

What could we expect to find in our water?

As water travels over the surface of land or through the ground it dissolves naturally occurring minerals and in some cases radioactive material. It can also pick up substances resulting from human activity or from the presence of animals.

Contaminants that may be present in source water include:

Microbial contaminants: such as viruses and bacteria, which may come from septic systems, agricultural livestock operations and wildlife;

Inorganic contaminants: like salts and metals, which can occur naturally or result from domestic waste water discharges and agricultural uses;

Pesticides and Herbicides: that may come from agriculture and residential uses;

Organic chemical contaminants: that include synthetic and volatile compounds coming from septic tanks and careless disposal of household chemicals, and

Radioactive contaminants: that occur naturally.

Who makes the decisions about our water?

Our City Council. We encourage public interest and participation in our community's decisions that affect drinking water.

How is this done?

By attending the Council meetings on **Tuesday evening at 7:00 p.m.**, in City Hall, **Council Chambers, at 6 North Main Street**, when there are water related issues on the agenda. The Saturday edition of our local newspaper publishes a notice of these meetings.

Health Information

The **EPA (Environmental Protection Agency)** establishes regulations that limit the amount of certain contaminants in drinking water, thus providing the consumer with water that is both palatable and potable (safe). Also, the **FDA (Food & Drug Administration)** promulgates rules and restrictions that limit contaminants in the bottled water industry in order to provide the same protection for the general public.

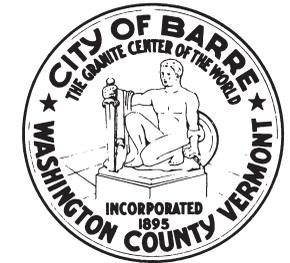
All drinking water, including bottled water, may contain small amounts of contaminants. Their presence does not always mean that water poses a health risk. However, some people may be more vulnerable to contaminants in drinking water than the general public. Immunocompromised persons with cancer who are undergoing chemotherapy, who have had organ transplants, who suffer from HIV/AIDS or other immune system disorders may be more susceptible to infections. Other groups at greater risk to infections would be the elderly and infant populations. These people should seek advice from their health care provider.

You can contact **EPA's Safe Drinking Water Hotline at 1-800-426-4791** for more information about contaminants in drinking water and their potential health effects. Their guidelines will provide measures to lessen the risk of infection by Cryptosporidium, Giardia, and other microbial contaminants.

*Gross Alpha particle activity results include Uranium activity. However, the EPA has set a maximum containment level (MCL) for "adjusted" Gross Alpha particle activity (including Radium-226 but excluding Uranium) at 15pCi/L. To determine compliance with the "adjusted" Gross Alpha MCL, a separate Uranium result is required for the adjustment calculation, and it must be converted from mass (ug/L) to activity (pCi/L). The estimated Uranium activity is then subtracted from the Gross Alpha particle activity lab result to yield the "adjusted" Gross Alpha result in pCi/L.

City of Barre Water Dept.
6 North Main Street, Suite 5
Barre, VT 05641

City of Barre Water Quality Report 2021



We are proud to report that water provided to the greater Barre area meets or exceeds established water quality standards!

Why are we telling you this?

This is an annual report on the quality of water delivered by the City of Barre. It meets the **Federal Safe Drinking Water Act (SDWA)** requirement for “**Consumer Confidence Reports**” and contains information on the source of our water, what’s in the water and the health risks associated with any contaminants that may be present. Safe water is vital to our community. Please read this report carefully. If you have any questions, you may call the **Water Filtration Facility 476-6885**.

Where does our drinking water come from?

The City of Barre’s water supply is located in the Town of Orange. The surface water fed by streams and springs is stored in three impoundments known as The Thurman W. Dix Reservoir and the Upper and Lower Reservoirs. The Dix Reservoir, designed in 1950, holds almost all (93%) of the raw untreated water.

To help protect the area around the reservoirs, known as the watershed, Barre has developed a **Source Protection Plan** that was approved by the State of Vermont on Dec. 29, 1997, April 2008, 2011 and December 2015. The area totaling 11.1 square miles is broken down into three zones based on distance from the surface water supply.

The Plan provides a more comprehensive look at the possible sources of contamination within our watershed.

The 6 million gallon per day water treatment facility receives water directly from the Lower Orange Reservoir. Our treatment process reduces or eliminates turbidity, bacteria, viruses, parasites, color, taste, odor and organics.

The finished water is transported from the facility to the distribution system via a 20” cast iron water main. The system is comprised of two different zones known as the high and low pressure areas. These areas provide water for approximately **15,000** customers.

Highlights of 2021

1. The Facility produced 485.647 MG. Production averaged 1.331 MGD.

Key maintenance activities include filter media replacement in Filtering Unit #1, new sodium permanganate chemical storage tanks and chemical injection system.

The water system is now monitoring chlorine residuals at the end of the system at four locations three days per week and is in the process of installing back-up power generation at cobble hill meadows pump station as recommended by the State Water Supply Division.

2. During a Water Supply Division inspection on July 10, 2018 it was noted that the Route 302 pressure reducing vault piping may have been underwater for ground water intrusion. In the event of pipe failure ground water could enter distribution system. A sump pump was added to the vault to prevent water accumulation.

continued in right column

WATER QUALITY --- DATA TABLE --- 2021

Chemical Group	Units	MCL	MCLG	Highest Detected	Date	Average	Range	Vt. Health Advisory	Typical Source	Violation Yes or No
Inorganics:										
Nitrate	ppm	10.0	10.0	0.12	2/18/2021	n/a	0.12 - 0.12	n/a	Runoff from fertilizer use; Leaching from septic tanks;sewage;Erosion of natural deposits	No
Cyanide	ppm	0.2	0.2	<0.01	7/29/2013	n/a	n/a	n/a	Poisons, metal plating & photo processing chemicals: industrial	No
Zinc	ppm	5.0		0.12	3/3/2003	n/a	n/a	n/a	Added as a corrosion inhibitor; Naturally occurring	No
Fluoride	ppm	4.0	4.0	0.91	5/27/2021	0.76	0.64 - 0.91	n/a	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	No
Manganese	ppb	n/a	n/a	47	7/31/2019	n/a	47-47	n/a	Erosion of natural deposits. Vermont Department of Health has established a health advisory of 300 ppb. Manganese equal to or greater than 50ppb can lead to unacceptable taste or staining of fixtures.	
Calcium	ppm	n/a	n/a	24.00	11/7/2018	n/a	24-24	n/a		No
Hardness (As CaCO3)	ppm	n/a	n/a	67.00	11/7/2018	n/a	67-67	n/a		No
Mangesium	ppm	n/a	n/a	1.60	11/7/2018	n/a	1.6-1.6	n/a		No
Organics:	Units	MCL	MCLG	Highest Detected	Date	Average	Range	Highest LRAA	Typical Source	Violation
Bromodichloromethane	ppb	n/a	n/a	3.40	10/27/2021	2.20	1.0 - 3.4	n/a	By-product of drinking water chlorination	No
Chloroform	ppb	n/a	n/a	46.20	7/21/2021	26.60	12.7 - 46.2	n/a	By-product of drinking water chlorination	No
Monochloroacetic Acid	ppb	n/a	n/a	<5.0	1/13/2021	<5.0	0.0 - 5.0	n/a	By-product of drinking water chlorination	No
Dichloroacetic Acid	ppb	n/a	n/a	14.30	7/21/2021	9.10	3.0 - 14.3	n/a	By-product of drinking water chlorination	No
Dibromoacetic Acid	ppb	n/a	n/a	<3.0	1/13/2021	<3.0	0.0 - 3.0	n/a	By-product of drinking water chlorination	No
Monobromoacetic	ppb	n/a	n/a	<3.0	1/13/2021	<3.0	0.0 - 3.0	n/a	By-product of drinking water chlorination	No
Trichloroacetic Acid	ppb	n/a	n/a	18.90	10/27/2021	13.30	9.2 - 18.9	n/a	By-product of drinking water chlorination	No
Total Trihalomethanes	ppb	80.00	0.00	49.50	7/21/2021	28.30	13.7 - 49.5	34	By-product of drinking water chlorination	No
Total Haloacetic Acids	ppb	60.00	0.00	27.70	7/21/2021	22.20	17.0 - 27.7	23.3	By-product of drinking water chlorination	No
Pathogens	Date	MCL	MCLG	Highest Detected	Sample Year	Average	Range	Health Adv	Typical Source	Violation
E.coli/Total Coliform	Monthly	n/a	n/a	5.2	2018	n/a	0 - 5.2	n/a	Naturally occurring sampled from Orange Reservoir prior to treatment	No
Cryptosporidium	Monthly	n/a	n/a	0	2018	n/a	0	n/a	Naturally occurring sampled from Orange Reservoir prior to treatment	No
Giardia	Monthly	n/a	n/a	4.14	2018	0.30	0 - 4.14	n/a	Naturally occurring sampled from Orange Reservoir prior to treatment	No
Radionuclides:	Units	MCL	MCLG	Highest Detected	Date	Average	Range	Health Adv	Typical Source	Violation
Gross Alpha	pci/L	n/a	0	0.581	2/18/2021	n/a	0.581 - 0.581	n/a	Erosion of natural deposits	No
R226	pci/L	5.0	0	0.104	2/18/2021	n/a	0.104 - 0.104	n/a	Erosion of natural deposits	No
R228	pci/L	5.0	0	0.818	2/18/2021	n/a	0.818 - 0.818	n/a	Erosion of natural deposits	No
Combined Radium	pci/L	5.0	0	0.922	2/18/2021	n/a	0.922 - 0.922	n/a	Erosion of natural deposits	No
Lead & Copper	Units	Action Level	Range	90th Percentile	Sampling Date	Sites over Action level	Total # of Sites Sampled	Health Adv	Typical Source	Violation
Lead	ppb	15ppb	0 - 130ppb	1.40	6/1/21 - 9/30/21	2	30	n/a	Corrosion of household plumbing systems; Erosion of natural deposits;leaching from wood preservatives	No
Copper	ppm	1.3 ppm	0 - 0.42ppm	0.091	6/1/21 - 9/30/21	0	30	n/a	Corrosion of household plumbing systems; Erosion of natural deposits	No
Contaminant Detected	Units	MCL	MCLG	Lowest Monthly % of samples Meeting MCL	Average	Highest Detected	Date	Health Advisory	Typical Source	Violation
Turbidity	ntu	0.30	n/a	100.00	0.052	0.079	9/26/21	n/a	Soil run-off; Turbidity is a measure of cloudiness in the water; It's a good indicator of the quality of water.	No
Disinfectant	Unit	MRDL	MRDLG	RAA	Range	Sample Year	Health Adv	Typical Source	Violation	
Chlorine	mg/L	4.00	4.00	1.05	0.92 - 1.25	2021	n/a		Water additive to control microbes	No

3. Per and Poly Fluorinated Alkyl Acids were tested for at point of entry to distribution system. NONE were detected. This chemical if detected at or above 20 parts per trillion a do not drink notice would have been issued.

• 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. The City of Barre 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 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>.

Key to Water Quality Data Table

• **Maximum Contaminant level (MCL):** The highest level of a contaminant that is allowed in drinking water.

MCLs are set as close to the MCLG as feasible using the best available treatment.

• **Maximum Contaminant level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG’s allow for a margin of safety.

• **Action level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

• **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).

• **Parts per Million (ppm) or Milligrams per Liter (mg/L):** One penny in \$10,000.

• **Parts per Billion (ppb) or Micrograms per Liter (ug/L):** One penny in \$10 million dollars.

• **Picocuries per Liter (pci/L):** A measure of radioactivity.

• **NTUs:** Nephelometric Turbidity Units

• **n/a:** Not Applicable

• **MRDL** Maximum Residual Disinfectant Level

• **MRDLG** Maximum Residual Disinfectant Goal

• **LRAA** Long Range Annual Average

*The Water System is responsible for the collection of a minimum of 15 bacteriological samples per month.