

# Annual Water Quality Report – Reporting Year 2015

Village of Fredonia Water Filtration Plant

P.O. Box 31

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PWSID# NY0600364

## There When You Need US

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2015. Over the years we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts or concerns about the information in this report. After all, well informed customers are our best allies.

## Fact and Figures

Our water system serves over 10,000 customers through 3,200 service connections. The total amount of water produced in 2015 was 563 million gallons. The daily average of water treated is 1.5 million gallons per day. Of the 563 million gallons we produced, 316 million gallons was billed to our customers. The balance or unaccounted water was used for firefighting, hydrant use, distribution system leaks, and backwashing filters at the water plant. The 2015 billing rate was \$3.02 per 1,000 gallons inside the village.

## Source Water Assessment

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.

## Where Does My Water Come From?

The Village of Fredonia draws its water from the Fredonia Reservoir. The estimated present 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 800,000 gallons per day via this connection. This equates to half of our average daily usage.

During 2015, we had no incidences of a "Boil Water Order" or any instances where we had to purchase water from the City of Dunkirk.

## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet the second and fourth Monday of each month, at 7:30 pm, at Village Hall, 9-11 Church Street, Fredonia, NY.

## Water Conservation Tips

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using, and by finding ways to use less whenever possible. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons of water for every cycle, regardless of how many dishes are loaded. Load your dishwasher to capacity, and get a run for your money!
- Turn off the tap when brushing teeth.
- Check all faucets in your home for leaks. Just a slow drip can waste 15-20 gallons a day. By fixing leaks, you can save almost 6,000 gallons a year.
- Check all 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 due to an invisible toilet leak. Fixing this can save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances. After 15 minutes, check your meter to see if it has moved. If it has moved, you have a leak.

## How Is My Water Treated?

The treatment process consists of a series of steps. First, raw water is drawn from our reservoir and sent to clarifiers, where poly aluminum chloride, 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 harmful bacteria. Before entering the clear well, poly orthophosphate is added as a sequestering agent and for corrosion control to reduce the potential for lead to be leached out of water lines and 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-to 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.

## Substances That Could Be in Water

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.

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 water poses a health risk. In order to ensure that tap water is safe to drink, the State and the U.S. EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department and the U.S. FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Important Health Information

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 or 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 at (800) 426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing system. We are responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing systems. When your system 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](http://www.epa.gov/safewater/lead).

## Is Our Water System Meeting Other Rules That Govern Operations?

During 2015, our system water quality was in compliance with applicable State drinking water operating, monitoring and reporting requirements.

In 2015, the Chautauqua County Department of Health Engineer conducted the last Sanitary Survey at the plant to date. There were a few violations and recommendations noted in the survey. During this past year, the Village has addressed some of them and is working on others.

The following violations were identified in the survey that we are working to resolve with guidance from both the Health Department and our engineers at O'Brien and Gere:

- Install new pump station/interconnect with Dunkirk that could meet all village water needs, which will also eliminates the need to build another water storage tank.
- Survey the current capacity of the reservoir, update drought emergency plan and prepare a reservoir dredging plan.
- Complete engineering work required to improve the safety of the dam.
- Complete maintenance to the dam, intake tunnel and related appurtenances.
- Complete maintenance and improvements to the filter plant.
- Improve security at the filter plant.
- Conduct inspection of the water storage tanks and complete any required maintenance/improvements.
- Complete and implement disinfection byproduct control study.
- Prepare a water distribution system improvement plan.

## Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less 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.

<b>Table of Detected Contaminants</b>
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**Table of Detected Contaminants**

Contaminant	Violation	Date of Sample	Level Detected	Unit Measure -ment	Regulatory Limit (MCL/AL)	MCLG	Likely Source of Contamination
<b>MICROBIOLOGICAL CONTAMINANTS</b>							
Turbidity(1)	No	12/19/15	1.00 NTU	NTU	TT=<1.0 NTU	N/A	Soil Run-off
Turbidity(1)	No	July	100% <0.3	NTU	TT=95% of samples <0.3NTU	N/A	Soil Run-off
Distribution Turbidity(1)	No	August (2015)	0.31	NTU	MCL>5 NTU	N/A	Soil Run-off
<b>INORGANIC CONTAMINANTS</b>							
Lead(2)	No	6/13/13-7/9/13	7.40; Range= 0.29-9.7	ug/l	15 (AL)	0	Corrosion of household plumbing systems; Erosion of natural Deposits
Copper(2)	No	6/13/13-7/9/13	0.419; Range= 0.0202-0.748	mg/l	1.3 (AL)	1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Barium	No	5/14/15	0.0528	mg/l	2.0 (MCL)	2	Discharge of drilling wastes; discharge from metal refineries; erosion or natural deposits
Chromium	No	5/14/15	0.54	ug/l	100 (100)	100	Discharge from steel and pulp mill; Erosion of natural deposits.
Fluoride	No	5/14/15	0.07	mg/l	2.2 (MCL)	N/A	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	No	8/13/15	0.15	mg/l	10 (MCL)	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Thallium	No	5/14/15	0.03	ug/l	2 (MCL)	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.
<b>STAGE 2 DISINFECTION BYPRODUCTS (CHESTNUT ST)</b>							
Haloacetic Acids	No	Quarterly (2015)	Avg.=40.25 Range= 32.0-56.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Trihalomethanes	No	Quarterly (2015)	Avg.=55.53 Range= 32.0-90.0	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.
<b>STAGE 2 DISINFECTION BYPRODUCTS (EAGLE ST)</b>							
Haloacetic Acids	No	Quarterly (2015)	Avg.=30.55 Range= 4.2-43.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Trihalomethanes	No	Quarterly (2015)	Avg.=54.52 Range= 4.00-81.0	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.
<b>STAGE 2 DISINFECTION BYPRODUCTS (GREGORY HALL)</b>							
Haloacetic Acids	No	Quarterly (2015)	Avg.=50.83 Range= 33.0-60.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Trihalomethanes	No	Quarterly (2015)	Avg.=58.45 Range= 24.0-83.0	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.
<b>STAGE 2 DISINFECTION BYPRODUCTS (TEMPLE)</b>							
Haloacetic Acids	No	Quarterly (2015)	Avg.=55.53 Range= 30.0-72.0	ug/l	60 (MCL)	N/A	By-products of drinking water chlorination.
Trihalomethanes	No	Quarterly (2015)	Avg.=53.1 Range= 23.0-73.6	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.
<b>DISINFECTANT</b>							
Chlorine residual	No	Daily (2015)	Ave.=1.42 Range= 1.0-2.4	mg/l	4.0 (MCL)	N/A	Water additive used to control microbes.

**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 single turbidity measurement for the year occurred on 12/19/15 (1.00 NTU). State regulations require that turbidity must always be less than or equal to 1.0 NTU. The regulations require that 95% of the turbidity samples collected have measurements below 0.3 NTU. Although July 2015 was the month when we had the fewest measurements meeting the treatment technique for turbidity, the levels recorded were within the acceptable range allowed and did not constitute a treatment technique violation. 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 (0.31 NTU) occurred in August 2015. This value is below the State's maximum contaminant level (5 NTU).

2-The level presented represents the 90<sup>th</sup> percentile of the 20 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 90<sup>th</sup> percentile is equal to or greater than 90% of the lead values detected in your water system. In this case, 20 samples were collected at your water system and to 90<sup>th</sup> percentile value is calculated to be between the 17<sup>th</sup> and 19<sup>th</sup> highest value. The action level for lead was not exceeded in any of the 20 sampling locations.

## Table Definitions

**ppm** (part per million): One part substance per million parts water (or milligrams per liter).

**ppb** (parts per billion): One part substance per billion parts water (or micrograms per liter).

**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.

**AL** (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which 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

**ND** (Not Detected): Indicates that the substance was not found by laboratory analysis.

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

## What Does This Information Mean?

As you can see by the table, our system had no violations. We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below New York State requirements.

## Questions?

For more information about this report, or for any questions relating to your drinking water, please call Christopher Surma, Chief Operator, at (716) 679-2310. You may also contact the Chautauqua County department of Health at (716) 363-4481.