

Annual Drinking Water Quality Report for 2022
Village of Fredonia
P.O. Box 31
Fredonia, NY 14063
Public Water Supply ID# NY0600364

INTRODUCTION

To comply with State regulations, the Village of Fredonia annually issues a report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect our drinking water sources.

Last year, your tap water met most State drinking water health standards. In November we had a treatment technique violation for turbidity. More information about this is included in the Table of Detected Contaminants and in the section "What Does This Information Mean?"

This report provides an overview of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to State standards. Educated consumers are more likely to help protect drinking water sources and to understand the true value as well as associated costs of safe drinking water. The AWQR intentionally encourages consumers to consider the challenge of delivering potable drinking water with adequate pressure in quantities to meet demands. If you have any questions about this report or concerning your drinking water, please contact Luis Fred, Chief Operator, at (716) 679-2310. We want you to be informed about your drinking water. If you want to learn more, you are invited to participate in our public forum and voice your concerns about your drinking water. We meet the first and third Monday of each month, at 6:30 pm, at Village Hall, 9-11 Church Street, Fredonia, NY.

WHERE DOES OUR WATER COME FROM?

In general, 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 activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants. In order to ensure that tap water is safe to drink, the State and the EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department and the FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

The Village of Fredonia draws its water from the Fredonia Reservoir. The present estimated storage capacity of the reservoir is 295 million gallons. The watershed area that feeds the reservoir covers more than five square miles. A vast majority of the watershed is unpopulated and heavily wooded. In addition to the reservoir, we are also supplied on an as needed basis by an interconnection with the City of Dunkirk. This connection can be utilized in times of emergency or drought. We are able to receive 400,000 – 800,000 gallons per day via this connection which has been upgraded this past winter. This equates to approximately half of our average daily usage.

A Source Water Assessment Plan (SWAP) is now available at our office. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.

According to the Source Water Assessment Plan, our water system had a susceptibility rating of medium. If you would like to review the Source Water Assessment Plan, please feel free to contact our office during regular business hours.

WATER TREATMENT PROCESS

The treatment process consists of a series of steps. First, raw water is drawn from our reservoir and sent to clarifiers, where polyaluminumchloride, polymer, and clay are added. The addition of these substances cause small particles to adhere to one another (called floc), making them heavy enough to settle in a basin from which sediment is removed. From here, the clarified water is piped to the filter beds. The water is filtered through layers of fine coal and silicate sand. As smaller, suspended particles are removed, turbidity disappears and clear water emerges. We then carefully monitor and add chlorine to the filtered

water to kill any potential harmful bacteria. Before entering the clear well, poly orthophosphate is added for corrosion control to reduce lead-leaching from household plumbing. The water travels into our on-site clear well. This clear well is baffled to allow the chlorine to react with the water so it becomes thoroughly disinfected. Upon exiting the clear well, the water travels through three transmission lines in the village. This is all done using gravity. The processes are monitored with our state-of-the-art SCADA (Supervisory Control and Data Acquisition) system. This system monitors water quality and controls flows into and out of the water plant.

FACTS AND FIGURES

Our water system serves over 10,700 customers through 3,200 service connections. The total amount of water produced in 2022 was 483 million gallons. The daily average of water treated is 1.3 million gallons per day. Of the 483 million gallons we produced, 122 million gallons was billed to our customers. The balance or unaccounted water was used for firefighting, hydrant use, distribution system leaks, and reactor solids removal at the water plant (75% of the total amount produced). In 2022, water customers were charged \$4.80 per 1,000 gallons of water and the annual average water charge per user was \$89.09.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. These contaminants include: total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, Per- and polyfluoroalkyl substances (PFAS), radiological and synthetic organic compounds including pesticides and herbicides. The table presented below depicts which compounds were detected in your drinking water. The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

It should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791) or the Chautauqua County Health Department at 716-753-4481.

Table of Detected Contaminants

Contaminant	Violation	Date of Sample	Level Detected	Unit Measurement	Regulatory Limit (MCL/AL)	MCLG	Likely Source of Contamination
MICROBIOLOGICAL CONTAMINANTS							
Turbidity(1) Max	No	11/14/22	0.39	NTU	TT=<1.0 NTU	N/A	Soil Run-off
Turbidity(1)	Yes	November (2022)	93.75% <0.3	NTU	TT=95% of samples < 0.3 NTU	N/A	Soil Run-off
Distribution Turbidity(2) Max	No	March (2022)	0.37	NTU	MCL>5 NTU	N/A	Soil Run-off, water main breaks, flushing hydrants
INORGANIC CONTAMINANTS							
Lead(3)	No	8/10/22 – 8/31/22	7.8; Range= ND – 25.0	ug/l	15 (AL)	0	Corrosion of household plumbing systems; Erosion of natural Deposits
Copper(4)	No	8/10/22 – 8/31/22	0.224; Range= 0.0098 – 0.427	mg/l	1.3 (AL)	1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Barium	No	1/26/22	0.0545	mg/l	2.0 (MCL)	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Nickel	No	1/26/22	0.23	ug/l	N/A	N/A	Nickel enters groundwater and surface water by dissolution of rocks and soils, from atmospheric fallout, from biological decays and from waste disposal.
Chromium	No	1/26/22	0.56	ug/l	100 (MCL)	100	Discharge from steel and pulp mill; Erosion of natural deposits.
Nitrate	No	1/26/22	0.23	mg/l	10 (MCL)	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Manganese	No	1/26/22	23	mg/l	300 (MCL)	N/A	Naturally occurring; Indicative of landfill contamination.
Copper (E.P.)	No	1/26/22	0.00057	mg/l	1.3 (AL)	1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Iron	No	1/26/22	20	ug/l	300 (MCL)	N/A	Naturally occurring.
Sodium	No	1/26/22	9.4	mg/l	(see Health Effects) (5)	N/A	Naturally occurring; Road salt; Water softeners; Animal waste.
Thallium	No	1/26/22	0.023	ug/L	2 (MCL)	0.5	Leaching from ore processing sites; Discharge from electronics, glass,

							and drug factories.
Chloride	No	1/26/22	16.3	mg/l	250 (MCL)	N/A	Naturally occurring or indicative of road salt contamination.
Sulfate	No	1/26/22	13.7	mg/l	250 (MCL)	N/A	Erosion of natural deposits
RADIOLOGICALS							
Gross Alpha	No	12/22/16	0.691	pCi/L	15 (MCL)	0	Erosion of natural deposits.
Gross Beta	No	12/22/16	0.641	pCi/L	50 (MCL)	0	Decay of natural deposits and man-made emissions.
Radium 226	No	12/22/16	0.0896	pCi/L	5 (MCL)	0	Erosion of natural deposits
Radium 228	No	12/22/16	0.168	pCi/L	5 (MCL)	0	Erosion of natural deposits.
STAGE 2 DISINFECTION BYPRODUCTS (CHESTNUT ST)							
Haloacetic Acids	No	Quarterly (2022)	Avg.=14.3 Range=5.0 - 39.7	ug/l	80 (MCL)	N/A	By-products of drinking water chlorination.
Total Trihalomethanes	No	Quarterly (2022)	Avg.=37.4 Range=20.1 - 60.4	ug/l	80 (MCL)	N/A	By-products of drinking water chlorination. TTHM's are formed when source water contains large amounts of organic matter.
STAGE 2 DISINFECTION BYPRODUCTS (EAGLE ST)							
Haloacetic Acids	No	Quarterly (2022)	Avg.=19.2 Range=9.9 - 25.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Total Trihalomethanes	No	Quarterly (2022)	Avg.=62.6 Range=38.8 - 81.3	ug/l	80 (MCL)	N/A	By-products of drinking water chlorination. TTHM's are formed when source water contains large amounts of organic matter.
STAGE 2 DISINFECTION BYPRODUCTS (GREGORY HALL)							
Haloacetic Acids	No	Quarterly (2022)	Avg.=20.7 Range=16.7 - 34.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Total Trihalomethanes	No	Quarterly (2022)	Avg.=46.0 Range=53.0 - 76.1	ug/l	80 (MCL)	N/A	By-products of drinking water chlorination. TTHM's are formed when source water contains large amounts of organic matter.
STAGE 2 DISINFECTION BYPRODUCTS (TEMPLE)							
Haloacetic Acids	No	Quarterly (2022)	Avg.=25.2 Range=18.0 - 34.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Total Trihalomethanes	No	Quarterly (2022)	Avg.=41.9 Range=27.5 - 64.0	ug/l	80 (MCL)	N/A	By-products of drinking water chlorination. TTHM's are formed when source water contains large amounts of organic matter.
DISINFECTANT							
Chlorine Residual	No	Daily (2022)	Avg.=1.22 Range=0.1-1.9	mg/l	4.0 (MCL)	N/A	Water additive used to control microbes.
UNREGULATED CONTAMINANT MONITORING RULE UCMR4 2018-2019							
Total Organic Carbon	Not Regulated	9/18-2/19	Avg.=3.23 Range=2.45-4.0	mg/l	N/A	N/A	Likely source is naturally occurring.
Manganese	Not Regulated	9/18-2/19	Avg.=3.74 Range=0.72-6.76	ug/l	N/A	N/A	Likely source is naturally occurring.
Chestnut Rd. #LRAA1 Bromochloroacetic acid	Not Regulated	9/18-3/19	Avg.=1.7 Range=1.06-2.41	ug/l	N/A	N/A	By-products of drinking water chlorination.
Chestnut Rd. #LRAA1 Bromodichloroacetic acid	Not Regulated	9/18-3/19	Avg.=3.2 Range=1.78-4.54	ug/l	N/A	N/A	By-products of drinking water chlorination.
Chestnut Rd. #LRAA1 Dichloroacetic acid	Not Regulated	9/18-3/19	Avg.=16.9 Range=9.25-24.6	ug/l	N/A	N/A	By-products of drinking water chlorination
Chestnut Rd. #LRAA1 Trichloroacetic acid	Not Regulated	9/18-3/19	Avg.=35.1 Range=14.6-55.5	ug/l	N/A	N/A	By-products of drinking water chlorination

Temple St. #LRAA2 Bromochloro- acetic acid	Not Regulated	9/18-3/19	Avg.=2.1 Range= 0.99-3.14	ug/l	N/A	N/A	By-products of drinking water chlorination.
Temple St. #LRAA2 Bromodichloro- acetic acid	Not Regulated	9/18-3/19	Avg.=2.1 Range= 0.99-3.14	ug/l	N/A	N/A	By-products of drinking water chlorination.
Temple St. #LRAA2 Dichloroacetic acid	Not Regulated	9/18-3/19	Avg.=21.9 Range= 9.9-34.1	ug/l	N/A	N/A	By-products of drinking water chlorination.
Temple St. #LRAA2 Monochloro- acetic acid	Not Regulated	9/18-3/19	Avg.=1.29 Range= 0-2.58	ug/l	N/A	N/A	By-products of drinking water chlorination.
Temple St. #LRAA2 Trichloroacetic acid	Not Regulated	9/18-3/19	Avg.=35.0 Range= 14.3-55.7	ug/l	N/A	N/A	By-products of drinking water chlorination.
Eagle St. #LRAA3 Bromochloro- acetic acid	Not Regulated	9/18-3/19	Avg.=1.9 Range= 1.23-2.47	ug/l	N/A	N/A	By-products of drinking water chlorination.
Eagle St. #LRAA3 Bromodichloro- acetic acid	Not Regulated	9/18-3/19	Avg.=3.2 Range= 2.42-4.03	ug/l	N/A	N/A	By-products of drinking water chlorination.
Eagle St. #LRAA3 Dichloroacetic acid	Not Regulated	9/18-3/19	Avg.=18.6 Range= 12.7-24.5	ug/l	N/A	N/A	By-products of drinking water chlorination.
Eagle St. #LRAA3 Trichloroacetic acid	Not Regulated	9/18-3/19	Avg.=40.2 Range= 24.9-55.5	ug/l	N/A	N/A	By-products of drinking water chlorination.
Gregory Hall #LRAA4 Bromochloro- acetic acid	Not Regulated	9/18-3/19	Avg.=2.2 Range= 1.02-3.28	ug/l	N/A	N/A	By-products of drinking water chlorination.
Gregory Hall #LRAA4 Bromodichloro- acetic acid	Not Regulated	9/18-3/19	Avg.=3.3 Range= 1.92-4.68	ug/l	N/A	N/A	By-products of drinking water chlorination.
Gregory Hall #LRAA4 Dichloroacetic acid	Not Regulated	9/18-3/19	Avg.=21.3 Range= 9.16-33.4	ug/l	N/A	N/A	By-products of drinking water chlorination.
Gregory Hall #LRAA4 Monochloro- acetic acid	Not Regulated	9/18-3/19	Avg.=1.6 Range= 0-3.21	ug/l	N/A	N/A	By-products of drinking water chlorination.
Gregory Hall #LRAA4 Trichloroacetic acid	Not Regulated	9/18-3/19	Avg.=35.0 Range= 14.8-55.2	ug/l	N/A	N/A	By-products of drinking water chlorination.

Notes:

1 – Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. Our highest turbidity measurement for the year (0.39 NTU) occurred on November 14. State regulations require that turbidity must always be less than or equal to 1.0 NTU. The regulations also require that 95% of the turbidity samples collected every month must be below 0.3 NTU. In November, 93.75% of our samples measured below 0.3 NTU.

2-Distribution Turbidity is a measure of the cloudiness of the water found in the distribution system. We monitor it because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants. Our highest average monthly distribution turbidity measurement detected during the year (0.37 NTU) occurred in March 2022. This value is below the State's maximum contaminant level (5 NTU).

3-The level presented represents the 90th percentile of the 24 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the Lead values detected in your water system. In this case, 24 samples were collected at your water system and the 90th percentile value was calculated to be the 22nd highest value at 7.8 ug/l. The action level for lead was exceeded at two the 24 sampling locations.

4- The level presented represents the 90th percentile of the 24 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the Copper values detected in your water system. In this case, 24 samples were collected at your water system and the 90th percentile value was calculated to be the 22nd highest value at 0.224 ug/l. The action level for copper was not exceeded at any of the 24 sampling locations.

5- Water containing more than 20 mg/l of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/l of sodium should not be used for drinking by people on moderately restricted sodium diets.

Definitions:

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible.

Maximum Contaminant Level Goal (MCLG): 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.

Maximum Residual Disinfectant Level (MRDL): 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.

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 the use of disinfectants to control microbial contamination.

Action Level (AL): 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.

Non-Detects (ND): Laboratory analysis indicates that the constituent is not present.

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

Milligrams per liter (mg/l): Corresponds to one part of liquid in one million parts of liquid (parts per million - ppm).

Micrograms per liter (ug/l): Corresponds to one part of liquid in one billion parts of liquid (parts per billion - ppb).

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had one violation for turbidity in 2022. In November, we measured turbidity levels higher than allowed in our filtered water. This is considered a treatment technique violation. As mentioned above in the notes, state regulations require that 95% of the turbidity samples collected every month must be below 0.3 NTU. In November, 93.75% of our samples measured below 0.3 NTU.

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. Please pay special attention to the additional statement in this document regarding Cryptosporidium.

We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below the level allowed by the State. Lead and copper were detected within the system and of twenty-four samples collected, two were found exceeding the action levels. We are required to present the following information on Lead in drinking water:

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 Village of Fredonia is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact The Village of Fredonia at (716) 679-2310. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at <http://www.epa.gov/safewater/lead>.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During 2022, our system was not in compliance with applicable State drinking water operating, monitoring, or reporting requirements.

In 2022 the Village of Fredonia public water supply was issued the following violations of Subpart 5-1 of the New York

State Sanitary Code:

- Failure to exercise due care and diligence in the operation and maintenance of a water plant and distribution system.
- Failure to correctly complete the required monitoring for Disinfection Byproducts for their public water supply for the first quarter of 2022.
- Failure to analyze and report all required turbidity readings in both November and December 2022.

In 2022 the Village of Fredonia public water supply was also issued violations for failing to submit the following reports or results to the Health Department on time:

- Lead and Copper results
- Microbiological monitoring results for October, November and December
- Disinfection Byproduct monitoring results for the second, third and fourth quarters of 2022
- Disinfection Byproduct precursor monitoring results for July, August, September, October, November and December
- Monthly operation reports for October, November and December
- Notification of Designated Operator in Responsible Charge

The Village of Fredonia is in violation of Section 5-1.52(Table 4A): Surface Water Turbidity Performance Standards. Therefore, we are required to include the following statement in this report:

“Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.”

INFORMATION ON CRYPTOSPORIDIUM

Cryptosporidium is a microbial pathogen found in surface water and groundwater under the influence of surface water. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. During 2022, we had a treatment technique for turbidity in November. The presence of turbidity does not mean that cryptosporidium was present in our water. However, ingestion of Cryptosporidium may cause cryptosporidiosis, a gastrointestinal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome disease within a few weeks. However, immuno-compromised people are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their health care provider regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to disease causing microorganisms or pathogens 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 from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791)

INFORMATION FOR NON-ENGLISH SPEAKING RESIDENTS

Spanish

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

French

Ce rapport contient des informations importantes sur votre eau potable. Traduisez-le ou parlez en avec quelqu'un qui le comprend bien.

WHY SAVE WATER AND HOW TO AVOID WASTING IT?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- Saving water saves energy and some of the costs associated with both of these necessities of life;
- Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping

- systems and water towers; and
- ◆ Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential firefighting needs are met. You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:
 - ◆ Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
 - ◆ Turn off the tap when brushing your teeth.
 - ◆ Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it up and you can save almost 6,000 gallons per year.
 - ◆ Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.

CLOSING

Thank you for allowing us to continue to provide your family with quality drinking water this year. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call our office if you have questions.