments about this report or any other aspect of our operations, please contact Alan J. Frasier PE, General Manager, at (207) 729-9956 (*phone*), (207) 725-6470 (*fax*), or ajfrasier@btwater.org (*email*).

How Is My Water Treated and Purified?

At all of our sources, we add sodium hypochlorite (chlorine) to protect against bacteriological contaminants, and fluoride to promote dental health. We also add a phosphate compound to inhibit corrosion of the distribution system piping and to reduce lead and copper corrosion of internal plumbing systems. The water from the Jackson and Taylor wells is filtered to remove iron and manganese caused by erosion of natural deposits in the sand and gravel aquifer. The pH of the water from the Jordan Avenue well field is adjusted using aeration to reduce the corrosivity of the water.

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 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.

Water treatment is a complex, time-consuming process.

Where Does My Water Come From?

Our sources of supply are all groundwater taken from various wells, as follows:

Jackson Station, Topsham:

One 24-inch-diameter well, one 18-inch-diameter well

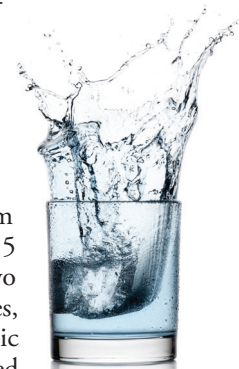
Jordan Avenue Station, Brunswick:

138 2.5-inch-diameter wells

Taylor Station, Brunswick: One 24-inch-diameter well, one 18-inch-diameter well, and one 12-inch-diameter well

Williams Station, Brunswick: One 12-inch-diameter well

Our water distribution system includes approximately 115 miles of water main, two storage tanks, 7,100 services, and 1,100 private and public hydrants. In 2017 we delivered an average of 2.26 million gallons of water per day to our customers. March 27th was our highest demand day in 2017, when we delivered 4.41 million gallons of water.



Upcoming Projects

The Jackson Station in Topsham is the District's largest supply source and headquarters for administration and operations. The station was constructed in 1971. As you can imagine, several of the building systems including structural, electrical, and mechanical are not operating efficiently and cannot easily be repaired or replaced. The District commissioned a strategic plan, completed in 2012, that recommended replacement of the facility by 2025.

In 2015, levels of disinfection by-products (DBPs) were seen to be increasing. These are substances that we regularly test for to stay within Federal guidelines. DBPs form when chlorine, which is used for disinfection, combines with naturally occurring organic matter (NOM) such as decaying leaves. Operational changes were made to ensure that levels remain below EPA and State water quality limits. While operational changes can lessen DBP formation, the basic characteristics of the water source are unchanged.

In 2016, the District began evaluating treatment schemes to remove NOM. Potential treatment methods were evaluated using pilot testing in 2017. In December 2017, the District retained CDM Smith, consulting engineers, to select a treatment scheme and develop a preliminary design for a new facility. Final design of construction documents is expected in 2019, with start of construction in 2020 or 2021. Estimates have not been prepared but the District expects the cost to be in the \$20M to \$25M range. These upgrades are necessary for us to continue producing and delivering safe drinking water. We will work to implement the best financial path to lessen the impact on our customers.



SWAP

In 1996, amendments to the Federal Safe Drinking Water Act (SDWA) required every state to complete assessments for each public water supply source. The assessments identify and describe conditions that may threaten the quality of water available to consumers. These assessments are the focus of Maine's Source Water Assessment Program (SWAP). The State of Maine Drinking Water Program (DWP) completed its SWAP report for the Brunswick and Topsham Water District in 2003. The report was sent to municipal officials in Brunswick and Topsham. The report can be viewed by contacting the Brunswick & Topsham Water District.

The responsibility for protecting public water supply sources from contamination falls largely to the public water suppliers. But municipal officials, not water suppliers, make land-use decisions. This means that protection of public water supplies requires a partnership between water suppliers, state and federal regulators, local landowners, and municipalities.

Categories of risk evaluation for public water sources include well type and site geology; existing and future risk of acute contamination; and existing and future risk of chronic contamination. The following is a summary of the assessment provided by the DWP. If you have any questions or comments, feel free to contact the Brunswick & Topsham Water District.

The DWP has assessed the risk of all our water sources, based on type and geology, to be at the moderate level. The only practical means of reducing the risk is through replacement of the source. Acute contaminants, such as pathogens, nitrates, and nitrites are those that can make people sick immediately after being consumed. The DWP has assessed all of our sources to have low risk for existing and future acute contamination. Chronic contaminants are those that pose a health risk if consumed over many years. The DWP has assessed our sources to have, on average, moderate risk for existing and future chronic contamination.



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**

How to Learn More About Your Water

This report highlights some of our activities during the past year. There are many ways to get the information you need:

Visit our Website

www.btwater.org

Like us on Facebook

Brunswick & Topsham Water District

Subscribe to a construction blog

www.btwater.org

Stop in the office

266 River Road, Topsham; M - Th 7am-5pm

Attend a Board Meeting

Second Monday of the month at 5:30pm

Call the office

(207) 729-9956; M - Th 7am-5pm

In case of emergency after normal business hours, please call (207) 729-9956 and the answering service will contact the appropriate personnel. A technician will return your call as soon as possible.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The information in the data tables shows only those substances that were detected between January 1 and December 31, 2017. Remember that detecting a substance does not necessarily 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 3rd stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program by performing additional tests on our drinking water. UCMR3 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. Contact us for more information on this program.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Arsenic (ppb)	2017	10	0	3	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2017	2	2	0.00066	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2017	[4]	[4]	0.78	0.06–1.72	No	Water additive used to control microbes
Chromium (ppb)	2017	100	100	1.4	NA	No	Discharge from steel and pulp mills; Erosion of natural deposits
Combined Radium (pCi/L)	2011	5	0	0.0571	NA	No	Erosion of natural deposits
Di(2-ethylhexyl) Phthalate (ppb)	2017	6	0	1.2	NA	No	Discharge from rubber and chemical factories
Fluoride (ppm)	2017	4	4	0.72	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2017	60	NA	33.75	20–57	No	By-product of drinking water disinfection
Nitrate (ppm)	2017	10	10	1.16	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	49	20–90	No	By-product of drinking water disinfection
Combined Uranium (ppb)	2017	30	0	1.2	NA	No	Erosion of natural deposits

MINERAL CONTENT AND SECONDARY STANDARDS

SUBSTANCE (MGL)	MAINE RECOMMENDED LIMIT		RESULT RANGE	
Chloride	250	10	41	
Hardness	150	24	56	
Iron	0.3	<0.01	0.07	
Manganese	0.05	0.001	0.007	
Sodium	100	11	55	
Magnesium	50	1.7	2.1	
Calcium	500	6.9	19	
Zinc	5	<0.002	0.21	

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% TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2016	1.3	1.3	0.342	0/40	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2015	15	0	1	0/40	No	Corrosion of household plumbing systems; Erosion of natural deposits

Definitions

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

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).