

Annual

WATER

QUALITY

REPORT

For Water Testing Performed in **2018**

WSID: VT0005053



Burlington Water

A Division of Burlington Public Works

17 year member of



We are pleased once again to present our annual water quality report. After many years supplying this information on a tri-fold brochure, we decided to migrate to a letter format which gives us unlimited real estate for both required data and news. For 110 years we've been working hard to provide you with the best possible drinking water. This report is a snapshot of the quality of water that we provided in 2018. Included are the details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards. We are committed to providing you with information because informed customers are our best allies.

Where Does My Water Come From?

We are fortunate in Burlington to have Lake Champlain as a raw water source. The lake provides drinking water for nearly 200,000 people – and recreational opportunities for many, many more. While the high quality of water in the lake makes our drinking water treatment process relatively easy, there are a variety of threats to water quality in the lake.

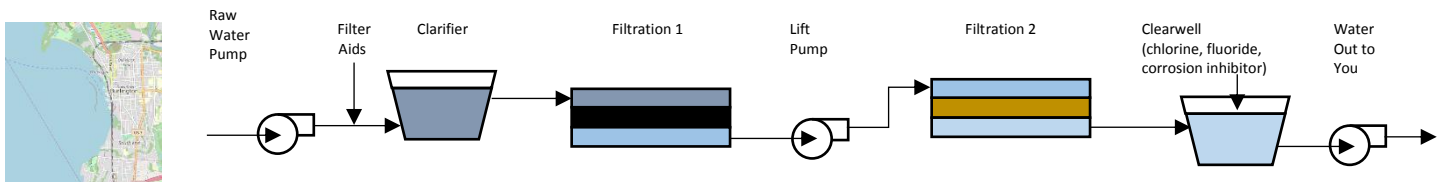
LAKE CHAMPLAIN BY THE NUMBERS	
Surface Area	435 square miles
Length	120 miles
Width (at widest point)	12 miles
Average Depth	64 feet
Watershed Size	8,234 square miles

The City of Burlington faces a variety of challenges when it comes to the stewardship of the lake – including a number of State and Federal regulatory requirements. In late 2014, Burlington was one of only 5 communities across the country selected by the EPA to receive technical assistance and funding to develop an Integrated Water Quality Plan. Integrated Planning allows communities to examine all of their regulatory and environmental challenges, and prioritize improvements based on what will provide the most efficient benefits up front. To learn more about Burlington's Integrated Planning process, visit www.burlingtonvt.gov/DPW/Stormwater/IMSWP

Beyond the Integrated Planning work, we will also be undertaking a number of capital improvements thanks to the \$30 million bond Burlington residents approved in the fall of 2018. For more information on that work, please visit www.burlingtonvt.gov/DPW/CWRP

How is it Processed?

We basically filter water twice before sending it out to you. Raw lake water is pumped into our plant where we add filter aids to help remove both dissolved and particulate matter from lake water. We then start removing large particles through gravity settling in clarifiers, filter water once through anthracite coal and again through sand. We then add chlorine to inactivate any harmful bacteria or viruses that may possibly have made it through our process and to keep them out of the distribution system, fluoride to prevent tooth decay and lastly a corrosion inhibitor to keep lead and copper in household plumbing from leaching into the water you drink.



What Else Are We Doing?

This has been another busy year for capital projects. While we performed repairs to filtration process 1 and cleaned media (sand) in filtration process 2 at the plant, the vast majority of our work was done out in our distribution system. Through a collaborative effort between our distribution crews and private contractors we replaced 1.5 miles and relined 1.9 miles of water mains. We appreciate your support and patience as we continue this work in 2019 and beyond.

Drinking Water Contaminant Definitions and Data

The sources of drinking water (both tap water and bottled water) include surface water (streams, lakes) and ground water (wells, springs). As water travels over the land's surface or through the ground, it dissolves naturally-occurring minerals. It also picks up substances resulting from the presence of animals and human activity. Some "contaminants" may be harmful. Others, such as iron and sulfur, are not harmful. Public water systems treat water to remove contaminants, if any are present.

In order to ensure that your water is safe to drink, we test it regularly according to regulations established by the U.S. Environmental Protection Agency and the State of Vermont. These regulations limit the amount of various contaminants:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides, may come from a variety of sources such as storm water run-off, agriculture, and residential users.

Radioactive contaminants, which can be naturally occurring or the result of mining activity

Organic contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and also come from gas stations, urban storm water run-off, and septic systems.

The table below lists all the drinking water contaminants that we detected during the past year. It also includes the date and results of any contaminants that we detected within the past five years if tested less than once a year. The presence of these contaminants in the water does not necessarily show that the water poses a health risk.

Terms and abbreviations - In this table you may find terms you might not be familiar with. To help you better understand these terms we have provided the following definitions:

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Level 1 Assessment: A level 1 Assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

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.

Locational Running Annual Average (LRAA): The average of sample analytical results for samples taken at a particular monitoring location during four consecutive calendar quarters.

Maximum Contamination Level (MCL): The "Maximum Allowed" MCL is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

Maximum Contamination Level Goal (MCLG): The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to human health. MCLG's allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. Addition a disinfectant may help control microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): 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 disinfectants in controlling microbial contaminants.

Nephelometric Turbidity Unit (NTU): NTU is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Parts per billion (ppb) or Micrograms per liter (ug/l): (one penny in ten million dollars)

Parts per million (ppm) or Milligrams per liter (mg/l): (one penny in ten thousand dollars)

Picocuries per liter (pCi/L): a measure of radioactivity in water

Running Annual Average (RAA): The average of 4 consecutive quarters (when on quarterly monitoring); values in table represent the highest RAA for the year.

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

90th Percentile: Ninety percent of the samples are below the action level. (Nine of ten sites sampled were at or below this level).

Health Information Regarding Drinking Water

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from EPA's Safe Drinking Water Hotline (1-800-426-4791).

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Safe Drinking Water Hotline. 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. Burlington Water Resources is responsible for providing high quality drinking water, but 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 drinking 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 <http://www.epa.gov/safewater/lead>.

Detected Regulated Contaminants BURLINGTON DEPT PUBLIC WORKS WATER DIV

Disinfection Residual	RAA	RANGE	Unit	MRDL	MRDLG	Typical Source
Chlorine	1.023	0.000* - 1.990	mg/l	4	4	Water additive to control microbes

* A distribution system special sample reported as having no residual had trace chlorine residual and passed its bacteriological test.

Chemical Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
Fluoride	01/22/2018	0.7	0.4 - 0.7	ppm	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate	01/11/2018	0.24	0.24 - 0.24	ppm	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Disinfection ByProducts	Collection Year	Highest LRAA	Range	Unit	MCL*	MCLG	Typical Source
Total Trihalomethanes	2018	59	35 - 80	ppb	80	0	By-product of drinking water chlorination
Total Haloacetic Acids (HAA5)	2018	43	5 - 58	ppb	60	0	By-product of drinking water chlorination

* In the case of Disinfection ByProducts the MCL is compared against Highest LRAA and not highest single value.

Lead and Copper	Collection Year	90th Percentile	Range	Unit	AL*	Sites Over AL	Typical Source
Copper	2018	0.13	0 - 0.33	ppm	1.3	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead	2018	2.7	0 - 118	ppb	15	1	Corrosion of household plumbing systems; Erosion of natural deposits

*The lead and copper AL (Action Level) exceedance is based on the 90th percentile concentration, not the highest detected result.

Monitoring Data for Unregulated Contaminants

Our Water System has sampled for a series of unregulated contaminants, per the Unregulated Contaminant Monitoring Rule (UCMR), established by the Environmental Protection Agency (EPA). Unregulated contaminants are those that don't yet have a health-based drinking water standard. The purpose of monitoring for these contaminants is to help the EPA decide whether the contaminants should have a health-based standard. Every five years the EPA develops a new list of UCMR contaminants. The results of our sampling are displayed in the table below. For more information, please visit www.epa.gov/dwucmr.

Detected Unregulated Contaminants (see notes below for more explanation)

Contaminant	Range	Average	Units
Manganese	3.30	3.30	µg/L
Total Organic Carbon	4180.00	4180.00	µg/L

Notes:

1. *Manganese* is an essential nutrient for the human body and is naturally occurring in some rocks and soils in Vermont and can erode into groundwater and surface waters. The Vermont Drinking Water limit for Manganese is 50 µg/L.
2. *Total Organic Carbon* measures the concentration of natural organic matter (NOM) in water. If not removed by our plant, NOM reacts with free chlorine to form Disinfection ByProducts as recorded above. We monitor ultraviolet absorbance (UVA) in the plant as a surrogate for TOC and can immediately tell how well we're removing NOM in the plant.

What's the Deal with PFOA/PFAS? (sources: Vermont Departments of Health and Environmental Conservation)

Perfluorooctanoic acid (PFOA) and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals used to make household and commercial products that resist heat and chemical reactions, and repel oil, stains, grease and water. These chemicals are widely found in nonstick cookware, stain-resistant carpets and fabrics, water repellent clothing, paper and cardboard food packaging and fire-fighting foam. PFOA/PFAS does not break down easily and therefore persists for a very long time in the environment, especially in water. Its toxicity and persistence in the environment means it is a potential danger to human health and the environment. Some scientific studies suggest that certain PFAS may affect different systems in the body. Although more research is needed, some studies in people have shown that certain PFAS may:

- Affect growth, learning and behavior of babies and older children
- Lower a woman's chance of getting pregnant
- Interfere with the body's natural hormones
- Increase cholesterol levels
- Affect the immune system
- Increase the risk of cancer

In February 2016 the Department of Environmental Conservation (DEC) initiated an investigation into potential PFAS contamination from a former Teflon coating factory in North Bennington. This investigation led to the discovery of widespread contamination in over 300 drinking water wells in the Bennington area with mostly PFOA. To deal with this issue, folks in Bennington either were connected to municipal water or had activated carbon treatment systems installed on their wells.

We worked with the State to have testing done on PFOA and its derivatives on four (4) separate occasions in 2013 and 2014. None was detected in Lake Champlain water. We will continue to work with the State on further testing, however it's worth noting that we have the capability to remove PFOA/PFAS and other organic compounds if they ever are detected.

Final News



After many years working with us in both water and wastewater, most recently as Chief Water Plant Operator, Steve Asselin fell in love with Hawaii while vacationing there and decided to make it his permanent home. We wish him and his family the very best and will try to remember the time difference when we call him with questions 😊. Aloha and Mahalo!

Questions? For more information about this report, or any questions relating to your drinking water, please feel free to contact Customer Care at 802-863-4501 or water-resources@burlingtonvt.gov.