Source Water Assessment

A source water assessment was prepared through the New York Department of Health in 2002. It evaluated possible and actual threats to Batavia's drinking water sources. The State source water assessment includes a susceptibility rating based on the risk posed by each potential source of contamination and how easily contaminants can move through the subsurface into the wells. The susceptibility rating is an estimate of the potential for contamination of the source water; it does not mean that the water delivered to consumers is, or will become contaminated. See the section "Substances That Could Be in Water" for a list of the contaminants that have been detected. The source water assessments provide resource managers with additional information for protecting source waters into the future. Our water is derived from two drilled wells and the Tonawanda Creek. The source water assessment has rated these wells as having a medium-high to very high susceptibility to microbials, nitrates, petroleum products, industrial solvents, and other industrial contaminants. These ratings are due primarily to the close proximity of permitted discharge facilities (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) to the wells and the associated industrial activity in the assessment area. In addition, the wells draw from an unconfined aquifer of unknown hydraulic conductivity. The source water assessment for the Tonawanda Creek has found an elevated susceptibility to contamination for this source of drinking water.

The amount of agricultural lands in the assessment area results in elevated potential for microbials, phosphorus, DBP precursors, and pesticides contamination. In addition, the moderate density of CAFOs (Concentration Animal Feeding operations) in the assessment may add to the potential for contamination. While there are some facilities present, permitted discharges do not likely represent an important threat to source water quality, based on their density in the assessment area. However, it appears that the total amount of wastewater discharged to surface water in this assessment area is high enough to further raise the potential for contamination (particularly for protozoa). There is also noteworthy contamination susceptibility associated with other discrete contaminate resources; these facility types include: mines. Finally, it should be noted that relatively high flow velocities make river drinking-water supplies highly sensitive to existing and new sources of microbial contamination. While the source water assessment rates our Wells and the Tonawanda Creek as being susceptible to microbials, please note that Batavia's water is filtered and disinfected to ensure that the finished water delivered to your home meets New York State's drinking water standards for microbial contamination. A copy of the assessment, including a map of the assessment area, can be obtained by contacting the Genesee County Health Department at (585) 344-2580 or Matt Worth at Batavia's City Hall at (585) 345-6315.

Community Participation

Major decisions concerning your drinking water are made by the Batavia City Council. Meetings are held in the Council Chambers of City Hall, at One Batavia City Centre, on the second and fourth Mondays of each month at 7 p.m. You are invited to attend these meetings to become more informed or to voice your opinion in the decision-making process affecting your water.

Water Conservation Tips

You can play a role in conserving water and save yourself money in the process 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. Here are few tips:

- 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 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 an invisible toilet leak. Fix it and you 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. Then check the meter after 15 minutes. If it moved, you have a leak.

Batavia City Water Bureau
One Batavia City Centre • Batavia, NY 14020
585.345.6315

2018 Annual WATER QUALITY REPORT

City of Batavia

Batavia City Water Bureau

PWS ID# NY1800544

Meeting the Challenge

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2018. 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, wellinformed customers are our best allies.

For more information about this report, or for any questions relating to your drinking water, please call James Ficarella, Superintendent of Water and Sewer, at (585) 345-6324, or Charles Neilans, Chief Water Plant Operator, at (585) 345- 6400, option 2.

Where Does My Water Come From?

Batavia receives its water from two sources. Two wells are located at Cedar Street that draw water from the Tonawanda Valley Watershed, one of the largest underground aquifers in New York State. Our well water is exceptionally clear, with an average turbidity of less than 0.05 NTU. However, well water in this area is hard (containing dissolved minerals) and requires softening to bring it to a condition most residents find acceptable. The Tonawanda Creek is our other source of water. While the creek has provided us with an adequate quantity and quality of water for more than 90 years, it is a surface water source and is therefore susceptible to rapid changes in quality. Runoff can quickly increase levels of turbidity, making the creek water less cost-effective to process. Creek water is used to supplement our wells and serves as a backup water supply. In an emergency, the city can even purchase water from the Monroe County Water Authority through connecting water lines.

Important Health Information

Some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immunocompromised 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 providers 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. 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 two 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 (800) 426-4791 or at www.epa.gov/safewater/lead.

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 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.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen, disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some shortterm deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at that time. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

Facts & Figures

The City of Batavia Filtration Plant processed 1.02 Billion gallons of water during 2018, treating an average of 2.8 million gallons each day. We serve a city population of 15,475 and supply water to about 5,800 service connections. We sold a total of 804.4 million gallons of water in 2018; of this 258.4 million gallons were sold through the Genesee County meters to the Towns of Batavia, Oakfield, and Elba. In addition , 76.5 million gallons were used within the water plant for testing and process. A total of 140 million gallons (or 21%) was not metered and is unaccounted for; the unaccounted being water from fire hydrants, city maintenance, parks, spray park at Austin Park, or water lost from leaks and water main breaks.

The average charge for water billed in 2018 was $5.30 per thousand gallons. As in past years, for all of 2018 your tap water met all State drinking water health standards. The City of Batavia Water Department is proud to report that it had no system violations, microbiological, or monitoring/reporting violations.

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 tables below show only those contaminants that were detected in the water. The State requires us to monitor 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.

Regulated Substances

Substance (Unit of Measure)	Date Sampled	MCL [MRDL]	MCLG [MDRLG]	Amount Detected	Range Low-High	Violation	Typical Source
Chloride (ppm)	8/14/2018	250	NA	95.1	NA	No	Naturally occurring or indicative of road salt contamination. Chlorides are in nature as salts of sodium, potassium and calcium; potassium chloride is used in the production of farming fertilizers.
Barium (ppm)	8/14/2018	2	2	0.0134	NA	No	Discharge of drilling wastes; discharge from metal refineries, erosion of natural deposits
Nickel (ppm)	8/14/2018	NA	NA	0.0006	NA	No	Typical source oof Nickel are agricultural phosphate fertilizers and natural soil deposits
Copper (ppm)	8/14/2018	1.3	1.3	0.002	NA	No	Corrosion of household plumbing systems; erosion of natural deposits
Chlorine Residual (ppm)	2018, hourly	[4]	NA	1.06	0.63-1.40	No	By-product of drinking water chlorination
Fluoride (ppm)	8/14/2018	2.2	NA	0.43	NA	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
	Daily	2.2	NA	yearly avg. 0.71	0.46-0.95		
Nitrate as N (ppm)	8/14/2018	10	10	0.75	NA	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Sulfate (ppm)	8/14/2018	250	NA	34.6	NA	No	Naturally occuring
Total Organic Carbon [TOC] (ppm)	2018, monthly	TT	NA	2.41 avg.	ND-12.0	No	Organic contaminants (natural organic substances, insecticides, herbicides, and agricultural chemicals) tha enter waterways in ranfall runoff
Sodium[5] (ppm)	8/14/2018	TT	NA	49.7	NA	No	Naturally occurring; Road salt, Water softeners; Animal waste
Alkalinity as CaCO^3 (ppm)	8/14/2018	NA	NA	51.8	NA	No	Natural minerals; lime softening process
Calcium (ppm)	8/14/2018	NA	NA	13.7	NA	No	Mineral deposits
Magnesium (ppm)	8/14/2018	NA	NA	15.0	NA	No	Dissolution of nickel in well water
Haloacetic Acids[6] (ppb)	2018, quarterly	60	60	20.1	ND - 20.1	No	By-product of drinking water disinfection
Total Trihalomethanes[6] **[TTHMs]** (ppb)	2018, quarterly	80	80	46.4	8.9 - 57.1	No	By-product of drinking water disinfection
Turbidity[1] (NTU)	2018, daily	TT ≤1.0	NA	0.02	0.01 - 0.05	No	Soil runoff
Turbidity[2] (lowest monthly percent of samples meeting limits) (NTU)	2018, daily	TT ≤0.3 NTU	NA	100%	NA	No	Soil runoff - November 2016 found the highest turbidity levels, but they were still well within tolerance levels of below 5.0 NTU
Turbidity [Distribution System] (NTU)	2018, weekly	>5	NA	0.06	0.02 - 0.85	No	Cloudiness in water main disruptions and breaks. (See section on water main flushing)

Substance (Unit of Measure)	Date Sampled	AL	MCLG	Amount Detected 90th Percentile	Range Low-High	Sites Above AL/ Total Sites	Violation	Typical Source
Copper[3] (ppm)	7/12-13/2016	1.3 ppm	1.3	0.000	ND-0.029	0/30	No	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead[4] (ppb)	7/12-13/2016	15 ppb	0	1.1	ND–6.0	0/30	No	Corrosion of household plumbing systems; erosion of natural deposits

[1]Turbidity is a measure of the cloudiness of the water. It is tested because it is a good indicator of the effectiveness of the filtration system. Our highest single turbidity measurement for the year occurred as indicated in the table. State regulations require that turbidity must always be below 1 NTU. The regulations require that 95% of the turbidity samples collected have measurements below 0.3 NTU. (Note that TT is dependent upon filtration method: conventional, 0.3 NTU; slow sand, 1.0 NTU; or diatomaceous earth filtration, 1.0 NTU.) Although the month as indicated in the Date column 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. [2]The highest measurement of the monthly average distribution results for the year occurred as indicated in the table. [3]The level presented represents the 90th percentile of the 30 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal or below it. The 90th percentile is equal to or greater than 90% of the copper values detected in Batavia. Thirty samples were collected in 2016. The Action Level of 1.3 ppm for copper was not exceeded at any of the sites tested. [4]The level listed represents the 90th percentile of the 30 samples collected in 2016. The Action Level for lead was exceeded at 1 of the 30 sites tested. TT=95% of samples are less than or equal to 0.3 NTU. [5]Water containing more than 20 ppm of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 ppm of sodium should not be used for drinking by people on moderately restricted sodium diets. [6]This level represents the hightest locational running annual average calculated from data collected.

90th Percentile – The levels reported for lead and copper represent the 90th percentile of the total number of 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 and copper values detected at your water system.

AL (Action Level) – The concentration of a contaminant which, 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 MCLG as possible.

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.

NTU (Nephelometric Turbidity Unit) – Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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).

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

How Is My Water Treated & Purified

Batavia's well water is very clear and requires little treatment other than softening. Soft water cleans better, requiring less soap to wash effectively.

Tonawanda Creek water enters the water plant through mechanical screens. These screens prevent creek debris from getting into the plant. Creek water is mixed with well water in the flash mixers, where water treatment chemicals are added. Ferric sulfate is added as a coagulant, neutralizing the charges on particles suspended in the water, allowing them to clump together and drop out. Calcium oxide, also called lime, is added to the raw water to soften it. Lime will cause compounds of calcium, magnesium, and other minerals to precipitate or drop out of the water.

The water is then sent out to the softening tanks, where large paddles slowly churn the chemically treated water, forming a sludge layer of muddy water. The sludge is made up of chemicals we added and chemicals from the water, as well as suspended dirt, clay, silt, and microorganisms. Most of the impurities will now drop out of the water.

The next step is the settling basin, where the water's velocity is reduced so that suspended matter can drop to the bottom. We add carbon dioxide at this point to adjust the pH. We add chlorine as a disinfectant, which will prevent growth of organisms in your drinking water.

From the settling basin, the water is directed to 12 rapid sand filters. The filters allow the water through while holding back virtually any remaining particles. Our water is then very clear, usually having a finished turbidity of around 0.02 NTU.

Finally, we add a small amount of polyphosphate corrosion inhibitor to prevent minerals dissolved in the water from precipitating out onto your pipes. Pumps push our finished water out into the distribution system, into two elevated tanks, and to your homes and businesses, at a pressure of around 70 pounds per square inch.

Fluoridation of Our Water

Our system is one of the many drinking water systems in New York State that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the United States Centers for Disease Control, fluoride is very effective in preventing cavities when present in drinking water at an optimal range from 0.7 to 1.0 ppm. To ensure that the fluoride supplement in your water provides optimal dental protection, the State Department of Health requires that we monitor fluoride levels on a daily basis. During the reporting year, monitoring showed fluoride levels in your water were in the optimal range 82 % of the time. None of the monitoring results showed fluoride at levels that approach the 2.2 ppm MCL for fluoride.

Facility Modification & System Improvements for 2018

Three new electronic security door locks were installed on the 3 main doors of the water plant.

Two new drive couplings were purchased from Bailey Electric/ Machine Shop and installed on 2 drive shafts of our 75 ‘ water precipitators.

A garage floor drain was excavated and repaired in the garage that was built in 1969.

Nondetected Substances

The following is a complete list of all the substances that we tested for in 2018 but did not detect in our water supply.

Inorganics:

Antimony, Arsenic, Beryllium, Cadmium, Chromium, Lead (at system entry point), Mercury, Selenium, Silver, Thallium, Iron, Manganese, Zinc, Cyanide, Sulfite, Nitrite.

SOCs:

Alachlor, Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Total PCBs (Arochlor), Toxaphene, 2,4,5-TP(Silvex), 2,4-D, Dalapon, Dicamba, Dinoseb, Pentachlorophenol, Picloram, Atrazine, Benzo(a)pyrene(PAH), bis(2-Ethylhexyl)adipate, Bis(2-ethylhexyl)phthalate, Butachlor, Metolachlor, Metribuzin, Propachlor, Simazine, 3-Hydroxycarbofuran, Aldicarb, Aldicarb sulfone, Aldicarb sulfoxide, Carbaryl, Carbofuran, Methomyl, Oxamyl.

VOCs:

Benzene, Bromobenzene, Bromochloromethane, Carbon tetrachloride, Chlorobenzene, Chloroethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 2,2-Dichloropropane, 2/4-Chlorotoluene, 4-Isopropyltoluene, Dibromomethane, Dichlorodifluoromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p,-Xylene, Methyl tert-butyl ether(MTBE), Methylene chloride, n-Butylbenzene, n-Propylbenzene, o-Xylene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl chloride.